Faculty of Information and Communication Technology

MODEL FOR ONLINE TEACHING TOOLS BASED ON INTERPERSONAL, VISUAL AND VERBAL INTELLIGENCE

Siti Nurul Mahfuzah Mohamad

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MODEL FOR ONLINE TEACHING TOOLS BASED ON INTERPERSONAL, VISUAL AND VERBAL INTELLIGENCE

SITI NURUL MAHFUZAH BINTI MOHAMAD

A thesis submitted
in fulfillment of the requirements for the degree of Doctor of Philosophy in Information and Communication Technology

Faculty of Information and Communication Technology

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2014

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DECLARATION

I declare that this thesis entitle “Model for Online Teaching Tools Based on Interpersonal, Visual and Verbal Intelligence” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature : .....

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APPROVAL

I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality as a partial fulfilment of Doctor of Philosophy in Information and Communication Technology.

Signature : .....

Supervisor Name : .....

Date : .....

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DEDICATION

This project is dedicated to my parents for the full support that they gave me during my studies and to my loved husband, the person who is always giving me the strength to fulfill all my goals.

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ABSTRACT

Multiple Intelligences (MI) are eight different ways to demonstrate intellectual ability. It is how human learn best and apply to daily activities.This study mainly aims to develop an Online Multiple Intelligence Teaching Tools (On-MITT) for the polytechnic lecturers and students. These teaching tools can assist lecturers to create their own teaching materials without having any knowledge of programming. The theory of Multiple Intelligences was used in this research. Certain studies have shown that teaching which tailors student's strength by using MI has many benefits while other studies revealed that there is a cause and effect between intelligence and academic achievement. The objectives of the research are to check whether there is a relationship between the students self-perceived MI and their academic achievement among the polytechnic students, design and develop On-MITT, evaluate the effectiveness of On-MITT in order to increase lecturers' motivation in teaching online as well as evaluate the effectiveness of teaching and learning using On-MITT. The population are 412 and the sample of the study comprised of 149 lecturers from the Malaysian Polytechnics from *Jabatan Matematik, Sains dan Komputer* (JMSK) and involved 69 diploma students in electrical course. There were 36 students in the experimental group who were taught with On-MITT and 33 students in the control group who were taught using traditional classroom. Data were gathered using *Ujian Diagnostik Kecerdasan Pelbagai* (UMI), Motivation Survey Questionnaire, Interview, and Classroom Observation as well as Teaching and Learning Survey Questionnaire. Findings of the study showed there is a significant positive linear relationship between Interpersonal (IN), Bodily-Kinesthetic (BK), Verbal-Linguistic (VL), Musical-Rhythm (MR), Visual-Spatial (VS), Naturalist (NA) intelligence and academic achievement. The results also revealed that the lecturers' motivation was not significantly affected by their teaching experience but affects by others factors such as knowledge, perceptions and skills. Students from the experimental group showed a higher achievement when compared with the control group. Overall, the findings showed that the On-MITT has motivational value, user friendly interface and interactivity design that can be used for all educators in technical education.

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ABSTRAK

Kecerdasan Pelbagai (MI) adalah lapan cara untuk menunjukkan keupayaan intelek seseorang. Ia merupakan keupayaan seseorang untuk belajar dan mengaplikasikannya kepada aktiviti harian. Tujuan utama kajian ini adalah untuk membangunkan alat bantu mengajar secara online berdasarkan teori kepintaran pelbagai khusus untuk pensyarah dan pelajar di Politeknik Malaysia. Alat bantu mengajar ini mampu membantu para pensyarah untuk merancang pengajaran sebelum mengajar di dalam kelas tanpa sedikit pengetahuan pengaturcaraan. Ada kajian menyatakan bahawa kaedah mengajar menggunakan teori ini memberi manfaat kepada pelajar manakala ada yang menyatakan bahawa teori ini memberi kesan dan impak yang mendalam terhadap pencapaian akademik pelajar. Antara objektif kajian ini adalah mengenalpasti hubungan antara pelajar politeknik dan kepintaran pelbagai yang dimiliki dengan peningkatan prestasi akademik mereka, merekabentuk dan membangunkan alat bantu mengajar berdasarkan teori kepintaran pelbagai, menilai keberkesanan terhadap motivasi pensyarah ketika mengajar menggunakan alat bantu yang dibangunkan dan objektif yang terakhir ialah menilai keberkesanan penggunaan On-MITT terhadap pengajaran dan pembelajaran. Populasi kaian adalah sebanyak 412 dan sampel kajian terdiri daripada 149 pensyarah Politeknik dari Jabatan Matematik, Sains dan Komputer (JMSK) dan melibatkan 69 pelajar diploma dalam kursus elektrik. Kumpulan eksperimen terdiri daripada 36 orang pelajar yang diajar menggunakan alat bantu On-MITT manakala kumpulan kawalan pula terdiri daripada 33 pelajar yang diajar secara konvensional. Instrumen yang digunakan untuk kajian ini adalah Ujian Kecerdasan Pelbagai (UMI), soal selidik Motivasi, temubual, pemerhatian dan soal selidik pengajaran dan pembelajaran. Hasil kajian menunjukkan terdapat hubungan yang signifikan antara kecerdasan Interpersonal (IN), Bodily-Kinestetik (BK), Verbal-Linguistik (VL), Muzik-Rhythm (MR), Visual-Spatial (VS), Naturalist (NA) dan pencapaian akademik. Dapatan kajian mendapati bahawa motivasi pensyarah tidak dipengaruhi oleh pengalaman mengajar mereka tetapi disebabkan oleh tiga faktor lain seperti tahap pengetahuan, persepsi dan kemahiran. Pelajar dari kumpulan eksperimen menunjukkan pencapaian yang lebih tinggi berbanding dengan kumpulan kawalan. Secara keseluruhannya, kajian menunjukkan bahawa On-MITT mempunyai nilai motivasi, menarik, mempunyai antara muka mesra pengguna dan reka bentuk interaktif yang boleh digunakan untuk semua pendidik dalam pendidikan teknikal.

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LIST OF ABBREVIATIONS

ADDIE	-	Analyze, Design, Develop, Implement, Evaluate
ARCS	-	Attention, Relevance, Confidence, Satisfaction
BK	-	Bodily-Kenesthetic
CCNA	-	Cisco Certified Network Associate
CGPA	-	Cumulative Grade Point Average
CIDOS	-	Curriculum Information Document Online System
DFD	-	Data Flow Diagram
DV	-	Dependent Variable
EX	-	Existential Intelligence
HTML	-	Hypertext Markup Language
IA	-	Intrapersonal
ICT	-	Information and Communication Technology
ID	-	Instructional Design
IHLs	-	Institutions of Higher Learning
IN	-	Interpersonal
ISD	-	Instructional System Development
IQ	-	Intelligent Quotients
IV	-	Independent Variable
JMSK	-	*Jabatan Matematik, Sains dan Komputer*
KPT	-	*Kementerian Pengajian Tinggi*
LM	-	Logic-Mathematic
LMS	-	Learning Management System
MI	-	Multiple Intelligences
MOHE	-	Ministry of Higher Education
MOS	-	Microsoft Office Specialist
MR	-	Musical-Rhythmic
NA	-	Naturalist
On-MITT	-	Online Multiple Intelligence Teaching Tools
SME	-	Subject Matter Experts
TAM	-	Technology Acceptance Model
UMI	-	*Ujian Diagnostik Kecerdasan Pelbagai*
URL	-	Uniform Resource Locator
VL	-	Verbal-Linguistic
VS	-	Visual-Spatial
WYSIWYG	-	What You See Is What You Get

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CHAPTER 1

INTRODUCTION

1.1 Research Overview

Each student has his or her own thinking skills and understand a lesson in a different way. The change of the current technology will facilitate educators in preparing teaching materials to cater to the needs of the students. The type of the technology used is not as important as compare to the opportunity given to the student to use his or her intelligence in the classroom. Thus, the student will become more active and receptive to his or her learning. Studies indicate that students do not have similar thoughts and have different intelligence (Armstrong, 1994; Campbell & Campbell, 1992; Gardner, 1983). Smith (2008) stated that Multiple Intelligence (MI) has had a profound impact on thinking and practice in education.

The theory of MI was used in this study to verify whether MI has any impact on the teaching and learning in the classroom. This study focused on facilitating lecturers at a polytechnic by providing teaching aids based on MI activities. Thus, the lecturers did not have to learn the programming skills. Lecturers can reduce the preparation time for the teaching aids. So, this indirectly can allow the lecturers to have more time to attract the student's attention to learn and use the teaching materials. These teaching tools can also improve lecturers' motivation to teach and prepare their teaching materials. The results showed that the academic achievement for the students have improved and lecturers were motivated to teach in the classroom via online.

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According to Howard Gardner (2006), every human being has at least two or more intelligences such as verbal-linguistic (VL), logic-mathematic (LM), intrapersonal (IA), interpersonal (IN), visual-spatial (VS), musical (MR), natural (NA) and existential (EX) intelligences. The first two which are verbal languages and mathematic skills are describe as Intelligent Quotients (IQ) and the last two which are IA and IN skills are describe as Emotional Intelligent (E.Q). It is believed that every human being has at least one intelligent, and some of them can even possess to a maximum of eight intelligences. With the strength acquired by students, the lecturers can prepare suitable teaching materials in a classroom. Lecturers should allow considerable elements of students' choice when designing activities and tasks for the intelligences because students perform well in the tasks which appeal to their interests.

Different philosophers, psychologists and educationists have defined intelligence as a concept in the most varied ways over the centuries. Munn (1966) as cited in Ahmed, Ishtiaq, Farouq and Sarfeaz (2011) defined intelligence as an ability to demonstrate an abstract thinking. Conventional learning methods have been inevitably applied to VL and LM intelligences. However, most of the institutions only practice these two intelligences as highlighted by Luzzo and Shearer (1999) as cited in Kumar (2010) stated that institutions would fail to train their students for greater success in the future. Thus, many students who have the potential in other intelligence are not given the opportunity to demonstrate their skills. Therefore, students scared and have no interest in learning.

Each human has different ways of thinking and learning. This also applies to students in Polytechnics who have different potential and intelligences. Each student has their own learning style to be considered by the lecturers during the learning process. Lecturers also have a variety of teaching styles that are closely related to students' learning

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