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REQUIREMENTS MODEL OF COLLABORATIVE MOBILE LEARNING (CML)

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MASTER OF SCIENCE (INFORMATION TECHNOLOGY)

UNIVERSITI UTARA MALAYSIA

2016

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Abstrak

Teknologi mudah alih merupakan satu alatan inovasi yang membantu pembelajaran. Namun, kajian sedia ada berkaitan pembelajaran mudah alih (m-pembelajaran) belum benar-benar menggabungkan pendekatan pembelajaran tertentu bagi menghasilkan cara baru yang memberi manfaat kepada pembelajaran. Ekoran itu, banyak penyelidik percaya bahawa terdapat keperluan untuk menerapkan model pedagogi dan arahan ke dalam teknologi m-pembelajaran, terutamanya bagi menyokong pembelajaran berkumpulan. Pada masa sama, banyak penemuan menunjukkan bahawa pereka bentuk berhadapan cabaran dalam mereka bentuk sistem yang menyokong kerjasama melibatkan pelbagai alatan. Justeru, para pengkaji mencadangkan agar inisiatif membangunkan kerangka bagi pembelajaran moden dalam pelbagai persekitaran diusahakan. Kerangka tersebut perlu menyediakan maklumat yang kaya melalui m-pembelajaran bagi pembelajaran berkumpulan. Usaha ini membolehkan pembelajaran kolaboratif (CL) yang lancar, menyeronokkan, dan anjal berlaku. Oleh itu, kajian ini mengenalpasti kebarangkalian pembangunan model instruksional bagi aplikasi mudah alih yang menggabungkan CL dan m-pembelajaran yang dinamakan model pembelajaran mudah alih kolaboratif (CML). Bagi tujuan tersebut, mengenalpasti keperluan utama dengan meneroka isu-isu penting dalam model sedia ada dan kajian berkaitan dalam karya sedia ada, di samping menemubual pelajar merupakan keutamaan kajian ini. Model yang diusulkan dan prototaip yang dibangunkan telah dinilai dan disahkan oleh empat orang pakar. Di samping itu, 43 responden kajian telah menggunakan prototaip dan memberi maklumbalas penerimaan mereka menggunakan borang soal selidik model penerimaan teknologi (TAM). Hasil ujian menunjukkan penerimaan terhadap model amat tinggi, mengesahkan kefungsian CML. Penemuan seperti ini mencadangkan bahawa model tersebut mampu memperbaiki produktiviti, menunjukkan cara menggunakan tenkologi mudah alih dalam CL. Kajian ini merupakan panduan kepada pereka bentuk dan pembangun dalam bidang m-pembelajaran.

Keywords: pembelajaran mudah alih (m-pembelajaran), pembelajaran kolaboratif (CL), pembelajaran mudah alih kolaboratif (CML), reka bentuk instruksional, aplikasi mudah alih Android.

Abstract

Mobile technology is one of innovative tools used to facilitate learning. However, the existing studies related to mobile learning (M-learning) have not deeply combined relevant learning approaches for giving a new way that benefits the learning sphere. Accordingly, many researchers believe that there is a need to incorporate pedagogical and instructive models into M-learning technology, especially for supports of team-learning. At the same time, many investigations prove that designers faced challenges in designing systems that involve collaboration with various stationaries. Therefore, researchers suggest for an initiative on more investigations for modern learning in modeling of M-learning domain. The model should provide rich amount of information through M-learning for collaborative learning (CL). This comes from understanding, collecting and modeling usable design, holds functionalities and non-functionalities issues to be the corner stone of the intended model. Consequently, this research studies the possibility of modeling an instructional model for Android mobile application combining the CL and M-learning concepts calls Collaborative M-learning (CML) model. Thus, determining the essential requirements by exploring the most important issues in the existing models and related works in the literatures, as well as interviewing learners are the priorities of this study. Content analysis method was used to analyze the gathered data in determining the requirements needed. The model and the prototype have been reviewed and verified by four experts. Also, 43 respondents in the field of Information Technology (IT) have tested the prototype and provided feedback on their acceptance, through Technology Acceptance Model (TAM) questionnaire under the usability evaluation. Results show that their acceptance upon the model is high, validating the functionality of the CML. Such findings recommend that the model is able to improve productivity, showing the technique to utilize mobile technology in CL. This study serves as a guidance for designers and developers in M-learning.

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Keywords: Mobile Learning (M-learning), Collaborative Learning (CL), Collaborative M-learning (CML), Instructional Design (ID), Android Mobile Application.

Acknowledgment

In the Name of Allah, the Most Gracious and Most Merciful

Above all else, all praise to Allah for giving me the strength, steadiness, and helping me to have this work done on time. Then, I would like to express my deepest gratitude to my supervisor, **Dr. Azham bin Hussain** for his intellectual guidance and kind support given to me during the period of this study. Also, I would like to thank our Coordinator **Dr. Norliza bt Katuk** who helped me through the discussion and supported me to accomplish this work. My deepest appreciation and heartfelt thankful for my evaluators, **AP Dr. Haslina bt Mohd** and **Dr. Shafinah Farvin bt Packeer Mohamed** who assisted me during my research process with their moral support and knowledge.

I want to express my gratitude and dedicate this thesis to my father **Hamid Flayyih** and my mother **Khawlah Tawfeeq**. My goal would not have been achieved without them. They have supported and are continuously praying for me during my studies and they encouraged me and felt confident in my abilities to complete my study, I pray to Allah to keep them safe and well. Also, I dedicate this thesis to my wife **Hind Mohammed** and my son (**Ameen)** who unremittingly supported me during the years of my study. They made this work possible. Moreover, I am also grateful to all my brothers and sisters for their care and assistance in many moments of inspiration and support during my study.

Also, I am thankful for my best friends **Husam Abdulhameed**, **Mohammed Rafid**, **Firas Farhan**, **Ahmed Naser**, **Monadhil Faeiq**, **Adil Abdullah** and **Abdullah Ibrahim**, for helping and supporting me to complete my dissertation. Lastly, I express my deepest thanks to Ministry **of Education in Iraq**, as well as my **Educational Directorate of Salah Al-Din** for their support and giving necessary advice and guidance, as well as arranging all facilities to accomplish my study (Master of IT). I express my thanks to the **staffs of IT**, **College of Arts and Science**, **University Utara Malaysia** and those who contributed indirectly towards the achievement of my study.

Omar Hamid Flayyih

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List of Abbreviations

CML	Collaborative Mobile Learning
M-learning	Mobile learning
E-learning	Electronic learning
U-learning	Ubiquitous learning
BYOD	Bring Your Own Device
LMS	Learning Management System
CSCL	Computer Supported Collaborative Learning
MOOS	Massive Open Online System
ID	Instructional Design
CSCL	Computer Supported Collaborative Learning
CE	Collaboration Engineering
GSS	Group Support System
PSA	Process Support Applications
RLOs	Reusable Learning Objects
QR	Quick Response
CSAM	Collaborative Situated Active Mobile learning strategies
IT	Information Technology
UML	Unified Modeling Language
RAD	Rapid Application Development
TAM	Technology Acceptance Model
SPSS	Statistical Package for the Social Sciences
FRAME	Framework for the Rational Analysis of Mobile Education
ZPD	Zone of Proximal Development
HTML	HyperText Markup Language
XML	Extensible Markup Language
AOSP	Open Source Project
JIT	Just-in-Time compiler
API	Application Programming Interface
CE	Collaboration Engineering

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PSS	Process Support Systems
GSS	Group Support System
PSA	Process Support Applications
ICT	Information and Communications Technology
SNS	Social Networking Services
mCSCL	mobile Computer-Supported Collaborative Learning
SDK	Software Development Kit
JDT	Java Development Tools
JSP	Java Server Pages

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CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter introduces related topics to this study, which represent background, followed by the problem statement, research hypotheses, and significance of the study. Finally, scope of the study is also presented in this chapter.

1.1.1 Mobile Learning (M-learning)

Since the beginning of this century, with the introduction of mobile devices, the term of Mobile learning (M-learning) became frequent along with Electronic learning (E-learning) and Ubiquitous learning (U-learning), the concept comes on the agenda since the vast emergence of wireless communications, Internet access and mobile device proliferation have defeat time and space limits on communication (Lai, Chang, Wen-Shiane, Fan, & Wu, 2013). The term of M-learning has increasingly grown among learners. It has become an interesting subject for researchers since a user may have more than one device. According to the annual report of International Telecommunication Union (2013) the quantity of mobile phone users around the world exceeds the real population. Figure 1.1 indicates the estimated number of mobile phone users.

In their study, Koh, Rawi, and Zhang (2011) stated that M-learning refers to the use of mobile devices such as laptop, tablet, smartphones or any portable computer anytime-anywhere, particularly with the rapid growth of wireless communication technologies and the innovative design of modern devices which represent the main factors that have supported the emergence of M-learning concept. The concept of M-learning concentrates

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