UNIVERSITI SAINS MALAYSIA
GERAN PENYELIDIKAN UNIVERSITI
PENYELIDIKAN
LAPORAN AKHIR

A WEB BASED MULTIMEDIA OBJECTS REPOSITORY SYSTEM FOR HEALTH SCIENCES

PENYELIDIK

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PENYELIDIK BERSAMA

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PN. ZAMILAH HUSSIN

2013

LAPORAN AKHIR PROJEK PENYELIDIKAN JANGKA PENDEK

FINAL REPORT OF SHORT TERM RESEARCH PROJECT

Sila kemukakan **dua (2) salinan** laporan akhir ini melalui Jawatankuasa Penyelidikan di Pusat Pengajian dan Dekan/ Pengarah/ Ketua Jabatan kepada Pejabat Pengurusan dan Kreativiti Penyelidikan (RCMO)

1. **Nama Ketua Penyelidik:** *Name of Research Leader* — En Nor Azmi Zainal

   ☐ Profesor Madya/ *Assoc. Prof.* ☐ Dr./ *Dr.* ☑ Encik/Puan/C *Mr/Mrs/Ms*

2. **Pusat Tanggungjawab (PTJ):** *School/Department* — Pusat Pengajian Sains Kesihatan

3. **Nama Penyelidik Bersama:** *Name of Co-Researcher*
   1. Prof. Madya Dr Sharifah Mastura Syed Mohamad
   2. Pn Zamilah Hussin

4. **Tajuk Projek:** *Title of Project* — A Web-Based Multimedia Objects Repository System for Health Sciences

5. **Ringkasan Penilaian**/*Summary of Assessment*:

	Tidak Mencukupi *Inadequate* 1	2	Boleh Diterima *Acceptable* 3	Sangat Baik *Very Good* 4	5
i) **Pencapaian objektif projek:** *Achievement of project objectives*	☐	☐	☐	☑	☐
ii) **Kualiti output:** *Quality of outputs*	☐	☐	☐	☑	☐
iii) **Kualiti impak:** *Quality of impacts*	☐	☐	☐	☑	☐
iv) **Pemindahan teknologi/potensi pengkomersialan:** *Technology transfer/commercialization potential*	☐	☐	☐	☑	☐
v) **Kualiti dan usahasama :** *Quality and intensity of collaboration*	☐	☐	☐	☑	☐
vi) **Penilaian kepentingan secara keseluruhan:** *Overall assessment of benefits*	☐	☐	☐	☑	☐

6. **Abstrak Penyelidikan**
(Perlu disediakan di antara 100 - 200 perkataan di dalam **Bahasa Malaysia dan juga Bahasa Inggeris**. Abstrak ini akan dimuatkan dalam Laporan Tahunan Bahagian Penyelidikan & Inovasi sebagai satu cara untuk menyampaikan dapatan projek tuan/puan kepada pihak Universiti & masyarakat luar).

Abstract of Research
(An abstract of between 100 and 200 words must be prepared in Bahasa Malaysia and in English).
This abstract will be included in the Annual Report of the Research and Innovation Section at a later date as a means of presenting the project findings of the researcher/s to the University and the community at large)

Sistem Repositori Multimedia (Multimedia Repository System, MRS) adalah sebuah aplikasi berasaskan web yang dibangunkan dengan berpandukan piawai Sistem Pengurusan Pengajaran (Instructional Management Systems, IMS). MRS menyediakan antara muka untuk muat naik objek (bahan multimedia) ke pelayan pusat, bagi membolehkan pengguna mengakses bahan pembelajaran multimedia melalui katalog. Lapangan katalog termasuk termasuk imej, kata kunci, maklumat klinikal dan teknikal. MRS telah dibangunkan dari awal dengan menggunakan metodologi pembangunan sistem prototaip. Pembangunan sistem dijalankan menggunakan teknologi sumber terbuka (open soruce) termasuk Apache Web Server, bahasa penskripan PHP dan sistem pengurusan pangkalan data MySQL. MRS boleh diakses melalui Internet, menerusi URL:http://www.mrs.kk.usm.my http://. Keputusan ujian penerimaan pengguna menunjukkan bahawa sistem ini mudah untuk digunakan (Min =18,09; SD = 1,70; min = 15; max = 21) dan berguna untuk berkongsi pengetahuan kesihatan dan perubatan (Min = 11,86; SD = 1,65 ; min = 7; maks = 14). Penyumbang boleh berkongsi koleksi objek mereka dengan pelajar dan rakan sekerja yang boleh melayari koleksi ini dalam pelbagai cara. Objek juga boleh dimuat turun ke dalam media penyimpanan pengguna. Penerangan, nota tutorial, maklumat klinikal dan suatu pernyataan hakcipta mengiringi item multimedia yang dimuat naik. MRS boleh digunakan oleh pensyarah Sains Kesihatan dan Perubatan untuk berkongsi objek pengetahuan mereka dengan pelajar dan rakan sejawat serta mengintegrasikan dengan Sistem Pengurusan Pembelajaran (Learning Management System, LMS) sebagai sumber dalam talian untuk tujuan pengajaran dan pembelajaran.

Multimedia Repository System (MRS) is a web-based application, developed using Instructional Management Systems (IMS) standard. MRS provides interface for uploading objects to a central server, enabling users to catalog and organize their multimedia learning resources. Cataloging fields include image, keywords, clinical and technical information. MRS was developed from scratch using the prototyping system development methodology. Its implementation was carried out using open source technologies that include Apache Web Server, PHP scripting and My SQL database management system. MRS is accessible through the Internet via URL: http://www.mrs.kk.usm.my. Users' acceptance test results show that the system is easy to use (Mean=18.09; SD=1.70; min=15; max=21) and useful for sharing health and medical knowledge (Mean=11.86; SD=1.65; min=7; max=14). Contributors can share their collections with students and colleagues who can browse the collections, through proper authentication, in a variety of ways. The objects can also be downloaded to user storage media. A description, tutorial notes, clinical information and a copyright statement accompany the multimedia item. MRS can be used by Health Sciences and Medical lecturers to share their knowledge objects with students and colleagues as well as integrate it with Learning Management System (LMS) as online resources for teaching and learning purposes.

7. **Sila sediakan laporan teknikal lengkap yang menerangkan keseluruhan projek ini.**
[Sila gunakan kertas berasingan]
Applicant are required to prepare a Comprehensive Technical Report explaning the project.
(This report must be appended separately)

Dikepilkan

Senaraikan kata kunci yang mencerminkan penyelidikan anda:
List the key words that reflects your research:

Bahasa Malaysia	*Bahasa Inggeris*
Sistem repositori multimedia,	Multimedia repository system,
Sistem pengurusan pengajaran,	Instructional management systems,
Aplikasi sumber terbuka,	Open source applications,
Informatik kesihatan.	Health informatics.

8. Output dan Faedah Projek
Output and Benefits of Project

(a) * **Penerbitan Jurnal**
Publication of Journals
(Sila nyatakan jenis, tajuk, pengarang/editor, tahun terbitan dan di mana telah diterbit/diserahkan)
(State type, title, author/editor, publication year and where it has been published/submitted)

1. Sharifah-Mastura Syed-Mohamad, Nor Azmi Zainal, Mohd Nazri Mat Husin, Zamilah Hussin and Zar Ni Wynn, *Sharing Health And Medical Knowledge Through Multimedia Repository System*, The Malaysian Journal of Medical Sciences. Vol. 15, Supplement 1, 187, 2008
2. Zar Ni Wynn, Sharifah Mastura Syed-Mohamad and Than Winn, *The Acceptance Study of Multimedia Repository System Based on the Modified Technology Acceptance Model*, Proceeding of National Postgraduate Conference on Engineering, Science and Technology 2009 (NPC 2009). 1, 99-104, 2009

(b) **Faedah-faedah lain seperti perkembangan produk, pengkomersialan produk/pendaftaran paten atau impak kepada dasar dan masyarakat.**
State other benefits such as product development, product commercialisation/patent registration or impact on source and society.

1. Multimedia Repository System boleh diakses melalui Internet untuk guna-sama pengajar dan pelajar bidang Sains Kesihatan dan Perubatan. Sehingga kini terdapat lebih 200 koleksi bahan multimedia disumbangkan oleh pengajar pelbagai disiplin sains kesihatan / perubatan (http://www.mrs.kk.usm.my/).
2. Johan Pertandingan Aplikasi Program Pembangunan Sains dan Teknologi Peringkat Negeri Kelantan Tahun 2009.

* Sila berikan salinan/*Kindly provide copies*

(c) **Latihan Sumber Manusia**
Training in Human Resources

i) Pelajar Sarjana:
Graduates Students
(Perincikan nama, ijazah dan status)
(Provide names, degrees and status)

Ms. Zar Ni Wynn. Ijazah PhD.: Factors influencing the usage of multimedia for teaching amongst health sciences lecturers in Malaysian public universities : towards the development of a multimedia repository system. Status: Graduated

ii) Lain-lain:
Others

9. Peralatan yang Telah Dibeli:
Equipment that has been purchased

Tiada

Komen Jawatankuasa Penyelidikan Pusat Pengajian/Pusat
Comments by the Research Committees of Schools/Centres

one article has been published in the Malaysian Journal of medical Sciences. There is one conference proceeding published at NPC 2009.

One PhD student was trained.

OM-12

SHARING HEALTH AND MEDICAL KNOWLEDGE THROUGH MULTIMEDIA REPOSITORY SYSTEM

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Introduction: Multimedia Repository System (MRS) is a web-based application, developed using Instructional Management Systems (IMS) standard. MRS provides interface for uploading objects to a central server, enabling users to catalog and organize their multimedia learning resources. Cataloging fields include image, keywords, clinical and technical information.

Materials and method: MRS was developed from scratch using the prototyping system development methodology. Its implementation was carried out using open source technologies that include Apache Web Server, PHP scripting and My SQL database management system. Users' acceptance test was conducted with thirty five lecturers from Health Campus, Universiti Sains Malaysia (USM).

Results: MRS is currently accessible within USM intranet environment and soon, it will be made accessible through the internet. Users' acceptance test results show that the lecturers found the system to be easy to use (Mean=18.09; SD=1.70; min=15; max=21) and useful for sharing health and medical knowledge (Mean=11.86; SD=1.65; min=7; max=14). Contributors can share their collections with students and colleagues who can browse the collections, through proper authentication, in a variety of ways. The objects can also be downloaded to user storage media. A description, tutorial notes, clinical information and a copyright statement accompany the multimedia item.

Discussion and conclusion: MRS can be used by Health and Medical lecturers to share their knowledge objects with students and colleagues as well as integrate it with Learning Management System (LMS) as online resources for teaching and learning purposes.

The Acceptance Study of Multimedia Repository System Based on the Modified Technology Acceptance Model

Zar Ni Wynn[1], Sharifah Mastura Syed-Mohamad[1] and Than Winn[2]

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[2]Population Health and Preventive Medicine, Faculty of Medicine, UniversitiTeknologi MARA, 40450 Shah Alam, Selangor, Malaysia

Abstract- This paper presents the results and findings from the user evaluation workshop conducted among the health sciences (HS) lecturers in the School of Health Sciences (PPSK), Universiti Sains Malaysia (USM). A digital repository system namely Multimedia Repository System (MRS) was developed in conformance with Health Education Assets Library (HEAL) metadata schema standard and the finished prototype was tested well before evaluation workshop was proceeded. A Web-based System Acceptance Model (Web-SAM) was newly developed to test the MRS acceptance which consists of 6 determinants (ease of use, usefulness, web experience, technical support, computer experience and compatibility) to predict the intention to system use in the future. A major finding of this study highlighted that usefulness ($\beta = 0.68$, $p < 0.01$), compatibility ($\beta = 0.41$, $p < 0.05$), and the year of computer experience ($\beta = 0.15$, $p < 0.01$), were the direct determinants of HS lecturers' intention to use MRS in the future for their lecture preparations. Technical support has a significant direct effect on compatibility ($\beta = 0.71$, $p < 0.01$) and compatibility has a significant direct effect on the usefulness ($\beta = 0.43$, $p < 0.01$). The proposed Web-SAM model accounted for 59% of the variance explained on intention to use.

I. INTRODUCTION

A stimulating teaching and learning environment can be created by incorporating technology, especially multimedia technology, into the classroom [1, 2]. Today's broad range of electronic technology expands the multimedia tools available for teaching [3] which facilitates tutors or lecturers to prepare their lectures by using certain application software such as Microsoft PowerPoint [4] to embed the multimedia elements (images, audio and video files, etc) easily in the presentations.

Generally, in the Malaysian health sciences (HS) teaching environment, lecture presentations are mostly delivered by using PowerPoint application. Most of the lecturers integrated text with different kinds of images such as photographs, scanned images, drawings and figures. Some of them added videos to supplement their lectures.

According to the information taken from the various departments of Universiti Sains Malaysia (USM) health campus, there were some departmental collections in some of the USM departments such as Skill Lab Centre, Anatomy and Surgery Departments. Some lecturers also have individual collections of their own such as rare case photos and video records of some surgical operations at hospital USM (HUSM).

There was no proper system available yet in USM which enables lecturers with enormous storage space and securely sharable medium. Those materials were only in the hands of those particular lecturers who created them. They only had chance to share with some of the limited numbers of known colleagues. Those lecturers were willing to share their materials with others to liven the teaching environment up with local materials as additional teaching resources. In order to solve these problems, a digital repository system namely Multimedia Repository System (MRS) was developed for the USM lecturers to deposit, index and license their teaching materials upon their wish and share those materials among the lecturers.

Although MRS has been tested well among the MRS members, a proper system evaluation has to be done among a group of real users to improve the system and also to ensure the acceptance of the target users (HS lecturers). This paper presents the findings from the system evaluation workshop conducted in the School of Health Sciences (PPSK), Univerisiti Sains Malaysia Health Campus.

II. THEORETICAL FRAMEWORK

In order to explain the acceptance of MRS, a proper model was needed to be developed and tested. Before the acceptance model for MRS was developed, some relevant models applied for system evaluation and acceptance studies were reviewed in details. Theoretical framework of this study was mainly based on the two well known models namely Technology Acceptance Model (TAM), Innovation and Diffusion Theory (IDT), and other extended models modified from those two models.

TAM is a well known model developed by Davis [5] in 1989 and it consists of perceived ease of use (EU), perceived usefulness (PU), attitude toward usage (ATU), behavioral intention to use (BI), and actual system use (AU). Davis defined "perceived usefulness" as the degree to which a person believes that using a particular system will enhance his or her job performance and "perceived ease of use" as the degree to which a person believes that using a particular system will involve minimal effort.