



Faculty of Technology Management and Technopreneurship

**MODELING EFFECTIVE MULTIMEDIA TECHNOLOGY BASED
LEARNING FOR MANAGEMENT UNDERGRADUATES**

P. Rajandran Peresamy

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MANAGEMENT UNDERGRADUATES**

P. RAJANDRAN PERESAMY

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ABSTRACT

The management undergraduate students' are from different demographic backgrounds and have different learning style preferences. These students are exposed to multimedia technology based learning environment during their undergraduate studies. The consideration and incorporation of demographic factors, learning styles and the use of multimedia technology in the learning process are necessary for effective learning. The objectives of this research are to identify the learning style preferences of management undergraduates in Malaysia, to assess the relationship between the demographic factors and learning styles, to measure the role of learning styles on effective learning, to assess the effects of multimedia technology on effective learning, and based on the above findings to develop an effective learning model for management undergraduates. This effective learning model is developed by incorporating the students' demographic factors, their learning styles and multimedia technology. This model is also intended to propose an appropriate use of multimedia technology to achieve effective learning for management undergraduates. The findings of this research are based on students' perceptions of the above research problem. According to Honey & Mumford (1992), learning style is a group of attributes and behaviors that determine an individual learner's preference in learning. This is also in accordance to the 'Experiential Learning Style Model' by Felder (1988) which identifies 8 types of learning styles i.e. active, reflective, sensing, intuitive, visual, verbal, sequential and global. According to Imran (2009) multimedia technology has affected the overall education strategies which have influenced the learning environment. The multimedia technology affects the learning styles of students. In this exploratory research the questions on the independent variables (learning styles) are adopted from the Index Learning style (ILS) developed by Felder-Soloman (1991). The moderator variable (multimedia technology) and the dependent variable (effective learning) are also incorporated in the research. Results of the research assist to identify the learning style preferences of management undergraduates, the relationships between the demographic factors and learning styles, and the learning styles influences on effective learning. Some selected multimedia technology related aspects have been tested with the learning styles to identify the effects of these variables on effective learning. The quantitative research survey method using questionnaire was used to collect seven hundred and three samples and the analysis was done with SPSS version 16. Based on the mean scores, the study shows that the dominant learning style in sequence are visual, sequential, reflective, sensing, global, active, intuitive and verbal. In the relationship of demographic factors to learning styles, the male students are found dominant in active, intuitive and global learning styles compared to the female students. In terms of ethnicity, the mean score for active, intuitive and global are more significant for at least one pair of ethnic group. There are significant mean score differences for STPM, diploma and matriculation students in active and sensing learning styles. In the education domain, the mean score for marketing students is higher compared to finance/banking students in sensory learning. The average score of students in public higher learning institutions is more significant compared to the private higher learning institutions in active, intuitive, visual,

verbal and global learning styles. In the year of study there are significant differences in the means for sensing, visual, verbal and global learning styles for at least one pair of year of study. The data analysis results show the influences of gender, ethnicity, entry qualifications, field of study, type of learning institution, and year of study on learning styles. The learning styles, that influence the effective learning of management undergraduates, were tested and the results show that there are 6 effective learning styles: active, reflective, visual, verbal, sequential and global. The multimedia technology related aspects, assessed in this research, are multimedia technology based education system, multiple views created for clarity using multimedia technology, multimedia technology's support to meet learners' learning needs and consistently placed navigational elements in multimedia technology for effective learning. The analysis conducted shows that each multimedia technology aspect and the overall multimedia technology as a moderator have effects on the six learning styles of the students. In summary, this research has identified the management undergraduates' learning style preferences, their relationship with demographic factors, the influences of learning styles on effective learning and the effects of multimedia technology on learning. The contribution of this research is the development of an effective learning model that incorporates demographic factors, learning styles and the use of multimedia technology in the creation of an effective learning environment for management undergraduates.

PENJANAAN MODEL PEMBELAJARAN EFEKTIF DENGAN MENGGUNAKAN TEKNOLOGI MULTIMEDIA UNTUK PELAJAR PRA SISWAZAH DALAM BIDANG PENGURUSAN

ABSTRAK

Pelajar pra siswazah dalam bidang pengurusan berasal daripada pelbagai latar belakang dan mempunyai gaya pembelajaran yang berbeza. Pelajar-pelajar ini terdedah kepada persekitaran pembelajaran yang dikendalikan dengan penggunaan teknologi multimedia. Pertimbangan khusus dan penggabungan yang wajar, faktor-faktor demografi pelajar, gaya pembelajaran mereka dan aspek teknologi multimedia perlu diambil berat untuk memastikan pembelajaran efektif pelajar-pelajar ini. Objektif-objektif utama penyelidikan ini adalah untuk mengenal pasti gaya pembelajaran pelajar pra siswazah dalam bidang pengurusan di institusi pengajian tinggi (IPT) di Malaysia, untuk menilai pertalian di antara faktor-faktor demografi pelajar dan gaya pembelajaran mereka, menganalisis peranan gaya pembelajaran yang mempengaruhi pembelajaran efektif mereka disamping menilai aspek-aspek teknologi multimedia yang mempengaruhi pembelajaran efektif pelajar-pelajar ini. Berdasarkan objektif-objektif di atas, sebuah model pembelajaran efektif yang meliputi aspek demografi pelajar, gaya pembelajaran mereka dan aspek teknologi multimedia dalam pembelajaran dibina. Model pembelajaran ini juga akan mencadangkan bagaimana aspek teknologi multimedia dalam pembelajaran dapat diuruskan sewajarnya untuk pembelajaran yang efektif di kalangan pelajar pra siswazah bidang pengurusan. Jawapan untuk persoalan-persoalan penyelidikan ini adalah berdasarkan respon dan persepsi pelajar-pelajar pra siswazah dalam bidang pengurusan dari institusi-institusi pengajian tinggi di Lembah Kelang, Malaysia. Menurut Honey & Mumford (1992) gaya pembelajaran merupakan kaedah, tingkahlaku atau cara seseorang menerokai ilmu. Ini juga berdasarkan model 'Experimental Learning Style' hasil kajian Felder (1988) yang telah mengenal pasti lapan gaya pembelajaran iaitu; aktif, reflektif, *sensing*, intuitif, visual, verbal, *sequential* dan global. Imran (2009) merumuskan bahawa teknologi multimedia telah memberi kesan terhadap kesemua strategi dalam pembelajaran dengan mempengaruhi keseluruhan persekitaran pembelajaran. Ini menggambarkan bahawa teknologi multimedia memberikan kesan yang nyata terhadap gaya pembelajaran seseorang pelajar. Dalam kajian ini, soalan-soalan kaji selidik berhubung dengan gaya pembelajaran dipetik dan diubahsuai daripada 'Index Learning Style' yang telah dicipta oleh Felder-Soloman (1991). Aspek-aspek teknologi multimedia dan pembelajaran efektif juga digabungkan dalam penyelidikan ini. Keputusan penyelidikan ini membantu untuk mengenalpasti gaya pembelajaran pelajar pra siswazah bidang pengurusan, menilai pertalian di antara faktor-faktor demografi pelajar dan gaya pembelajaran mereka dan mengenalpasti gaya pembelajaran yang mempengaruhi pembelajaran efektif. Beberapa aspek teknologi multimedia telah dikaji selidik bersama gaya pembelajaran untuk mengenalpasti pengaruh aspek-aspek ini terhadap pembelajaran efektif. Melalui penyelidikan secara kuantitatif sebanyak 703 borang soal-selidik telah terpilih dan

penganalisan data telah dijalankan dengan program SPSS Versi 16. Hasil kajian menunjukkan bahawa pelajar-pelajar pra siswazah bidang pengurusan mempunyai pemilihan gaya pembelajaran mengikut keutamaan dalam urutan menurun seperti berikut; visual, *sequential*, reflektif, *sensing*, global, aktif, *intuitif* dan verbal. Dalam pertalian di antara faktor demografi dengan gaya pembelajaran didapati pelajar lelaki lebih kepada gaya aktif, intuitif dan global berbanding dengan pelajar perempuan. Dari segi bangsa pula skor pencapaian menunjukkan ada perbezaan dari segi gaya pembelajaran di kalangan bangsa yang dikaji. Selain itu, faktor kelayakan masuk ke pengajian tinggi juga menunjukkan pengaruh signifikan gaya pembelajaran aktif dan *sensing*. Di samping itu dalam bidang pengkhususan, purata min untuk bidang pemasaran lebih tinggi berbanding dengan bidang kewangan/perbankan dalam gaya pembelajaran *sensing*. Min skor purata pelajar IPTA lebih signifikan berbanding dengan pelajar IPTS dalam gaya pembelajaran aktif, intuitif, visual, verbal dan global. Dari segi tahun pengajian pula didapati gaya pembelajaran *sensing*, visual, verbal dan global mempengaruhi sekurang-kurangnya satu tahun pengajian. Jawapan kepada data analisis ini menggambarkan bahawa faktor-faktor demografi seperti jantina, bangsa, kelayakan masuk, bidang pengkhususan, jenis IPT dan tahun pengajian mempengaruhi gaya pembelajaran pelajar. Dari segi kesan gaya pembelajaran terhadap pembelajaran efektif, analisis data yang dijalankan menunjukkan bahawa enam gaya pembelajaran iaitu; aktif, reflektif, visual, verbal, *sequential* dan global mempengaruhi pembelajaran efektif untuk pelajar pra siswazah bidang pengurusan. Aspek-aspek teknologi multimedia yang dikaji dalam penyelidikan ini adalah, sistem pembelajaran berdasarkan teknologi multimedia, penggambaran kandungan sesuatu aspek dengan pelbagai pendekatan untuk penjelasan jitu melalui teknologi multimedia, sokongan teknologi multimedia untuk memenuhi keperluan atau inspirasi pembelajaran pelajar dan menempatkan elemen-elemen penerokaan yang konsisten dengan penggunaan teknologi multimedia. Analisis data yang telah dijalankan untuk aspek-aspek multimedia secara berasingan dan menyeluruh menunjukkan bahawa aspek teknologi multimedia memberi kesan positif terhadap enam jenis gaya pembelajaran. Pada kesimpulannya penyelidikan ini menunjukkan bahawa pelajar pra siswazah pengurusan mempunyai perbezaan pemilihan gaya pembelajaran, terdapat pertalian di antara faktor-faktor demografi dengan gaya pembelajaran mereka, gaya pembelajaran memberi kesan terhadap pembelajaran efektif dan aspek-aspek teknologi multimedia juga memberi kesan terhadap pembelajaran. Sumbangan penyelidikan ini adalah penjana sebuah model pembelajaran efektif dengan pengabungjalinan faktor-faktor demografi pelajar, gaya pembelajaran dan penggunaan teknologi multimedia dalam mewujudkan persekitaran pembelajaran efektif untuk pelajar pra siswazah bidang pengurusan.


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DECLARATION

I declare that this thesis entitled “Modeling Effective Multimedia Technology Based Learning for Management Undergraduates”, 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 : 

Name : P. RAJANDRAN

Date : 20/7/2010

DEDICATION

To my beloved parents Peresamy & Periamma, mother in-law Parvathy, wife Rajeswary and children Suganthavani, Rateszkumar, Danesh & Kamaleszwaari...

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GLOSSARY AND ABBREVIATION

4MAT System	- Four learning Style typology with brain hemisphere
ANOVA	- Analysis of variance
Active learner	- A person works at external world with relevant information.
Adoptive Hypermedia	- Built by set of goals and knowledge for users.
ATAP	- Any Time Any Place
CAI	- Computer Aided Instruction
CBI	- Cross Border Information
CIMEC	- A multimedia frame work for constructive and collaborative, Inquiry based E-learning Supplementing Computer Sciences Courses
Demographic factors	- Background or individualistic aspects of an individual.
DTDP	- Different Time Different Place
Effective learning	- Understand content clearly and completely.
ELT	- Experiential Learning Theory.
Global learner	- People who learn by fits and starts.
HBDI	- Herrmann Brain Dominance Instruments
Hypermedia	- Multimedia structured or linked for user to navigate.
Hypertext	- Valuable mean of representing and organizing information.
IDEAL	- Intelligent Distributed Environment for Active Learning.
ILM	- Interactive Learning Modules

ILS	- Index Learning Styles.
IMC	- Interactive Multimedia Curricula.
INCORTERMS	- International Purchasing Module Of Business Operation Management
Interactive multimedia	- User controllable combinations of audio, video, text, graphics, animation etc.
Intuitive learners	- People with abstract conceptualization.
IPTA	- Institusi Pengajian Tinggi Awam
IPTS	- Institusi Pengajian Tinggi Swasta
Learning styles	- Individuals learning preferences.
LSI	- Learning Style Inventory.
MBTI	- The Myers-Briggs Type Indicator
MI	- Multiple Intelligence
MLE	- Multimedia Learning Environment.
Multimedia	- A combination of different content forms eg. audio, video, text, graphics, animation etc.
OCTOPLUS™	- All style cyclic design for instruction.
OLTC	- Open Learning Technology Corporation.
PC	- Personal Computer.
PROGRAMLIVE	- A multimedia tutorial program in Java Programming.
Reflective learner	- A person examines and manipulates information introspectively.
Sensing learner	- A person likes facts, data, experimentation and problem solving.
Sequential learners	- People who master materials presented in linear manner.
STPM	- Sijil Tinggi Persekolahan Malaysia

STSP

- Same Time Same Place.

TILE

- Technology Integrated Learning Environment

Verbal learner

- Remember what they hear.

Visual learners

- Remember well what they see.

CHAPTER I

INTRODUCTION

1.1 INTRODUCTION

Learning is a life long process combining formal and informal learning of an individual (Woodrow, 1998). UNESCO's World Conference on Higher Education 1998 reports that learning is a natural part of everyday lives of all men and women throughout the world (UNESCO, 1998). In conjunction with this, Alheit (1998) says a natural form of everyday learning is an important beginning point for any lifelong learning for everyone. Effective learning transfer can be planned either by the learning facilitator by taking into account the individual's learning style and delivery style or alternatively the individual learner should recognize his/her own preferred learning style and make the necessary interventions and adjustments even though both approaches are for the best solution, but the latter is the one that can be controlled by each individual as he/she seeks to learn something new or different (Warner, 2008). The learning process occurs effectively if the learner's demographic factors and his/her learning style is addressed and supported by appropriate educational technology .

The adoption of information and communication technology to improve the higher educational trends can be a very challenging task which requires a lot of complex solutions of blending pedagogical, technological and organizational components (McPherson & Nunest, 2008). In the current learning environment, the practical implementation of multimedia technology based learning environment is another aspect that needs attention and scrutiny as it paves the way for effective learning. The incorporation of learning styles, students' demographic factors and appropriate multimedia technology, in learning, will lead to effective learning by learners. The use of multimedia technology in an appropriate manner in the learning process is important for effective learning.