LEARNING OBJECT AND MOBILE PERSUASION FOR AT RISK LEARNERS IN AN ODL ENVIRONMENT

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ABSTRACT

This conceptual paper describes the teaching and learning of technical subjects based on the learning objects and mobile persuasion. Learning object is popular due to its potential reusability that will save cost of development, especially for online learning. While most of the research on learning object looks at the reusability and interoperability for economical reasons, this paper will focus on the development and design instruction for learning objects, as a small component that will support the learning process of at-risk learners in an open and distance learning environment. While mobile persuasion, based on the Short Messaging Services (SMS) technology, will focus on how to motivate the at-risk learners to be self-directed learners. This paper will outline the design of learning objects and mobile persuasion for at-risk learners. The research outcome is expected to help and support at-risk learners to improve their academic performance.

KEYWORDS: Learning objects, mobile persuasion, at-risk learners

1. INTRODUCTION

Open University Malaysia (OUM), an open and distance learning (ODL) university adopted blended learning that comprises of Self-Managed Learning, Face-to-Face Tutorials and Online Learning. SMS tutoring is incorporated in the blended learning mode to further support learners learning process. The weightage of self-managed learning accounted for about 80% of the entire learning process of any courses.

This explained why self-managed learning is crucial in the ODL environment in determining how successful can a learners complete the programme in the ODL environment. However, due to limited face-to-face meeting with the tutors (10 hours per semester per course at OUM) and busy working schedule of the learners, retaining learners is a major challenge for many ODL institutions. Having to juggle multiple commitments and subjected to a sense of isolation causes low motivation that could ultimately lead to high rates of attrition at the University in comparable with the conventional university.

While the number of institutions offering education through ODL mode and the number of students enrolling in ODL are growing very rapidly, the stagnantly high attrition and drop-out rates and the consistently low retention and success rates of students have been causing distress to ODL system. Studies in attrition in distance learning is important for two major reasons: there is the need to assess the cost effectiveness of open and distance education in comparison with the traditional classroom-based education and the determination of approaches to increase the effectiveness of distance learning and to increase student engagement in that form of learning (Tyler-Keith, 2006).

This conceptual research paper will look at the teaching and learning methodology for engineering subjects based on the learning objects and mobile persuasion to support at-risk learners to be self directed learners in ODL institution and engaging students with the goals of enhancing the learning process and reducing attrition rates.

1.1 Learning Objects

Learning object is popular due to its potential reusability that will save cost of development, especially for online learning. While most of the research on learning object conducted look at the reusability and interoperability for economical reasons, this project focus on the development and design instruction for learning objects, as a small component of learning materials that will support the learning process of at-risk learners in ODL environment.

Learning objects encourage the use of learning content online. This help ODL institution to deliver learning materials to the learners and learners able to learn more effectively. When learning object is clearly expressed its purposes, the design of learning object become useful to the learners. Learning is more efficient when it is focused and directed. IEEE (2002) defines learning object as 'any entity, digital or non-digital, which can be used, re-used or referenced during technology supported learning'. Wiley (2000) considers learning object as 'any digital resources that can be reused to support learning'. Quinn (2000) defines learning object as 'chunk of educational content' that could be of any media type digital or non-digital. Sosteric and Hesemeier (2002) defines learning object as 'digital file intended to be used for pedagogical purposes'

Learning object developer must know the objectives of developing learning object. If it is for economical reason, then reusability and interoperability are important. If it is for ease of learning, then learning object representing in small component is helpful, especially for at – risk learners at ODL environment with busy schedule to pick up the new knowledge. To help at – risk learners to learn effectively and hence reduce attrition rate, the project focus on the development of small and independent learning component. Small learning materials are much more suitable for the demand of the workplace for ODL learner than traditional lengthier learning materials. Course overloaded with learning content may result in learners dropping out.

1.2 Mobile Persuasion

At OUM, SMS tutoring comprises of five categories: Course Management, Content, Forum, Tips and Motivation. Two to three SMS messages sent to learners weekly. Table 1 shows the SMS tutoring category and its objective.

Table 1: SMS tutoring category

Category	Purpose
Content	To help learners identify important content and knowledge in the course.
Forum	To lead learners to participate in online discussion forums.
Tips	To provide hints to learners on how to do well in their studies.
Motivation	To motivate learners to persevere in the learning process.
Course management	To provide timely announcements on tutorial dates, assessments and other aspects related to course management.

Mobile persuasion places emphasis on the motivation by persuading the learners to change the attitude and behaviour. B.J. Fogg (2003) defines persuasion as an attempt to change attitudes or behaviours or both without using coercion or deception. He derived captology as the study of computers as persuasive technologies. Figure 1 shows captology describes the area where computing technology and persuasion overlap. The objective is aimed at changing learners' attitude and to engage learners throughout the entire programme as an ODL learner.

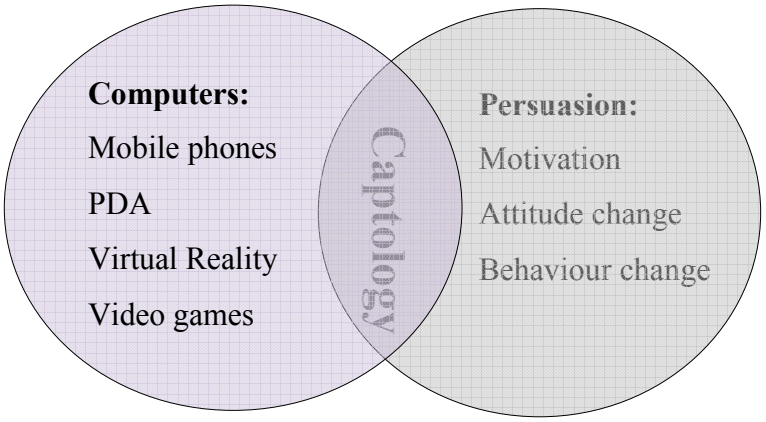

Fig. 1: Captology (Source: B. J. Fogg, 2003)

Mobile persuasion is part of the Persuasive Technology. Most of the persuasive technology research focuses on interactive, computational technologies, including desktop computers, Internet services, video games, and mobile devices (Oinas-Kukkonen 2008). This paper is focused on the implementation of mobile persuasion for at – risk learners by using mobile phone SMS technology.

2. METHODOLOGY

Learning object and mobile persuasion via SMS messages are used to support at-risk learners learning process. Figure 2 show the relationship on how the learning object and mobile persuasion could have impact to the at-risk learners and would improve their academic result.

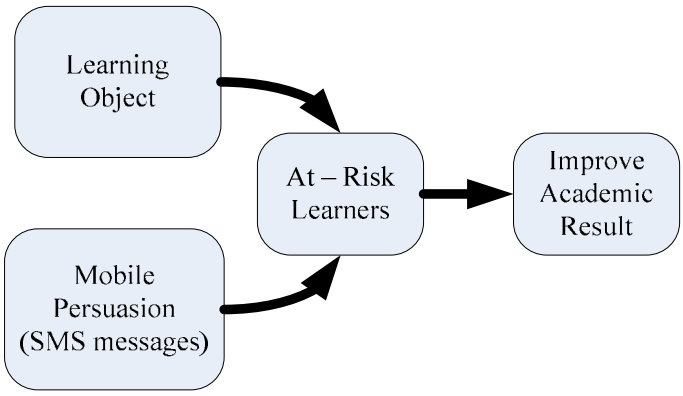

Fig. 2: Learning Object and Mobile Persuasion

Learning Object

Since the objective of this project is to develop learning object that help at – risk learners to learn effectively, reusability is not the focus of this research. The learning object will be developed based on the existing module by converting it into discrete and small components of learning materials. Among the high failing rate courses, Control System module is chosen to rewrite entirely in the learning object format. Once can choose to write learning object from scratch, or convert existing module into learning object format. Since the module is ready, it is faster and economical to convert existing module written in traditional format into learning object.

Learning object should reflect an educational objectives, it should be self contained with specifically designed activities and assessment method to meet the educational objective. Each learning object is treated as a lesson, small learning materials that learners are expected to complete in 2 to 3 hours. Following are the proposed learning object design guideline for this project:

1. LO must be units of instruction that standalone.
2. LO should follow standard instructional format.
3. LO is relatively small, representing single objective.
4. LO sequence must have a context.

Each learning object includes content, resources, example, online discussion activities, online self assessment and motivation quotes. Original table of contents for the Control System comprises of 7 major topics with multiples sub-topics. The contents are converted to 23 small individual learning objects as shown in Table 2.

Table 2:

No	Learning Objects	Current module table of content
LO 1	Introduction to Control System	Topic 1 Introduction to Control System
LO 2	Open Loop System	
LO 3	Closed Loop System	
LO 4	Laplace Transform	Topic 2 Review of Mathematical Foundation
LO 5	Final Value Theorem	
LO 6	Transfer Function	Topic 3 Transfer Function
LO 7	Transfer Function: Electric Circuits	
LO 8	Transfer Function: Mechanical System	
LO 9	Block Diagram Reduction Method 1	Topic 4 Block Diagram and Signal Flow Graph
LO 10	Block Diagram Reduction Method 2	
LO 11	Signal Flow Graph	
LO 12	Mason Gain Formula	

LO 13	Poles and Zeros	Topic 5 Time Response
LO 14	First Order System	
LO 15	Second Order System	
LO 16	Second Order System: Transient Response	
LO 17	System Type	Topic 6 Steady State Error
LO 18	Steady State Error (in term of T(s))	
LO 19	Steady State Error (in term of G(s))	
LO 20	Steady State Error (Non – unity Feedback System)	
LO21	Stability	Topic 7 Stability
LO22	Routh-Hurwitz Criterion	
LO23	Routh-Hurwitz Criterion: Special Cases	

Mobile Persuasion

As explained in Section 1, SMS tutoring category implemented at the OUM. SMS tutoring is subjects based where certain subjects is pre-selected to implement SMS tutoring before semester started. Mobile persuasion, which is also based on SMS technology, is sent to the at – risks learners only. The SMS messages sent would focus on the motivation / compliment category. Two to three messages will be sent to the at – risks learners per week at convenient times. Each message would contain a compliment (e.g. "You have done a good job!") or motivational quotes (e.g. "...even without success, creative persons find joy in a job well done. Learning for its own sake is rewarding..."). It is hope that with the introduction of this mobile-human interaction it could create a strong bonding between the at-risk learner and the institution.

3. CONCLUSION

This paper has proposed the method of supporting the ODL at-risk learners by incorporating the learning object and mobile persuasion. The content to be included in the learning object is described. We also described the use mobile persuasion to alter ODL learners' attitude by sending SMS messages 2 to 3 times a week. The

application of both learning object and mobile persuasion seems a promising method of helping ODL at-risk learners to improve their academic performance.

REFERENCES

Fogg. B.J. (2003), Persuasion Technology: Using Computers to Change What We Think and Do. Morgan Kaufmann Publishers, San Francisco.

Learning Technology Standards Committee (2002) (PDF), Draft Standard for Learning Object Metadata. IEEE Standard 1484.12.1.

Tyler-Smith, Keith (2006), Early Attrition among First Time eLearners: A Review of Factors that Contribute to Drop-out, Withdrawal and Non-Completion Rates of Adult Learners undertaking eLearning Programmes, Journal of Online Learning and Teaching

Quinn, C and Hobbs, S (2000), Learning objects and instructional components, Educational Technology and Society.

Wiley, D. A. (2000), Connecting Learning Objects to instructional design theory: A definition, a metaphor and a taxonomy, The instructional use of learning objects.

Sosteric M., Hesemeier S. (2002), When is a learning object not an object: A first step towards a theory of learning objects. International Review of Research in Open and Distance Learning.