Courseware: Online 3D VLE

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Abstract— The basic of this project was to create a prototype courseware using an online 3D Virtual Learning Environment or experience learning platform. The platform that we used was Second Life which includes several sections: objectives, tutorial, quiz and test. The design of the presentation was tested in five categories such as effectiveness, ease of use, efficacy, aesthetic and users' satisfaction. The obtained results provided a set of unique and empirically derived guidelines for the design and the use of multisection frameworks to generate more usable courseware in the 3D Virtual Worlds of an online learning interface. This study had shown promosing outcome of the use of multisection in an online 3D Virtual Learning Environment.

Keywords— Courseware, Online 3D VLE, Second Life, Virtual Worlds.

I. INTRODUCTION

VIRTUAL World or 3D Virtual Learning Environment (VLE) or a Multi-User Virtual Environment (MUVE) would be a potential medium for distance learning which could enhance student learning experiences such as discussions, seminar, 3d presentations and other learning categories where materials are created, stored and used (Boulos, 2007). The versatile, immersive, creative and dynamic of 3D Virtual World learning environments would increase knowledge, self-directed learning, and peer collaboration by academics, healthcare professionals, and business executives (Hansen, 2008). 3D presentation and scripting language in virtual worlds would expand the teaching and learning capabilities for instructors and students. Virtual World also encourages active learning which could provide valuable experiences that could enhance engagement, promote participation, and motivate self-directed learning (Hansen, 2008). Thus, Virtual Worlds offer great potential to create medical and health educators and librarians, but more research is needed into their use in medical and health education (Boulos, 2007).

The average technological capabilities or training might not be able to provide them understanding and affordability in online learning (Li & Irby 2008). 3D Virtual World can be an interesting platform in presenting lesson of a health subject. It offers beneficial features compared to 2D conventional Web such as navigate multi-media content, realistic voice chat, live events (lectures, conferences, festivals, and concerts), develop social skills, trade (sell, buy or advertise real or virtual goods), play multi-player games, vacation , browse information and 3D libraries (Boulos, 2007). Learning in Virtual World should comprises three significant theoretical foundations such as social constructivist, task-centered instruction and situated learning environment (Semrau, 2009).

Virtual World technology has the potential to enhance and transform teaching, however it can also be used inappropriately or in ways that actually interfere with learning. Furthermore, learning through Virtual World or 3D Virtual Learning Environment (VLE) or a Multi-User Virtual Environment (MUVE) can cause frustration, boring and lost (Sanchez, 2007). It also lacks of instructions and the students did not really understand the purpose of learning. The students have problems relating the Virtual World learning experience to the course material. Students explained inadequate instructions in Virtual World activities that make them lose in completing the tasks and caused frustration.

Advance technology in 3D Virtual World may offer more interesting learning through tutorial session. Kluge and Riley (2008) highlighted that instructional design and assessments need to be reconsidered in order to accommodate and promote learning in Virtual Worlds. Therefore, it seems there is a need of performance evaluation in the Virtual World program for determining the understanding of students towards the course given Learning experiences in Virtual World are more synchronous and rapid compared to conventional web learning where the navigation is easier and fancier where the user may fly, walk, run, riding virtual vehicles or even teleporting to different locations simultaneously (Boulos, 2007).

II. DETAILS EXPERIMENTAL

The cupping treatment lesson titles comprised of types of cupping, cupping body parts, cupping equipment, cupping techniques, cupping benefits, cupping optimal times and preparation before and after cupping treatment. The lesson tutorial in 2-dimensional courseware presented with text and 2-dimensional graphic images with multimedia learning while the lesson tutorial in Virtual World courseware presented in text, 2D graphic images, 3D objects with simulation and explorative learning.

TABLE 1:
COURSEWARE INTERFACE DIFFERENCE IN 2-DIMENSIONAL AND VIRTUAL WORLD COURSEWARE

Interface	2DC	VWC2
Text	✓	✓
2D graphics	✓	✓
3D graphics		✓
3D environment		✓
Online	✓	✓

This cupping treatment lesson was arranged in the 4 sections platform (objective, tutorial, quizzes and test) in contributing to a courseware either in 2-dimensional (by frames) or Virtual World (by spaces).
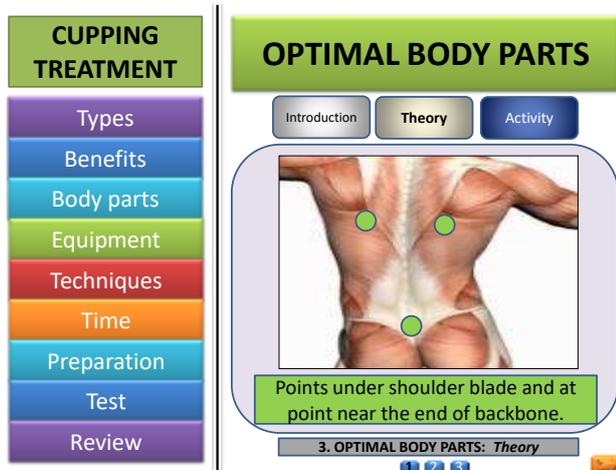

Fig.1 An example of screenshot of the tutorial Cupping Treatment subject lesson of optimal body part for cupping treatment presented in 2-dimensional courseware.
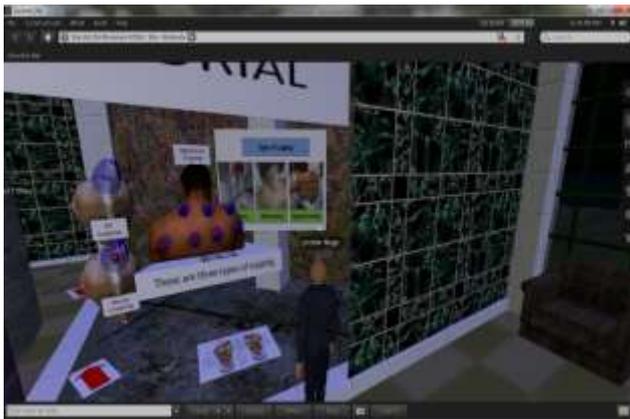

Fig. 2 Screenshot in one of the tutorial section of Virtual World courseware.

III. RESULTS AND DISCUSSION

The study has investigated the influence of Virtual World courseware on usability (in term of user perception and satisfaction) as well as learning performance in an online interface. This investigation has been carried out by developing two different versions of the courseware as an experimental platform. The first version was based on two-dimensional (flash) courseware in teaching the cupping lesson as learning material. Meanwhile, the second version was based as metaverse (3D Virtual World) to deliver the same learning material. Both online learning platforms were then empirically evaluated by two independent groups of users. The first group (control) tested the two-dimensional (flash) interface while the second one (experimental) tested the metaverse (Virtual World) interface in learning cupping subject and answering some questions in a test section.
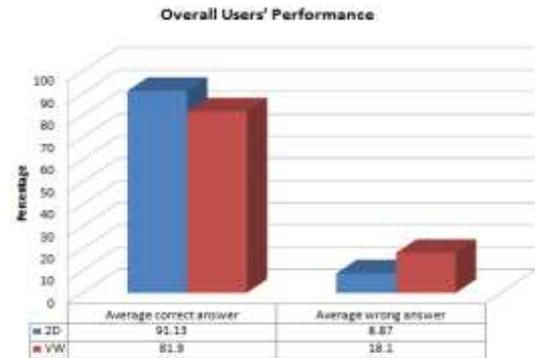

Fig. 3 Average percentage of correct answers achieved by users in both groups for all questions.

Fig. 4 shows the frequency of the user agreement to each statement in the satisfaction questionnaire.

The results obtained from this experiment confirmed that the courseware in the metaverse (Virtual World) could indeed usable and satisfied student by adding the multisections (objective, tutorial, quiz and test). In other words, it can be concluded that the tested metaverse (Virtual World) courseware and multisection framework could significantly contribute in enhancing users' learning performance and the usability of the online learning interface in term of perception (ease of use, efficacy, aesthetic and presence) and user satisfaction. Therefore, the courseware in the metaverse (Virtual World) and multisection framework is suggested and could be taken into consideration when designing user interfaces of online learning applications not even in teaching health but other modules as well.

IV. CONCLUSIONS

The design of health course using online 3D virtual world which using several section such objective, tutorial, quiz and test section with video addition has been studied and major conclusions are as follows:

1. Developing a course in Virtual World was effective and the student may manage their study time anytime and anywhere.
2. The structured objective, tutorial and quiz sections removed the sense of lost in Virtual World and can manage their timing well.
3. More real the course mimic the real situation, more understandable the student to the course subjects.

However, it was suggested that the Virtual World (online 3D VLE) course should enhance their instructional and adding high simulation towards the program. Further research could be carried out to reinforce the full potential of Virtual World for teaching and practice health and medical courses.

This online 3D VLE is believed to be widely used in the future especially for training and safety purposes.

REFERENCES

Book, B. "Virtual worlds: today and in the future." ITNOW 48.2 (2006): 32-33.

Boulos, .et al. (2007). Second Life: an overview of the potential of 3-D virtual worlds in medical and health education. *Health Information and Libraries Journal*, vol. 24, no. 4. p. 233-245.

Gagne, R., Briggs, L., & Wagner, W. (1992). Principles of Instructional Design. Fort Worth: Harcourt Brace Javanovich. pp 185-204.

Hansen. M. M et al (2008). Versatile, Immersive, Creative and dynamic virtual 3-D healthcare learning environments: a review of the literature. *J Med Internet Res*, 10 (3): e26.

Kluge, S. & Riley, L. (2008). Teaching in virtual worlds: Opportunities and challenges. Issues in Informing Science and Information Technology. Informing Science Institute, 5, 127-135. Retrieved June 12, 2009, from http://proceedings.informingscience.org/InSITE2008/IISITv5p127-135Kluge459.pdf

Chi-Sing, L. & Irby, B (2008). An overview of Online Education: Attractiveness, Benefits, Challenges, Concerns and Recommendations. *College Student Journal*, Jun2008 Part A, Vol. 42 Issue 2, p449-458, 10p.

Sanchez, J. (2007). Second Life: An Interactive Qualitative Analysis. In C. Crawford et al. (Eds.), Proceedings *of Society for Information Technology and Teacher Education International Conference 2007*, pp. 1240-1243.**.**

Semrau, P. & Boyer, B. (2009). Three Significant Theoretical Foundations Occurring In Virtual World Learning. In T. Bastiaens et al. (Eds.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2009* , pp. 3143-3148.

Vozenilek, J., Huff, J. S., Reznek, M. and Gordon, J. A. (2004), See One, Do One, Teach One: Advanced Technology in Medical Education. *Academic Emergency Medicine*, 11: 1149–1154.