

A Proposal on Massive Multiplayer Online M-Learning to Improve M-Learning via MMOG Technology and Instructional Design

Mohd Firdaus Md Khalid
Graduate School of Global Information
and Telecommunication Studies,
Waseda University
Tokyo, Japan
Email: firedauz@fuji.waseda.jp

Wataru Kameyama
Graduate School of Global Information
and Telecommunication Studies,
Waseda University
Tokyo, Japan
Email: wataru@waseda.jp

1. Introduction

Today the M-learning (mobile learning) concept had been known as the next evolution of E-learning. However, M-learning is still regarded by many to be in its infancy stage and suffers many problems similar to its predecessor but they are exacerbated due to the current limited technological capacity [1], mainly on issues of motivation insufficiency and lack of a generic concrete framework. Our research is to address these preceding problems by proposing the dual-integrations of Massive Multiplayer Online Games (MMOG) technology and Instructional Design (ID) methodology as the solution. The paper will start with reviews on related literatures on relevant M-learning researches, followed by introduction to our proposed research architecture. The final section closes the paper with our conclusion as well as future works.

2. Literature Reviews

The two focused M-learning problems of this research is in dire need of a concrete solution as these 'wireless mobile technologies for education' are still incredibly diverse and incompatible to fully achieve a large scale impact on learning [2]. Nokia had even suggested several usability principles due to the lack of formal instructional design strategies and principles in current M-learning standards today [3].

Games technology had always been connected with researches on motivations since E-learning and the same integration interest had attracted researchers for M-learning. The MobileGame prototype [4] for example, focused on location-based learning games in a university setting while others like Savannah [5] are more focused on role-play and simulation. However, most of these researches are not entirely focused improving the learning standards, especially for higher education institutions level [4]. For this reason, principles and methodologies especially for utilizing games to maintain their engagement aspect in the learning environment need to be further researched and established [6].

One of the most prominent game genres that can deliver such engagement and immersive values is Massive Multiplayer Online Games (MMOG) [7] which is one of the focuses of our research.

The integration of instructional content had also been noted as one of the important principles that should be taken into account during pedagogical considerations of M-learning [8]. This is because currently there is a dearth of suitable M-learning content, not to mention that user management, access control and activity management receive too little systematic attention at the institutional level [1]. Unless proper planning is done in considerations towards issues of pedagogical changes, motivational values, strong instructional methodology, and issues on technical features, future M-learning designs are going to face a lot of difficult challenges.

Thus the test here is to design and develop a relevant learning environment, based on sound pedagogical principles that will ensure the optimization in the M-learning environment [9].

3. The Proposed MMOM Architecture

Basing our development framework from the general architecture of M-learning [10], we propose our MMOM (Massive Multiplayer Online M-learning) research architecture in Figure 1. The first set of process is on the gathering of relevant information to be used in the research. These information are gathered from classroom observations, literature reviews, and testing of currently available M-learning systems, E-learning systems, MMOGs and instructional design prototypes. The second set is the integration processes which consist of (A) the integration of teaching/learning data collection into the Content Management (CM) section of E-learning Management System (ELMS); and (B) the integration of MMOG environment data collection into the presentation layer of ELMS.

In Integration (A), we propose to base it on Savery & Duffy's Eight Principles of Instructional Design [11] as we believe that the general design of M-learning is consistent with these principles in terms of its learning approach and strategies and is able to facilitate the development of our research.

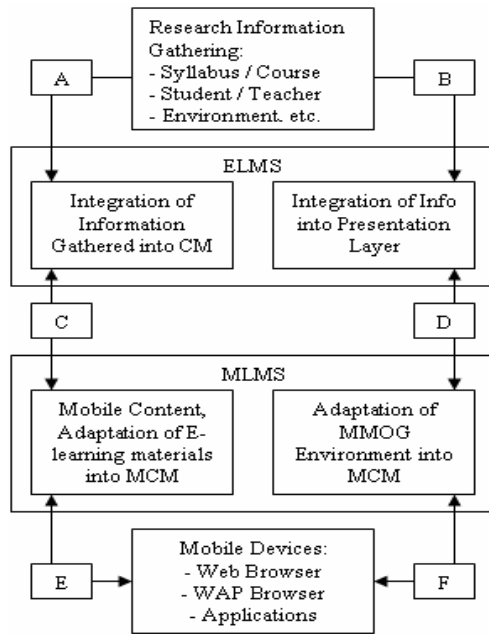


Figure 1: Proposed MMOM Architecture

Looking into Integration (B), we propose to base it on Preston's six key points of establishing a low-bandwidth, MMOG-style interface [7] which emphasizes on adopting the compelling and engaging nature of the game genre. We believe that the key points will not just significantly motivates the students on continuous learning due to its MMOG-style immersive nature, but it will also help to foster a more committed, engaged attitude among the learners to be more active in class participation with the teachers, other students and all the elements in the virtual environment. The third set is the adaptation processes which consist of (C) the adaptation of the prior implemented E-learning materials from the ELMS into the M-learning Management System (MLMS). Subset (D) is the adaptation of the ELMS's MMOG Environment into the Mobile Presentation Layer of the MLMS. The adaptation development schemas will be determined later in the development stage after the ELMS integration process is completed. The final process is the implementation of the dual-integration system into mobile devices and testing the system with real-life test subjects.

4. Conclusion and Future Works

Despite the presence of the focused problems, we believe that there is no doubt M-learning has potentials to excel even further using our proposed framework and can be generic enough to be tailored into many fields of today's higher education institutions. Furthering our research, we plan to integrate the relevant data collection into the Content Management section and the MMOG Environment in the E-learning Management System before adapting it in the Mobile Learning Management System.

5. References

- [1] McLean, N., (2003). The M-Learning Paradigm: an Overview. Retrieved 14, January 2005 from: <http://www.oucs.ox.ac.uk/lgt/reports/mllearning.doc>
- [2] Roschelle, J. (2003). Keynote Paper: Unlocking the Learning Value of Wireless Mobile Devices. *Journal of Computer Assisted Learning*, 9 (3), 260-272.
- [3] Maria Uther. "Mobile Internet usability: What can Mobile Learning learn from the past". Proceedings of the IEEE International Workshop on Wireless and Mobile Technologies in Education, 2002.
- [4] Schwabe, G. & Göth, C. 2005, 'Mobile Learning with a Mobile Game: Design & Motivational Effects' *Jour. of Comp. Assisted Learning*, vol.21, no.3, pp.204.
- [5] Facer K., Joiner, R., Stanton D., Reid J., Hull R. & Kirk D. (2004) Savannah: mobile gaming & learning? *Journal of Comp. Assisted Learning* 20, 399-409.
- [6] Fujimoto T., (2005) Social Interactions Experienced in the Massively Multiplayer Online Game Environment: Implications in the Design of Online Learning Courses. Conference of the Association for Educational Comm. & Technology.
- [7] Preston, J., Booth, L. and Chastine, J. Improving Learning and Creating Community in Online Courses via MMOG Technology. Proceedings of the 35th SIGCSE Technical Symposium (VA, March 2004) ACM Press.)
- [8] Chen, Y.S., Kao, T.C., Sheu, J.P., & Chiang, C.Y.: A Mobile Scaffolding-Aid-Based Bird-Watching Learning System, Proceedings of IEEE International Workshop on Wireless & Mobile Tech. in Education, pp.15-22, IEEE Computing Society Press, 2002.
- [9] Brown, T.H. (in press). Towards a model for m-learning in Africa. Forthcoming in first edition of *International Journal on E-Learning* in 2005.
- [10] Trifonova, A. and Ronchetti, M. (2003) 'A General Architecture for M-learning', Proceedings of the Second International Conference on Multimedia and Information and Communication Technologies in Education (m-ICTE2003), Badajoz, Spain, December.
- [11] Savery, J., & Duffy, T. (1995). Problem based learning: an instructional model and its constructivist framework. In B.G. Wilson (Ed.), *Designing Constructivist Learning Environments* (pp. 135-148). Englewood Cliffs: Educational Tech. Publications.