



MINISTRY OF EDUCATION MALAYSIA

MEIPTA

Blended & Flipped Learning:

Case Studies in Malaysian HEIs

Editor:
Mohamed Amin Embi





Blended & Flipped Learning:
Case Studies in Malaysian HEIs

Published by:
Centre for Teaching & Learning Technologies,
Universiti Kebangsaan Malaysia
&
Department of Higher Education,
Ministry of Education Malaysia

Cetakan Pertama/ *First Printing*, 2014
Hak Cipta Universiti Kebangsaan Malaysia/ *Copyright* Universiti Kebangsaan Malaysia 2014

Hak cipta terpelihara. Tiada bahagian daripada terbitan ini boleh diterbitkan semula, disimpan untuk pengeluaran atau ditukarkan ke dalam sebarang bentuk atau dengan sebarang alat juga pun, sama ada dengan cara elektronik, gambar serta rakaman dan sebagainya tanpa kebenaran bertulis daripada Pusat Pengajaran & Teknologi Pembelajaran, Universiti Kebangsaan Malaysia terlebih dahulu.

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopy, recording, or any information storage and retrieval system, without permission in writing from the Centre for Teaching & Learning Technologies, Universiti Kebangsaan Malaysia.

Diterbitkan di Malaysia oleh/ *published in Malaysia by*
Pusat Pengajaran & Teknologi Pembelajaran
Universiti Kebangsaan Malaysia,
43600 UKM Bangi,
Selangor Darul Ehsan.

Dicetak di Malaysia oleh/ *printed in Malaysia by*
Awal Hijrah Enterprise
No. 12, Jalan 3/69, Seksyen 3,
43650 Bandar Baru Bangi,
Selangor Darul Ehsan.

Perpustakaan Negara Malaysia Data-Pengkatalogan-dalam-Penerbitan/
Cataloguing-in-Publication Data

Blended & Flipped Learning: Case Studies in Malaysian HEIs edited by:
Mohamed Amin Embi

ISBN 978-983-3168-40-8

Contents

Chapter 1 Overview of Blended Learning 1
Introduction 1
Definitions of Blended Learning 1
Dimensions of Blended Learning 2
Blended Learning Models 4
Factors Promoting Successful Blended Learning 5
Issues of Bended Learning and Possible Solutions 7
Researches on Blended Learning 9
Conclusion 12
References 13

Chapter 2 Blended Learning: Examining Concepts and Practices 19
Overview 19
Introduction 19
Technology in Education 23
Blended Learning 24
Role of the Teacher in Technology Integration 25
Role of the Learner in Technology Integration 26
Theories Related to Blended Learning 27
Implementation of Blended Learning 29
Conclusion 30
References 30

Chapter 3 Blended Learning Readiness in Malaysia 37
Introduction 37
Literature Review 38
Methodology 40
Results and Discussion 40
Section One: Respondents' Demographics 41
Section Two: Descriptive Statistics 41
Qualitative Data 50
Implication of the Study 55
Conclusion 55
References 55

Chapter 4 Meaningful Blended Learning via iFolio@UKM 59
Introduction 59
Blended e-Learning Environment 60
Meaningful Learning 60
The UKM Case Study 61
Conclusion 78
References 79

Chapter 5 A Qualitative Study of In-service Teachers' Blended Learning Experiences via Schoology 83
Introduction 83
What is Blended Learning? 84
The Module and the Medium 86
Using Activity Theory and Blended Learning 88
Methods 91
Focus Groups 91
Focus Group Interview 91
Reflective Journals 92
Data Analysis 93
Results and Discussion 93
Understanding Contradictions and Tensions Using Activity Theory 97
Conclusion 100
References 101

Chapter 6 Regulating Learning through Linking, Flipping and Wrapping 105
Introduction 105
The i-Learn Learning Management System 107
Blended Learning Models 108
Concluding Remarks 117
References 117

Chapter 7 Morpheus UNIMAS: Strengthening Student Engagement in Blended Learning Environments 121
Introduction 121
Student Engagement 122
The Morpheus Experience 122
The Case Study 124
Lessons Learnt 129
Conclusion 130
References 131

Chapter 8 Investigating Faculty Adoption of Blended Learning 135
Introduction 135
Learning Management System (LMS) to Support Learning 136
Background to the Study 137
Methodology 138
Findings 139
Conclusion 142
References 142

Chapter 9 Experience on Blended Learning: Towards e-Laboratory 147
Introduction 147
From Conventional to e-Laboratory in UniMAP 149
Towards e-Laboratory via UniMAP Blended Learning and Concerns 150
The First Experience on Blended Learning in UniMAP 152
Issues Faced and Solutions Adopted 159
Conclusion 159
References 160

Chapter 10 Enhancing Student Interaction and Engagement in Blended Learning 165
Introduction 165
E-Learning @ UMT 168
Blended Learning 169
Enhancing Interactions in Blended Learning 169
Conclusion 174
References 174

Chapter 11 Blended Learning in UPSI 179
Introduction 179
MyGuru 180
Moving to Cloud Computing 181
MobiLearn 184
Benchmarking 187
Conclusion 191
References 192

Chapter 12 Overview of Flipped Learning 197
Introduction 197
Definitions of Flipped Learning 198
Why Flipped Learning? 199
Flipped Classroom Benefits and Application 200
Variations in Implementing the Flipped Classroom 201
Issues of Flipped Learning 201
Research on Flipped Learning 202
Future Trends 204
Conclusion 204
References 204

Chapter 13 Flipped Learning Readiness among Graduate and Postgraduate Students in UKM 209
Introduction 209
Literature Review 210
Methodology 211
Results and Discussion 212
Section One: Respondent Demographics 212
Section Two: Data Analysis 212
Implications of the Study 221
Conclusion 222
References 222

Chapter 14 To Flip or Not to Flip the Classroom? Findings form a Malaysian Undergraduate Course in UMS 227
Introduction 227
Objectives of Study 228
Research Questions 228
Literature Review 228
Methodology 234
Findings and Discussion 237
Conclusion 249
References 250

Chapter 15 Flipping Large Lectures @ IMU 255
Introduction 255
Flipped Classroom 256
i-Lectures 257
Large Lectures 259
Case Study 262
Moving Forward 270
Conclusion 273
References 274

Chapter 16 Flipped Classroom & Meaningful Learning Among UKM Graduate Students: A Teacher's Reflection 277
Introduction 277
What were the shortcomings of the conventional 1L+2T approach? 278
What was the primary motivation to try the flipped classroom approach? 279
What is the flipped classroom? 279
Why use the flipped classroom methodology? 281
What is the focus of the flipped classroom? 283
How do the students' respond to the flipped classroom methodology? 284
How has this approach engaged my own teaching and learning? 294
References 295

Chapter 17 Designing an Interactive Book for Flipped Learning 299
Introduction 299
Flipped Learning 300
Methodology 302
Results 303
Future Work 308
References 308

Chapter 18 Blended Learning: Flipped, Flopped or Forgotten? 311
Introduction 311
Flipped Learning and Teaching 312
Flipped, Flopped or Forgotten? 313
Collaboration 314
Coda 314
References 315

Foreword

Minister of Education Malaysia

Assalamualaikum wbt and Salam 1Malaysia,

The concept of Blended Learning has widely diverged to include a wide variety of synthesis in learning methods until 2006, when the first Handbook of Blended Learning was published. Currently, the use of the term mainly involves combining Internet and digital media with established classroom forms that require the physical co-presence of teacher and students. Flipping, otherwise known as inverted instruction, is an international trend that encourages students to be responsible for their own learning. In line with the National Higher Education Strategic Plan (PSPTN), in which widening access and enhancing equity as well as enculturation of lifelong learning are two of the seven strategic thrusts, Malaysia is committed to blended and Flipped Learning approaches.

With this regard, the effort to compile this edition entitled "Blended and Flipped Learning: Case Studies in Malaysian HEIs" by the Council of the Malaysian Public HEIs e-Learning Coordinators (MEIPTA) is very timely and commendable. The content of this book demonstrate the initiatives and commitment of Malaysian higher education institutions in promoting lifelong learning using various blended leaning and Flipped Learning platforms. I would also like to take this opportunity to congratulate Professor Dr. Mohamed Amin Embi, Chairman of CAPs e-Learning, PSTPN, MOE, for taking the leading role in making the publication of this important compilation a success.

Furthermore, I wish to express my gratitude to all the HEIs involved that have shared their blended and Flipped Learning initiatives in this compilation. Definitely, these efforts are very significant to MOE in order to further formulate suitable strategies and policies on Blended and Flipped Learning in line with the Ministry's PSPTN strategic thrusts that also support the imitation and adoption of these new approaches in Malaysia.

Wassalam.

YAB Tan Sri Dato' Haji Muhyiddin Bin Haji Mohd. Yassin
Minister of Education Malaysia

This page intentionally left blank

Foreword

Secretary General

Assalamualaikum and Greetings!

Thankful to Allah S.W.T that with His grace, I am given the opportunity to pen a few words in this edition entitled "Blended & Flipped Learning: Case Studies in Malaysian HEIs". This book which is the compilation of blended learning and flipped learning initiatives implemented so far at various Malaysian HEIs is an indication of Malaysia's commitment to the worldwide blended learning and flipped learning movement catalyzed by the International Association for Blended Learning (IABL).

I am certain that this book would contribute to the success of the implementation of one of the 21 Critical Agenda Projects (CAP) that is e-Learning which is also one of the strategic thrusts of the National Higher Education Strategic Plan (PSTPN). Indeed, the sharing of best practices on blended learning and flipped learning within Malaysian institutions will enable these HEIs to continue to compete in the rapidly growing development in Information and Communication Technologies (ICT).

Finally, I would like to congratulate Prof. Dr. Mohamed Amin Embi, Chairman of CAPs e-Learning for compiling this edition. Such effort is very much commended and should be continued to promote the culture of knowledge sharing and dissemination among Malaysian institutions of higher learning.

YBhg. Dato' Seri Ir. Dr. Zaini bin Ujang
Secretary General II
Ministry of Education Malaysia

This page intentionally left blank

Foreword

Director General, Ministry of Education

Assalamualaikum wbt,

I am thankful to Allah S.W.T that with His grace, I am blessed to be given the opportunity to pen a few words in this book entitled 'Blended and Flipped Learning: Case Studies in Malaysian HEIs'.

This book compiles initiatives implemented at different Malaysian higher education institution which uses blended learning and flipped learning method. This compilation indicates Malaysia's commitment in enhancing the quality of teaching and learning via technology integration. Referring to the actual implementation in Malaysia, this book shall serves as a guideline and as a teaching tool that will bring the students closer to the curriculum objectives. I would like to applaud on the efforts from our hardworking scholars to finally publish this book which is a great contribution to e-Learning in Malaysia which indirectly will pave the way for further research.

Lastly, I would like to congratulate MEIPTA, especially the editor, Prof. Dr. Mohamed Amin Embi, for the compilation of this book. I believe this will be a good start to create the culture of knowledge sharing among Malaysian higher education institutions in order to deliver the best teaching and learning experience a student could have.

Wassalam.

Prof. Dato' Dr. Asma Ismail
Director General,
Ministry of Education Malaysia

This page intentionally left blank

Foreword

Editor

Praise be to Allah S.W.T. for making it possible for me to edit the book on Blended Learning and Flipped Learning in Malaysian Higher Education Institutions. I am especially grateful to the Ministry of Education for supporting the effort to publish a practical and informative book that can be duly used as a reference by Malaysian Higher Education Institutions.

With technology paving the way and breathing new, exciting elements into our otherwise mundane traditional teaching sessions, we believe it is important to assist the educators in enhancing their delivery and to engage the learners. And in our capacity as experienced educators and proponents of Blended Learning and Flipped Learning, we take this opportunity to do so by putting our minds and hearts together to support these approaches. The objective is to provide an overview of the implementation of Blended Learning and Flipped Learning in Malaysian Higher education institutions (HEIs). We belive in the freedom to deliver; yet educators should be guided by good practices and proven measures.

The book is comprised of two sections: Section A encompasses 11 chapters (chapters 1 to 11), while Section B contains 7 chapters (chapters 12 to 18).

Our experinece in the field suggest that Blended Learning and Flipped Learning can promote learning in Malaysian HEIs. Our ultimate aim is to make Blended Learning and Flipped Learning an effortless venture for educators and higher education administrators. We hope that in the near future we will reach a state where Blended Learning and Flipped Learning will not merely be a catch phrase.

As the editor, I am indebted to contributors and authors from several Malaysian Universities for their time and help rended. I am sure the working weekends and evening meetings will not go to waste. This compilation is an evedince of shared and pure intention. May our good work be blessed.

Prof. Dr. Mohamed Amin Embi
Director,
Centre for Teaching & Learning Technologies
Universiti Kebangsaan Malaysia

This page intentionally left blank


Blended Learning

This page intentionally left blank

Chapter

1

This page intentionally left blank



Chapter 1

Overview of Blended Learning

Mohamed Amin Embi, Norazah Mohd Nordin & Ebrahim Panah

Universiti Kebangsaan Malaysia

Introduction

The focus of the first generation of e-Learning (digitally delivered learning) and Web-based learning programs was on delivering the instructional content of physical classroom over the Internet (Silverwood, 2006). In addition, the first generation of e-Learning programs were a repetition or/ and compilation of online accounts of classroom-based courses (Singh, 2003). Accordingly, the experience obtained from the first-generation of e-Learning, often challenging with long sequences of 'page-turner' content along with point- and-click quizzes, is shedding light on the fact that a single mode of delivery of instruction may not offer sufficient engagement, choices, relevance, social contact, and context required to facilitate effective and successful learning and performance. In the second generation of e-Learning, escalating numbers of learning planners and designers are conducting experiments with Blended Learning mode through combining various delivery modes. Evidences signify that Blended Learning not only provides more choices but also appears to be more effective and efficient.

Definitions of Blended Learning

Blended Learning is defined as a student-centered, self-paced, flexible and multi-modal approach to learning (Garrison & Vaughan, 2006; Neals, 2010). Blended Learning is the teaching practice that interconnects traditional face-to-face mode

of teaching and Web-based teaching and learning. It is an instructional model with increasing popularity assisting schools and the relevant communities in addressing issues of students' engagement, challenges of students' achievement and disciplines, the issue of access to professional staff as well as the expectations of twenty first century learners. Furthermore, it requires the students to employ their previous learning, obtain new knowledge and trigger their creativity to tackle real world problems using a wide range of synchronous tools in conjunction with asynchronous tools (Neals, 2010; Sharma & Barrett, 2007). One of the most common definitions recognizes a combination of physical (face-to-face) and virtual environments. For instance, Graham (2006) defines Blended Learning as the intersection of face-to-face settings, featured by synchronous and human interactions, and ICT-based settings or asynchronous situations, and text-based in which humans operate independently. Likewise, Mason and Rennie (2006) broaden this definition by involving other blends of technologies, settings and pedagogical approaches. Some define Blended Learning as the meticulous synthesis of face-to-face and Web-based learning experiences (Garrison & Vaughan, 2008) where the tradition approaches need to be reflected on, and also the learning and teaching need to be redesigned in this new terrain. Similarly, Littlejohn and Pegler (2007) suggest a different approach and term it as 'blended e-Learning'. Their approach appears to be promising since it changes the focus on learning design. In fact, in addition to the process of blending face-to-face and online environments, the issue of e-Learning is highlighted. Garrison and Kanuka (2004) argue that the combination of face-to-face classroom and online courses, on one hand, has simplicity, but on the other hand there is a sort of a complexity concerning the concept evident in various settings, the diversity in student population and the resulting learning designs. Stacey and Gerbic (2008) commented that diverse blends of pedagogy and technology are documented in campus-based as well as distance programs. Recently, the advent of novel learning technologies, such as, internet-based audio and video communication, podcasting, e-portfolios along with social networking tools like blogs and wikis have generated new blending potentials. Diversity in students' culture and their experiences in technology lead to further challenging issues for Blended Learning design. Furthermore, complexity is also obvious in the degree to which ICT is incorporated or embedded within learning/ teaching courses. Some researchers (Garrison & Vaughan, 2008; Vaughan, 2007) argue that merely supplementing a face-to-face mode with online Web-based learning is not considered as Blended Learning, while others (Littlejohn & Pegler, 2007) present the concept of' strong' and 'weak' blends in order to show a continuum across very small amounts of e-Learning to significant amount of e-Learning.

Dimensions of Blended Learning

The term Blended Learning has often originally been associated with simply connecting traditional classroom learning/ teaching to e-Learning activities such as asynchronous work (Moskal, Dziuban & Hartman, 2013). However, the term has gradually evolved to encompass a wider range of learning strategies or dimensions

(Singh, 2003). Nowadays, a Blended Learning program can combine the following dimensions, even though many of them have overlapping attributes (Singh, 2003).

Blending Offline and Online Learning

Basically, a Blended Learning program combines offline and online modes of learning in which the offline learning takes place in more traditional classroom settings, while online learning typically refers to learning/ teaching over the Internet or Intranet (Moskal *et al.*, 2013; Singh, 2003)**.** Even the offline learning programs are managed using an online learning system. Singh (2003) exemplifies this by assuming that a learning program which provides study materials along with research resources for students using the Web, while it provides teacher-led, classroom teaching and learning sessions as the major means of instruction. In this book, the term Blended Learning is associated with a combination of offline and online forms of learning.

Blending Self-Paced and Live, Collaborative Learning

Self-paced learning normally implies solitary and on-demand learning at a learner's pace where he/ she can manage or control (Singh, 2003). In contrast, collaborative learning is regarded as a more dynamic communication which takes place among many learners which leads to knowledge sharing (Moskal *et al.*, 2013). Singh (2003) states that blending self-paced with collaborative learning can encompass review of main literature regarding a regulatory change and/ or new product which is followed by a live, moderated, online, and peer-to-peer discussion about the application of the material to the learner's job as well as customers.

Blending Structured and Unstructured Learning

Some forms of learning have a structured, premeditated, or formal learning program in which content is organized in a definite sequence like book chapters, while others are undetermined and unstructured (El-Mowafy *et al.*, 2013). In fact, learning in the workplace mostly takes place in an unstructured form through meetings, e-mail, or hallway conversations. According to Singh (2003), the design of a blended program may appear to actively take conversations as well as documents from undetermined and unstructured learning events and integrate them into knowledge repositories accessible on-demand, which champions the way knowledge workers collaboratively work and learn.

Blending Custom Content with Off-the-Shelf Content

Off-the-shelf content is generally defined as an unawareness of an organization's exclusive context and requirements. Nevertheless, generic content is cheaper to purchase and regularly has higher fabrication values compared to custom content (Ginns & Ellis, 2007). Today, generic self-paced content could be customized either by blending live experiences such as classroom and online, or with the process of content customization. Industry standards like Shareable Content Object Reference

Model (SCORM) open the door to progressively more flexible blending of custom content and off-the-shelf (Singh, 2003), enhancing the user's experience when minimizing cost.

Blending Learning, Practice, and Performance Support

Perhaps the optimum form of Blended Learning program is supplementing learning (organized before initiating a new job-task) along with practice (utilizing job-task and business process simulation models) as well as just-in-time tools of performance support, facilitating the appropriate implementation of job-tasks (Bonk & Graham, 2012). Cutting-edge productivity tools can provide 'workspace' environments which can package the computer-based work, collaboration, as well as performance support tools (Singh, 2003).

Blended Learning Models

Horn and Staker (2011) have introduced six models of Blended Learning such as Face-to-Face Driver, Rotation, Flex, Online Lab, Self-Blend and Online Driver which will be discussed at length in the following sections.

Model 1: Face-to-Face Driver

In the programs associated with the face-to-face-driver class, face-to-face teachers are engaged so as to deliver a large amount of their curricula. To do so, the physical teacher organizes online learning in a case-by-case approach for supplementing or remediating, usually in a technology lab or in the back of the classroom.

Model 2: Rotation

The common characteristic of the rotation models is that students rotate on a predetermined schedule between online learning in a one-to-one and self-paced environment, and attending a classroom run by a conventional face-to-face teacher within a certain course. This model is mostly used in between the traditional face-to-face classroom and online learning since it entails a split between the two modes and, sometimes, between remote and onsite. Usually, the face-to-face teacher supervises the online work.

Model 3: Flex

Programs which have a flex model have the feature of an online platform which delivers a large amount of the curricula. In doing so, teachers provide students with on-site support based on flexibility and adaptability required via in-person tutoring sessions as well as small group sessions. Likewise, many dropout recoveries along with credit-recovery blended courses feature this model.

Model 4: Online Lab

The online-lab model illustrates programs that depend on an online platform for delivering the entire course while in a brick-and-mortar lab environment. Typically, in these programs, online teachers will be available. Although paraprofessionals supervise, they offer little content expertise and capability. Students who take part in an online-lab program also often take traditional, conventional courses and have usual block schedules.

Model 5: Self-Blend

Self-blend model is the approximately ubiquitous type of Blended Learning common among American high schools, encompassing any time students decide to take one or more online courses for supplementing their conventional school's catalog. Normally, the online learning course is always remote; distinguishing it from the online-lab model; however, the traditional learning takes place in a brick-and-mortar school. Hence, all kinds of supplemental online schools which provide *a la carte* courses for individual students facilitate and ease self-blending.

Model 6: Online Driver

The online-driver model entails an online platform with teacher who delivers all curricula. For the most part, students work remotely. Sometimes, face-to-face check-ins appear to be optional but other times necessary. Some of these programs also provide brick and- mortar components, including extracurricular activities.

Factors Promoting Successful Blended Learning

The literature about Blended Learning is subjugated by insider accounts in relation to its introduction in courses offered in campus, usually utilizing a learning management system along with online discussions. Such reports are often exceedingly descriptive and also factors that may promote successful and efficient Blended Learning are often concealed in the form of closing observations and recommendations hardly ever identified more explicitly (Stacey & Gerbic, 2008). The subsequent recommendations are clustered under four headings developed from the growing literature, with overall stress on pedagogic factors.

Institutional Success Factors

Blended Learning models are required to specially meet local, organizational or community needs instead of using a general approach (Sharpe *et al.*, 2006). Nevertheless, Mason and Rennie (2006) argue for giving priority to the learners' needs, ahead of the teaching context or/ and the teacher's biases in making such choices. Tabor (2007) emphasizes that the institutional building blocks such as organizational readiness, motivated faculty, sufficient technical resources, and good channels of communication and feedback with students should be in place. There should be room for staff so as to develop their own understandings of Blended Learning. Active learning and having commitment to the Blended Learning concept

are also important (Sharpe *et al.*, 2006). Blended Learning needs to be introduced as an academic, scholarly and transformative process of redesigning within the institution to rebuild the course instead of merely adding on technology (Garrison & Vaughan, 2008; Sharpe, *et al.*, 2006; Littlejohn & Pegler, 2007). There should be regular institutional evaluations as well as publicizing the results (Sharpe, *et al.*, 2006).

Regarding Teachers

The importance of teachers' ongoing professional development with sufficient time for developing such skills and profession should be acknowledged (Vaughan, 2007). Continuing pedagogical and technical support via joining a blended program community of practice is a model whose success in sustaining teacher's innovation has been proven (Garrison & Vaughan, 2008). The issues such as teachers' fears of losing class control, lower student's feedback and grades along with general uneasiness regarding effects of online learning on classroom relationships must be addressed (Vaughan, 2007). Correspondingly, its impacts on teachers' workloads should be taken into consideration. Littlejohn and Pegler (2007) emphasize the costliness concerning investment of both institution and teacher and recommend the creation of digital resources which are shareable and reusable in an effort to guarantee that Blended Learning can be sustainable.

Regarding Students

The learning maturity and readiness of students for Blended Learning along with demands for autonomous learning should be taken into account (Tabor, 2007). As the students conceive fewer face-to-face classes as less work, more responsibility in terms of learning and time management skills should be taken into account (Tabor, 2007; Vaughan, 2007). Consistent and clear communication concerning the new prospects and expectations is required to help students appreciate the process of Blended Learning (Sharpe *et al.*, 2006).

Pedagogic Considerations

A combination of the physical and virtual environments should be created based on an understanding of the merits and demerits of each environment and the appropriateness of the selection of the learners who are involved. Examples of good practices of the online discussion in the literature can inform the design of Blended Learning (Meyer, 2004). Likewise, some have extended this concept by introducing a pedagogical framework in which the diverse phases of the course take advantages of the different media as well as highlight the importance of the learning activities (Sharma & Barrett, 2007). Garrison and Kanuka (2004) emphasized the importance of integration of the two environments in the process of learning and teaching. Correspondingly, more recently, Garrison and Vaughan (2007) have conducted the integration requirement in a model with four phases revolving around the face-to-face environment. To do so, a sequence of activities before, during, after the course as well as in preparation stage for the subsequent face-

to-face session is demonstrated along with suggestions for different technology options incorporating the strengths of both physical and virtual environments. The essential role of the physical face-to-face environment in the given model offers the comfort of a conventional learning environment for learners and teachers. Also, the model reflects existing high-quality practice in which teachers often design courses around the concept of learning activities i.e., 'before, during and after' class.

Regarding the role of teacher, in her study, Gerbic (2006) reported that prompts from the teacher, encouragement, and discussion of the justification for adding online discussions were not particularly effective in relating online discussions with the classroom, and consequently the course as well as the new online setting was marginalized by the students. But the more effective process involves the teacher who provides feedback for the online discussion quality in the face-to-face course and provides goings-on that prepares skilled student for online activities. The teacher's consideration of the new virtual environment, in the traditional class, legitimizes it as part of the given course and certifies its significance for learning.

Issues of Bended Learning and Possible Solutions

Various factors and issues are necessary to be addressed in order to create a meaningful Blended Learning environment. However, many of these influential factors are interdependent and interrelated. Developing a systemic understanding of such factors allows designers to build meaningful distributed Blended Learning environments. According to Singh (2003), these factors constitute the Octagonal Framework with eight dimensions such as institutional, pedagogical, technological, interface design, evaluation, management, resource support, and ethical introduced by Khan (Figure 1.1)**.** Accordingly, each dimension of the framework shows a category of issues which need to be addressed. Tackling these issues could help organize thinking process, and guarantee that the consequential learning program builds a meaningful learning experience.

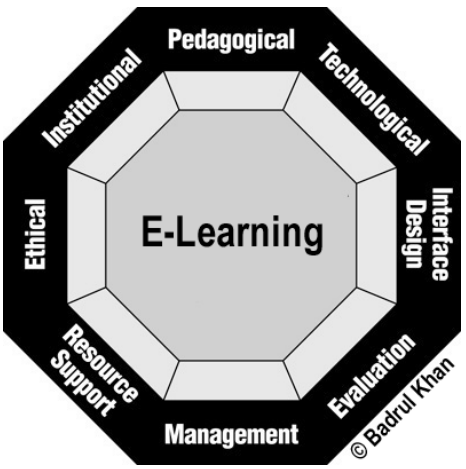


Figure 1.1: *Khan's Octagonal Framework (based on Singh, 2003)*

Institutional

The Institutional dimension deals with the issues regarding organizational, administrative, and academic affairs, along with student services. Usually, personnel who are involved in the process of planning a learning program can ask questions in relation to the organization preparedness, accessibility of content and infrastructure, as well as learners' needs. Hence, two issues need to be addressed. First, the ability of the organization to offer each learner the learning delivery mode autonomously where a blended program should be focused. Second, concerning the learners' needs analysis, the question is, appreciating all learners' needs.

Pedagogical

The Pedagogical dimension is associated with the combinations of content, which is deliverable (content analysis), learning objectives (goal analysis) and the learner needs (audience analysis). In addition, the pedagogical dimension covers e-Learning design and strategy. This dimension is related to a scenario in which all learning goals of a specified program are listed in an orderly manner, and accordingly the appropriate delivery method is selected. For instance, if a learner is supposed to exhibit a product (in sales training), utilizing the simulation of product as part of blending, it can be an appropriate way of blending. Hence, when the learner is supposed to figure out a new price pattern for a product, accordingly he/ she can appreciate a discussion, which is one of the fundamental elements of Blended Learning.

Technological

After addressing the issue of pedagogical and delivery method, Technology issues need to be tackled. Thus, issues such as building a learning environment and the delivery tools of learning program need to be addressed. So, this dimension addresses the requirement for the most appropriate learning management system (LMS) which is able to manage multiple delivery types as well as a learning content management system (LCMS) that makes a catalog out of the actual content (i.e., online content modules) intended for the learning program. Furthermore, technical requirements, namely the server supporting the learning program, accessibility to the server, bandwidth and accessibility, security, and other pertinent infrastructure, hardware, and software issues need to be addressed.

Interface Design

Another dimension is interface design addressing the factors associated with the user's Interface with each element in the specified Blended Learning program. It is important to ensure that the user interface champions all the elements of the blending program. To incorporate various elements of the blend, the interface must be sophisticated enough. This will allow the learner to employ each delivery type and also switch between the diverse types. It is necessary to analyze the usability of the user interface. This dimension can also address the issues such as

content structure, graphics, navigation, and help. By the way of example, students in a higher education courses, may study online and after that attend a lecture conducted by the professor. Hence, the Blended Learning program should enable the learners to assimilate equally well both the Web-based learning and the lecture.

Evaluation

Another dimension is the Evaluation related to the usability and practicality of a Blended Learning program. Hence, the program should be capable enough to evaluate the effectiveness of a learning program as well as to evaluate the learners' performance. Therefore, in a Blended Learning program, a suitable evaluation method needs to be used in relation to each delivery type.

Management

The Management dimension addresses the issues concerned with a Blended Learning program management, including infrastructure and logistics in order to manage multiple delivery types. Normally, it is much more difficult to deliver a Blended Learning program compared to delivering the whole course using one delivery type. Moreover, the management dimension deals with the issues such as registration and notification, as well as scheduling of the diverse elements of the blend.

Resource Support

Another dimension is the Resource Support which addresses the issue of making different kinds of resources (i.e., offline and online) as well as organizes them. Likewise, resource support can also be a counselor/ tutor who is always available in person, through e-mail, or on a chatting system.

Ethical

The Ethical dimension addresses ethical issues which play important roles in the process of the development of a Blended Learning program. Hence, issues like cultural diversity, equal opportunity, and nationality need to be addressed.

To sum up, since learning technologies along with delivery media are continuously evolving and progressing, it is argued that organizations (such as corporate, government & academia) support Blended Learning programs and models in comparison with programs which have single delivery mode.

Researches on Blended Learning

More recent studies into learning approaches have identified discrepancies in how students employ technologies in learning (Ellis, 2004; Ellis & Calvo, 2004). In a study, online discussions were provided for students to use for reviewing and discussing important issues associated to the e-commerce topics that they were studying (Ellis & Calvo, 2004). Results revealed qualitative variations in how the

students used the bulletin boards for discussions. Some students have read the other's postings to get ideas for the variety of issues discussed, and subsequently exploited these postings in order to extend their own perspectives about the issues prior to writing their own posting. On the contrary, other students were unwilling to make postings. Diversity in students' perceptions of the learning context appears to be closely connected with their learning outcomes quality. While both blended courses and face-to-face courses have a lot of variation, one consistent finding is the student and faculty contentment with this modality. Students and faculty are positive in terms of the flexibility and convenience. They are also satisfied with the increase in interactions they appreciate in blended courses (Cottrell & Robison, 2003; Dziuban, *et al.*, 2004; Willett, 2002). Students claim that the quality of their experience in Blended Learning is as high as or even higher than their experience in face-to-face courses. Also, they report high contentment with teacher interaction. Normally, course weakness refers to problems with technology, such as difficulty with systems of course management (Waddoups & Howell, 2002). Correspondingly, researchers at Ohio State University conducted a survey on 201 students studying at three universities regarding their experience in courses revolving the continuum of distance education from fully face-to-face to completely online (see Figure 1.2). The findings show that the course intuitive structure, that is, obviously defined objectives, assignments, deadlines, as well as encouraging dialogues and interactions, were vital in their satisfaction with the course (Stein, 2004).

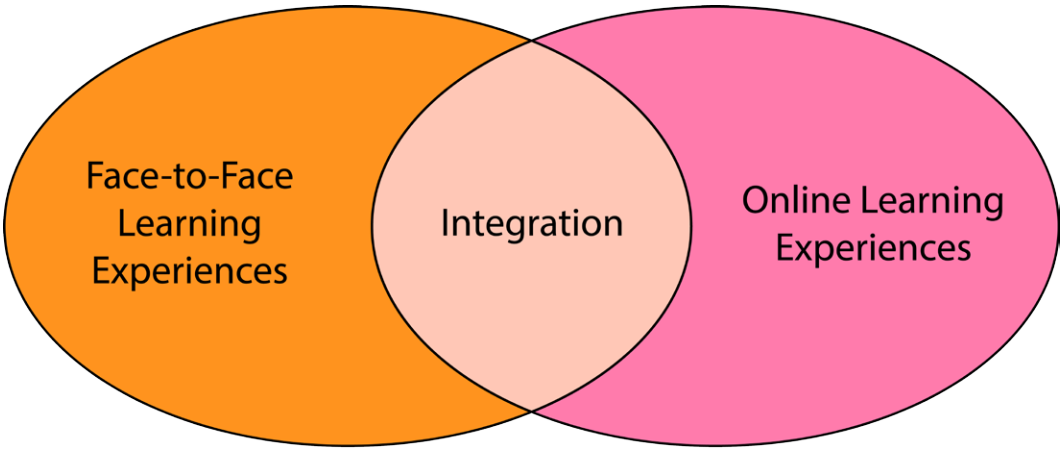


Figure 1.2: *Campus-Based Blended Learning Approach (based on Joutsenvirta & Myyry, 2010)*

In a related study, Rovai and Jordan (2004) made a comparison of three types of education graduate courses such as traditional, blended, and completely online and reported that like students in the face-to-face course, students who were in the blended course found to be highest in terms of community; however, higher than those taking part in completely online section. They asserted that "since students in the blended course exhibited similar sense of community and variability as students in the traditional course, offering the convenience of fully online courses without the complete loss of face to-face contact may be adequate to nurture a strong sense of community in students who would feel isolated in a fully online course" (p. 13).

Accordingly, students in the blended programs publicized the advantages of the online section of the course allowing them to freely carry out some of the course trainings at their own pace and flexibility, a feature significant for these students, as many of them needed to work. Nevertheless, many of them also declared the importance of the face-to-face section which they believed helped them both in achieving academic goals and in constructing professional relationships as well as a strong sense of community. Additionally, some students attending the completely online course misinterpreted the teacher's remarks as being *sharp and frank,* whereas students in the blended and face-to-face courses did not express such impressions, perhaps owing to the opportunity for discussions in person allowing everyone to get acquainted.

Primarily, some faculties report that students' performance in blended programs is as good as, or sometimes better, compared to face-to-face courses (Ferguson & Tryjankowski, 2009; Waddoups & Howell, 2002). The Pew Grant Program in Course Redesign reported improvement in students' learning in 19 out of 30 projects where 11 students had no considerable difference from face-to-face divisions (Twigg, 2003). Likewise, Utts, *et al.*, (2003) compared face-to-face course and blended courses and reported that the performance was equal, while hybrid students were a little less positive. Correspondingly, El-Mowafy *et al.*, (2013) conducted a study on Blended Learning in which they developed two Blended Learning tools for surveying units. Surveys of students indicated that the majority of learners found the interactive simulation tools valuable and contributing to enhancing their understanding of the computations. Also, students perceived the digital marking rubric useful in helping their understanding of requirements of practical task, in promoting their performance, and in assisting them in focusing on the aims of each activity. O'Toole and Absalom (2003) found that students taking part in the blended course, accessed online resources and attended lectures as well outperformed the students who endeavored to perform without taking part in lectures. They conceive that the lecture creates high motivation for students to retain progress, therefore, equating to higher student accomplishment.

In discussing the concept of integrated e-Learning, Jochems, *et al.*, (2004) (as cited in Ginns & Ellis, 2007), argue that "a variety of coherent measures at the pedagogical, organizational and technical levels for the successful implementation of e-Learning in combination with more conventional methods" is required (p.5). Coherence in the evaluation of the success of blended program is particularly germane, as the general goal of a blended course is providing a mix of online with face-to-face experiences supporting each other in accomplishing desired learning outcomes. It is conceived that coherence in the learning experiences can be achieved through the learning processes alignment across the blended settings in relation to the same learning outcomes. Such evaluation framework is built on an established, learner-focused approach to teaching evaluation (Barrie, *et al.*, 2005; Crawford *et al.*, 1998; Garrison, 2011; Lizzio, *et al.*, 2002), broadening that approach to integrate prominent characteristics of blended program experiences. Therefore, the framework deals with the quality of Blended Learning course via the

development of dependable and valid scales, and also connect these aspects of qualities of the given part with the student's whole experience through investigating the relationships between these scales and students' approach to learning across the whole course, and the overall score for the course.

As a result of conducting review of researches on Blended Learning mode, Bluic *et al.,* (2007) concluded that research so far has mainly been focused on various aspects of Blended Learning, particularly the technology, and they support a more holistic approach seeking to appreciate the complexity of blended contexts and processes as a whole system. The researchers concur with this view and recommend additional avenues for further research study into blending learning. More insights into the approaches and factors that can enhance relations between the virtual and physical components of blended programs within universities are required. Comparative research focusing on the merits and demerits of different ICT, specially the new technologies incorporated with face-to-face environments, to look into the characteristics of optimal Blended Learning along with the pedagogical frameworks to advocate Blended Learning for instructors and learners as well as to deeply investigate successful models associated with professional development and supporting teachers who engage in this novel mode of teaching. Furthermore, Akkoyunlu and Soylu (2008) recommended potential avenues for studies into learning styles and their contributions to students' levels of engagement and experiences; the long-term results of Blended Learning; as well as the effects of teachers' teaching styles on students' achievement. Likewise, Arbaugh *et al.*, (2009) suggest that investigation into how trainers impact online learning could be beneficial.

Conclusion

The challenging issues of a rapid technology development leading to change in higher education highlighted that a blended course approach has the potential to alleviate some of these challenging issues. Blended Learning combines traditional classroom learning with online along with mobile learning so as to maximize the understanding and appreciation of theoretical principles, acquiring knowledge and development of professional, technical, and practical skills (El-Mowafy *et al.*, 2013). Hence, Blended Learning must play an important role in any course review. Accordingly, the most appropriate approaches in teaching and learning should be selected to improve student learning and satisfy the requirements of industry and profession. In addition, some Blended Learning elements including flip teaching/ learning and collaborative learning are well-suited to augment student's dynamic involvement in learning.

Blended Learning offerings are popularizing and gaining momentum. It is argued that e-Learning is versatile and adaptable as there are a range of choices. Teachers can employ e-Learning tools along with technology in a classroom context (Strauss, 2012). Students and instructors can interact online over the net, where no physical classroom is involved. In addition, self-paced learning is another choice that makes content on hand on a 7X24 basis. Studies suggested that e-Learning is most effective and efficient when it employs a blending of all such delivery options.

What will the Blended Learning look like in the future? The answer would be that, as new and enhanced learning modalities continuously develop; additional examples will be added to our current mix. The main issue is not if we need to blend. Instead, the main challenge is what comprises the ingredients? The academic results rely on them. Hence, Blended Learning provides both students and teachers with flexibility in learning and teaching (Hoic-Bozic et al., 2009). Integrating the virtual and physical modes allows both teachers and students to act as learners although this is most effective and efficient when institutions support learners through stipulation of professional learning as well as the opportunity for revamping courses to make the most appropriate blend.

References

Akkoyunlu, B., & Soylu, M. Y. (2008). A study of student's perceptions in a blended learning environment based on different learning styles. *Educational Technology & Society,* 11(1), 183- 193.

Arbaugh, J. B., Godfrey, M. R., Johnson, M., Pollack, B. L., Niendorf, B., & Wresch, W. (2009). Research in online and blended learning in the business disciplines: Key findings and possible Future directions. *Internet and Higher Education,* 12(2), 71-87.

Barrie, S., Ginns, P., & Prosser, M. (2005). Early impact and outcomes of an institutionally aligned, student focused learning perspective on teaching quality assurance. *Assessment & Evaluation in Higher Education*, 30(6), 641-656.

Bliuc, A., Goodyear, P., & Ellis, R. (2007). Research focus and methodological choices in studies into students' experiences of blended learning. *Internet and Higher Education*, 10, 231-244.

Bonk, C. J., & Graham, C. R. (2012). *The handbook of blended learning*: Global perspectives, local designs. John Wiley & Sons.

Cottrell, D.M. & Robison, R.A. (2003). Blended learning in an accounting course. *The Quarterly Review of Distance Education*, 4(3), 261-269.

Crawford, K., Gordon, S., Nicholas, J., & Prosser, M. (1998). Qualitatively different experiences of learning mathematics at university. *Learning and Instruction*, 8, 455–468.

Dziuban, C.D., Hartman, J.L., & Moskal, P.D. (2004). Blended learning. *EDUCAUSE Center for Applied Research Bulletin, 7, 112.*

El-Mowafy, A., Kuhn, M. & Snow, T. (2013). A blended learning approach in higher education: A case study from surveying education. In Design, develop, evaluate: The core of the

learning environment. *Proceedings of the 22nd Annual Teaching Learning Forum*, Perth: Murdoch University.

Ellis, R. A. (2004). Student approaches to learning science through writing. *International Journal of Science Education*, 26, 1835–1854.

Ellis, R. A., & Calvo, R. A. (2004). Learning through discussions in blended contexts. *Educational Media International*, 40, 263–274.

Ferguson, J., & Tryjankowski, A. M. (2009). Online versus face-to-face learning: Looking at modes of instruction in Master's-level courses. *Journal of Further and Higher Education*, 33(3), 219-228.

Garrison, D. R. (2011). *Garrison, D. R. (2011). E-learning in the 21st century: A framework for research and practice. Taylor & Francis*.

Garrison, D. R. & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education*, 7(2), 95-105.

Garrison, R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education*, 7, 95-105.

Garrison, R., & Vaughan, H. (2008). *Blended learning in higher education: Framework, principles and guidelines.* John Wiley & Sons.

Gerbic, P. (2006). *On-campus students' learning in asynchronous environments.* doctoral thesis, Deakin University, Melbourne, Australia.

Ginns,P & Ellis, R.(2007). Quality in blended learning: exploring the relationships between on-line and face-to-face teaching and learning. *Internet and higher education*, 10, 53–64.

Graham (2012). *The handbook of blended learning: Global perspectives, local designs*. San Francisco: John Wiley and Sons.

Graham, C. R. (2006). Blended learning systems. CJ Bonk & CR Graham, *The handbook of blended learning: Global perspectives, local designs*. Pfeiffer. Bonk & C.

Hoic-Bozic, N., Mornar, V. & Boticki, I. (2009). A blended learning approach to course design and implementation. *IEEE Transactions on Education*, 52(1), 19-30.

Horn, M. B., & Staker, H. (2011). *The rise of K-12 blended learning*. Innosight Institute.

Joutsenvirta, T., & Myyry, L. (2010). *Blended Learning in Finland*. Viitattu.

Littlejohn, A., & Pegler, C. (2007). *Preparing for blended e-learning*. Abingdon, Oxon: Taylor & Francis.

Lizzio, A., Wilson, K., & Simons, R. (2002). University students' perceptions of the learning environment and academic outcomes: Implications for theory and practice. *Studies in Higher education,* 27(1), 27-52

Mason, R. & Rennie, F. (2006). *Elearning: The key concepts.* London: Routledge.

Meyer, K. (2004). Evaluating online discussions: Four different frames of analysis. *Journal of Journal of Asynchronous Learning Networks,* 8(2), 101-114.

Moskal, P., Dziuban, C., & Hartman, J. (2013). Blended learning: A dangerous idea? *The Internet and Higher Education,* 18, 15-23.

Neals (2010). Blended Learning: Any Time, Any How, Many Ways. *Nsw Country Areas Program. The Nswdet Rural and Distance Education Unit.*

O'Toole, J. M., & Absalom, D. J. (2003). The Impact of Blended Learning on Student Outcomes: is there room on the horse for two? *Journal of Educational Media*, 28(2-3), 179-190.

Rovai, A.P. & Jordan, H.M. (2004). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *The International Review of Research in Open and Distance Learning*, 5(2).

Sharma, P. & Barrett, B. (2007). *Blended Learning: Using Technology in and Beyond the Language Classroom*. Macmillan Education, Oxford.

Sharpe, R., Benfield, G. & Francis, R. (2006). Implementing a university e-learning strategy: Levers for change within academic schools. *ALT-J.* 14 (2), 135 -151.

Silverwood, T. (2006). Blended learning made easy. *Learning*: 115–22. http://www.chs.nihon-u.ac.jp/institute/human/kiyou/74/10.pdf.

Singh, H. (2003). Building effective blended learning programs. Issue of *Educational Technology*, 43(6), p. 51-54.

Stacey,E. & Gerbic, P.(2008). Success factors for blended learning. *Proceedings ascilite Melbourne 2008: Concise paper,* 964-968.

Stein, D. (2004). Course structure: Most important factor in student satisfaction. *Distance Education Report,* 8(3), 4.

Strauss, V. (2012). Three fears about blended learning. *The Washington Post*, 22 Sept.

Tabor, S. (2007). Narrowing the distance: Implementing a hybrid learning model for information security education. *The Quarterly Review of Distance Education,* 8(1), 47-57.

Twigg, C.A. (2003). New models for online learning. *EDUCAUSE Review*, 28-38.

Utts, J., Sommer, B., Acredolo, C., Maher, M. W., & Matthews, H. R. (2003). A study comparing traditional and hybrid internet-based instruction in introductory statistics classes. *Journal of Statistics Education,* 11(3), 171-173.

Vaughan, N. (2007). Perspectives on blended learning in higher education. *International Journal on ELearning,* 6(1), 81-94.

Waddoups, G.L. & Howell, S.L. (2002,). Bringing online learning to campus: The hybridization of teaching and learning at Brigham Young University. *International Review of Research in Open and Distance Learning*, 2(2),

Willett, H.G. (2002). Not one or the other but both: Hybrid course delivery using WebCT. *The Electronic Library,* 20(5), 413-419.

This page intentionally left blank

Chapter

2

This page intentionally left blank



Chapter 2

Blended Learning: Examining Concepts and Practices

Johan Eddy Luaran, Nor Aziah Alias & Jasmine Jain

Universiti Teknologi MARA

Overview

For many centuries, teaching was given a primary importance in education. It represents teachers as central importance to learning and the learner. In traditional classroom, learning itself can only be done with the presence of teachers and the existence of physical classroom. However, with Blended Learning, it provides a great need for learners to experience the process of learning outside the normal classroom learning. The arrival of technology and the promotion of virtual learning environment (VLE) seem to be very significant in educating students for two reasons: firstly, learning through the Web would simultaneously result in students learning to operate freely within this knowledge-based environment (K-based environment), and secondly, it has a potential for helping students to learn effectively. This chapter discusses the concepts and practices including the theories underlying Blended Learning.

Introduction

Traditionally, the concept of education and learning has always been associated with the physical presence of schools, classrooms, examination halls, teachers, textbooks, and examinations. However, the emergence of technology in education has transformed our education positively and more and more modern conceptions of learning have been introduced. Although we are living increasingly in a digital

technologies world, the fact that our quality of education is still poor is undeniably becoming the major concern in teaching and learning aspects. This point is made particularly well by Subramaniam (2013) in his discussion of what makes low quality of Malaysian education more alarming in English language classroom. Subramaniam's question to teachers:

> *"Increasing contact hours of English alone will not help students to be proficient in the language. What needed to be changed was the approach towards the teaching of English in schools. We have to look at the current curriculum and methodology. The scenario is going to be the same if the curriculum and methodology remain unchanged. How then can we hope to improve the English proficiency of students?"*
>
> Dr. Ganakumaran Subramaniam (2013)
> President of Malaysian English Language Teaching Association (Melta)

As far as academic endeavour is concerned, academicians are now keen on bringing in what the learners' needs for the subject in the world outside the classroom and in relation to the examinations for which the students will seat. Teachers, on issue of current concern, have to work and study the variety of educational approaches available in order to increase the learning qualities, skills and strategies so that teachers can help to improve the learning process among students and make them become efficient and informed through the use of technology in teaching and learning.

The concept of Blended Learning is acknowledged to be the best approach that can help students in their learning process. It is rooted in the idea that learning is not just an erstwhile event- but it is a continuous process of learning. That said, the process of learning will not end in the classroom but will expand its wall whereby learners are encouraged to become an independent learner outside the classroom. Therefore, it is adviced that the design of today's curricula should highlight the primary goals of learning which is the development of communicative ability, the design of teaching materials for effective development of language skills and the respective roles and responsibilities of teachers and learners.

In Malaysia, although we are new with the blended approach, technology seems to be increasingly adapted and integrated into our educational process. A very large number of researches have been carried out in different parts of the world to investigate the use of computer and technology in the teaching-learning process. At this point, we wonder whether educational practice can actually benefit from technology or not. Given a valuable insight into some of the mechanisms by which Blended Learning is better than face-to-face classroom learning and self-managed learning (Singh & Reed, 2001), the learning mode is believed to provide learners with the best methodologies, by giving learners the high level attention and guidance that can be achieved in the actual classroom as well as the flexibility and openness of self-paced learning through online learning methods. This research

by Singh and Reed (2001) gives us confidence that blending not only offers us the ability to be more efficient, but also effective.

In contrast, Duhaney (2000) suggests that the traditional devices such as the printed page, chalk and chalkboard, and others have been utilized and continue to be used in teaching and learning process. But, with the additional emergence of newer forms of technology, the environment has created fun and interest to support pedagogy and learning. Therefore, in order to develop a learning that is equipped with technology, a blended approach to learning was adopted in teaching which employs multi-mode strategies.

Accordingly, learning itself is believed to be effective when it takes place through real and virtual interactions between learners and tutors via self-managed learning, face-to-face interactions and online learning methodologies. Therefore, it is essential for teachers to combine the methods of teaching with online learning, or more technologically advanced forms of learning methods, with the traditional methods such as face-to-face interaction and the actual classroom as shown in Figure 2.1.

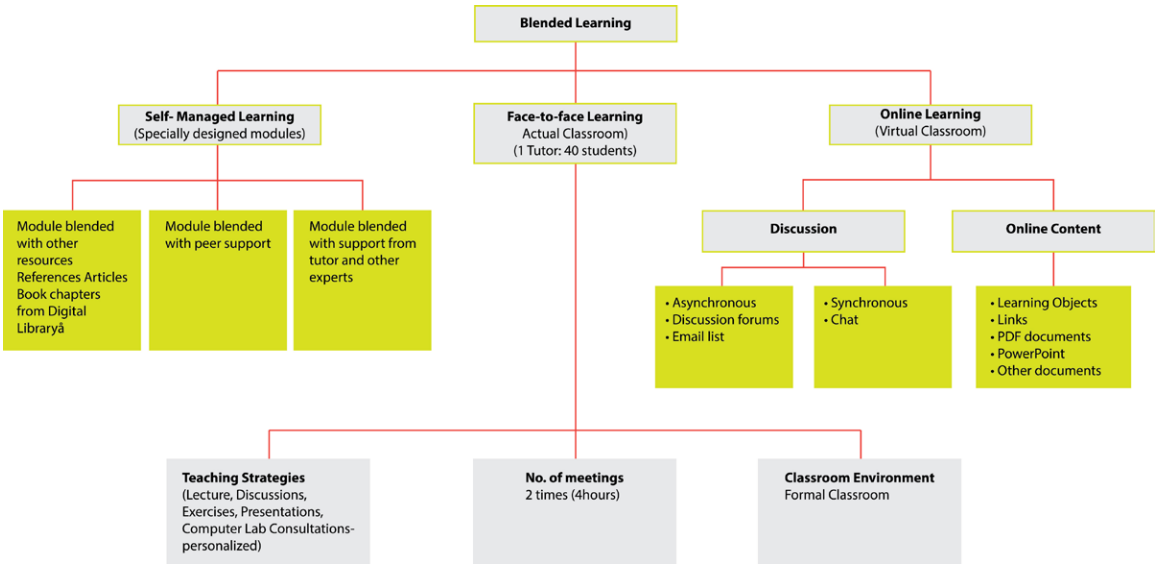


Figure 2.1: *Conceptual Framework for Blended Approach of Learning*
Source: Abdullah Sanusi Ahmad (2003)

The driving force behind the new concept is our contention that in order to understand how IT can best be used in teaching and learning, it is necessary to know something about the way educational policy-makers view the role of technology to bring about the desired outcome of education. Thus, blended approach adopted considers educational policy at national levels and attempts to evaluate various implementation issues on the basis of learner experience. However, there are questions about technology integration that centred on schools and classrooms. Such questions focus on integration into teaching practices, learning

experiences, and the curriculum. Since the curriculum must be the vehicle for technology integration, Cuban (2001) urged teachers to fit the computer to the curriculum, not the curriculum to the computer. The misleading thought is the technology is not the subject for teachers to focus, but the focus of integration should be on pedagogy that is the effective practices for teaching and learning.

With the advancement of technology, it is possible to embrace the changes in learners, teachers, and institutions for flexibility and ubiquity, that is, learning can take place at 'anywhere, anytime, and using any device'. In other words, learning in a Digital Age is available at the click of a mouse. This is because the growth of information and communication technologies (ICT) has revolutionized the way people learn and get information (Wan Fatimah *et al.*, 2007). In teaching language, for example, language teachers have to accept the fact that technology has grown historically and traditional classroom learning has benefited greatly from the globally networked computers and rich multimedia applications. Therefore, today's language learning has not just changed incrementally from those in the past, but more and more attention has been paid to explore the potential of applying technology in education, by integrating Blended Learning with traditional face-to-face classroom learning to make them suitable to be applied in teaching and learning language (Marlia & Supyan, 2003).

In Malaysia, the implementation of technology in teaching and learning activity has captured great interest to the teachers and students in the higher education institution. Many higher education institutions have started to adopt and exploit the exciting activities for students to use information and technology effectively as well as bringing the knowledge closer and making it more accessible to everyone. This technology is referred to as technology- enhanced learning (TEL) (Farahiza Zaihan, 2010). Traditionally, traditional classroom learning was mostly conducted in a classroom-based context where teachers took full responsibilities. Farahiza Zaihan (2010) described that a traditional classroom involves the instructor to present, interact, discuss, demonstrate and communicate with students face-to-face. The delivery system has been fully utilized in the classroom setting with the instructor giving a lecture and distributing all the hands on notes, assignments and exercises to the students. Interaction between the teacher and the students has been viewed as an essential learning element within the arrangement setting. However, the traditional classroom learning is slowly replaced by the emergence of technology such as e-Learning technology. Historically, there have been two common e-Learning modes: distance learning and computer assisted instruction. These two modes are included under e-Learning as the Internet becomes the integrating technology. By using the e-Learning, learners can control over content, learning sequence, pace of learning, and time to meet their learning objectives. Students do not see e-Learning as replacing traditional classroom method but as a complement to it, forming part of a Blended Learning strategy (Ruiz *et al.*, 2006). Among the benefits of Blended Learning reported by recent research were:

i. provide students with more control over learning; and
ii. help to foster creative and critical thinking.

As such, the implementation of Blended Learning in classroom is seen as a positive approach to demonstrate positive perceptions towards learning. Therefore, with the help of technology, Blended Learning can be used as an alternative approach in teaching and learning.

Technology in Education

The use of technology in education is not limited only to the use of computers that assist learners in their learning process. In recent years, there are many new educational paradigms besides videoconferencing and other Web-based technology that have suddenly blossomed in the field of education. Mobile learning is also gaining its popularity as it is smaller and portable device that help to accomplish learning outcome. These kinds of technology-based instructions allow individuals to be more productive when consuming, interacting with, and creating information through a compact digital portable device that has reliable connectivity and fits in a pocket or purse.

The rapid development in information technology has influenced educational process and therefore caused substantial changes in the traditional educational systems. Information technology comprises adopting technology and modern pedagogical techniques in academic institutions and creating an alternative educational system that suits the students. Such a system of learning is mainly based on internet services which facilitate communication and ensure transmission of different types of information needed for learning and include systems for evaluating knowledge gained and achievement. Due to evolution in IT, Blended Learning is becoming more and more the common learning environment.

With Blended Learning, learners are able to learn anything, at any place and any time they needed the knowledge. It has brought remarkable challenges and changes for both, the educators and education. Unlike other academic subjects, language classroom presents challenges from the beginning: a new language, a new vocabulary, unrecognized words, grammar rules and most importantly, the expectation for students to actually be proficient and many other problems related to learning for authentic communication in English as well as offering students with the IT skills. In order to solve the problems in learning English for example, the CALL (Computer Assisted Language Learning) technology is most commonly used by English teachers to design programs to meet the specific needs of language learners. As communicative language teaching developed, teachers began integrating technology-based activities in the language classroom. Studies of the influence of technology-enhanced instruction on language learning have also appeared in growing numbers. Previous research indicates that CALL can facilitate communication, reduce anxiety, encourage oral discussion, develop writing and

thinking connection, nurture social or cooperative learning and enhance student motivation (Yang & Chen, 2007).

Blended Learning

The term Blended Learning has gained considerable interest in recent years as a description of particular forms of teaching combined with technology (Hisham Dzakiria, Che Su & Hassan, 2006). The recent advent of wireless broadband Internet access and mobile communications devices has provided remarkable opportunities for 21st century Blended Learning models- simultaneous online and face-to-face (Fisher, 2010). It has also enabled the emergence of a true synchronous/ asynchronous and virtual/ physical matrix of learning opportunities for which our existing built learning environment infrastructure is not well suited (Mitchell, 2007). Some scholars argue Blended Learning could be more powerful and even transformative for higher education as compared to other forms of learning (Garrison & Kanuka, 2004). As Barkley (2001) propagates, "The ideal solution is to blend the best characteristics of online learning and onsite learning to provide the greatest support for acquisition of knowledge, modelling, practice, observation and coaching which are the five components of learning". In comparison of Web-based and traditional classroom learning in higher education institutions, Hofman (2002) found that Web- based learning courses enable students to more effectively understand course content. Hofman attributes the significance of Web-based learning to better collaborative learning environment provided by the Web, increased learning sources and convenience. In addition, Soyemi, Ogunyinka and Soyemi's (2012) work suggested that the majority of teachers reported that students are more highly motivated, which in turn affects behaviour and communication when using computers and the Internet in class. Furthermore, Stacey and Gerbic (2007) found students' learning experience and performance can be improved when online resources are integrated with traditional forms of course delivery, such as face-to-face lectures and tutorials. The evidence of such a transformation in teaching and learning processes thus provides greater impacts on the discipline of education.

There has been systematic and extensive research about Blended Learning approach in education. Outcomes from this research have helped to identify the key concepts related to student quality of learning by using Blended Learning approach. According to Entwistle, McCune and Hounsell (2002), factors influencing the quality of learning achieved include course material presentation and both the type of teaching-learning environment provided as well as the students' perceptions of this environment. Figure 2.2 illustrates the concepts related to the quality of learning as proposed by Entwistle, McCune and Hounsell (2002).

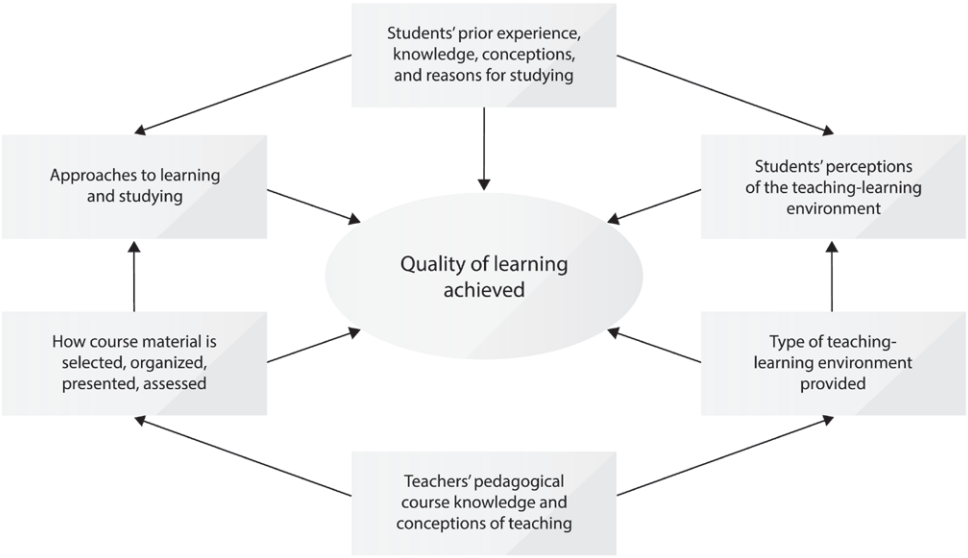


Figure 2.2: *Concepts related to the quality of learning*

These elements in the quality of learning require both the design of the course materials and the learning environment to be considered. Lizzio, Wilson and Simons (2002) in their study concluded that elements of the learning environment, which can be influenced and controlled by instructors, affect not only how students approach studying, but also the subsequent learning outcomes they attain (Lizzio *et al.*, 2002). Williams, Bland and Christie (2008) define Blended Learning "as a combination of traditional face-to-face learning and distributed learning which is an instructional model that allows teachers, students and the content to be in different location". The feature of Blended Learning is designed to accommodate the fact that students have different learning needs and preferences. The pedagogical model encourages students to learn in an interactive and collaborative environment, and at their own pace and at their own time (Graham, 2006; Saltzberg & Polyson, 1995).

Role of the Teacher in Technology Integration

The role of a teacher in technology integration classroom teaching is similar to the role teachers have always played in the face-to-face classroom teaching. Teacher is expected to facilitate learning to the best of the teacher's ability. Chitravelu *et al.*, (1995) emphasizes two factors that change the way a teacher operationalizes this role today. One factor is the concept of what actually facilitates learning. In the traditional instruction, teaching was thought to bring about the best in learning. However, with the modern instruction, the opportunities for learning are given the central importance. Another factor is the availability of resources and the Internet which is often referred to as the world's largest storehouse of information and resources. Undeniably, Internet is a good resource.

The potential of the Internet to facilitate communication and provide learning opportunities outside the classrooms makes it ideal for Web-based instruction (online learning) (Wang & Bagaka, 2002). Web-based instructions provides all time access to learning at anytime and anywhere and it is believed to be cost effective and has a wide reach. In addition, it is flexible and able to take a classroom learning style where content is delivered to students at the same pace. The teachers have, therefore, become more ready to give their support to the use of technology especially outside the classroom environment. However, in order to have successful Web-based instruction, Vrasidas and McIsaac (2000) suggest the teachers should provide frequent, immediate and adequate feedback, and should participate in online discussions. Wan Fatimah, Afza and Janier (2006) support that the context of the teaching requires teachers to provide easy access to content, to provide good experience for learners and to provide guidance and feedback. Hence, the absent of the teachers in the learning environment will contribute to student stress where students will experience trouble in using technology, lack of necessary motivation due to self-managed learning and feel isolated.

Role of the Learner in Technology Integration

Generally, in Malaysia, the central attention to education is the outcome of education, not the effectiveness of the learning process. Therefore, learners give insufficient attention to the process and yet feel abandoned along the courses. Although Blended Learning allows learners to study beyond the classroom, there should be a system to monitor student's performance and progress in learning process. Without this system, a learning process may lose direction and fizzle out (Chitravelu *et al.*, 1995)

Blended Learning is believed to provide many benefits to the learners. In order to experience full advantages of the educational opportunities available using Blended Learning approach, the learners have to become less of passive and more active participants in the learning process (Stansfield, McLellan & Connolly, 2004). Moreover, Blended Learning offers excellent possibilities for placing students at the centre of learning. Learners are being encouraged to take part in discussion forums and make valuable contributions to the learning process. The central importance is given to learning and the learner.

The methodology used in Blended Learning environment requires that learners take an active part in the learning process and participate by posting up their ideas, responding to colleagues and sharing their thoughts and views. Lungu (2013) in her study on the significance of Blended Learning technology into ESP classes, suggests that Blended Learning provides easiness in learning English because students could have 24/7 access to their interactive learning materials, allowing them to study at anyway and at any time.

However, the use of Blended Learning can pose challenges for students. Unrealistic expectations and feelings of isolation are some of the challenges

experienced by the students. Vaughan (2007) cites previous studies have shown that students enrolled in blended courses can sometimes have unrealistic expectations. The students have the tendency to assume that fewer classes meant less work and experienced problems with accepting responsibilities to manage their own learning. Students have also reported feeling isolation due to the reduction of opportunities for social interaction in a face-to-face classroom environment (Smyth *et al.*, 2012).

Consideration of learners' needs and expectations is important to determine student satisfaction and willingness to take the courses. Bliuc *et al.*, (2007), Harris *et al.*, (2009) and Mitchell and Honore (2007) explain that managing learners' expectations and level of understanding are important for development and implementation of successful Blended Learning modules. Furthermore, Blended Learning can only be successfully implemented if the learners have sufficient knowledge of, and are willing to use, the newly introduced technology. Learners must be trained and equipped to navigate the information and communication technology used in Blended Learning (Beadle & Santy, 2008; Harris *et al.*, 2009).

Theories Related to Blended Learning

This section discusses the schools of thought of different learning theories and how Blended Learning can be integrated in relation to these theories. Four major models of learning: behaviourism, cognitivism, constructivism and social constructivism were found to have significant contributions required for technology integration in teaching and learning.

Behaviourism

Fundamentally, the best-known operant behaviourist, Skinner says that behaviourist model is derived from the stimulus-response approach where the learner is conditioned to respond based on stimulus. Under this paradigm, the orientation to learning emphasizes the outcome, or observable elements of particular behaviour responses in the learning process (Gredler, 2005). From the behavioural viewpoint, the stimulus-response approach gives impact to the instructional design. Since behaviourism is stimulus-response based, the instructional design is depending on the classroom environments besides retaining the appropriate stimuli to serve the intended behaviour. In the context of learning, Skinner believes the stimuli are the form of reinforces that follow a response and that tend to strengthen behaviour or increase the probability of a recurrence of that response which constitutes a powerful force in the control of human behaviour (Brown, 1987).

As the behaviorists mention that learning is strictly influenced by environmental factors and stimuli, this view is shown clearly through an example demonstrated by Skinner in a case of a baby who accidently touches a nearby object and hears a tinkling bell sound occurs. As the baby looks in the direction from which the sound came, she manages to find the direction. The situation shows how the baby operated on her environment. Her responses were reinforced until finally a particular

concept of behavior was learned. Hence, Blended Learning approach is presented based on theory of behaviorism. Implications of this theory in the classroom have been discussed by many researches previously. The audio lingual method inspired by behavioristic principles has had a lasting impact on teachers' understanding of the process of human learning. As cited by Brown (1987), the audio lingual method emphasizes learners with the stimuli and it stresses repetition and reinforcement (operant conditioning) in order to develop desired habits. This is similar to the case of the baby as aforementioned. Additionally, the learning environment uses much tapes, language labs and visual aids to aid the learners.

Cognitivism

Unlike behaviourism, cognitivism focuses on the internal mental activities where learning is seen as information processing. Constructivists refer to learning as a process of active construction of learner. Cognitivism carries the notion that "learning involves the reorganization of experiences in order to make sense of stimuli from the environment" (Merriam & Caffarella, 1999). The cognitive theory of learning is best described as a meaningful learning. In other words, learning itself will happen when the learners "attempt to make sense of their experiences". The term meaningful learning is further described by Brown (1987) as, "a process of relating and anchoring new material to relevant established entities in cognitive structure". This indicates that the learning process involves learning through receiving, storing and retrieving information from the materials and the learning process is further developed by the learners through their existing knowledge structure (also known as schema) in order to learn better.

Constructivism and Social constructivism

The theories that focus on processes and interaction, whether individually or socially, are the constructivism and social constructivism learning theories (Hung, 2001). Under the constructive paradigm, as advocated by Piaget (1960) and Bruner (1990), these theories emphasize the notion that whatever activities in person mind and environment have to be constructed by the individual through knowledge discovery (Piaget, 1960). In the theory of constructivism, it is believed that knowledge cannot be simply passed on from learner to learner. Knowledge is acquired through how one's own mind constructs knowledge (based on own interpretation). Boethel and Dimock (2000) outline the six assumptions of constructivism theory of learning:

i. Learning is an adaptive activity.
ii. Learning is situated in the context where it occurs.
iii. Knowledge is constructed by the learner.
iv. Experience and prior understanding play a role in learning.
v. There is resistance to change.
vi. Social interaction plays a role in learning.

Implementation of Blended Learning

The implementation of Blended Learning requires the incorporation of three components (content, pedagogy and technology) of good teaching and representation of these components in teaching and learning process. Thus, a more thoughtful pedagogical uses of technology, called technological pedagogical content knowledge (TPCK), offer these three main components of learning environments in technology integration teaching and learning. Figure 2.3 demonstrates TPCK framework and its knowledge components as adopted from Koehler and Mishra (2008).

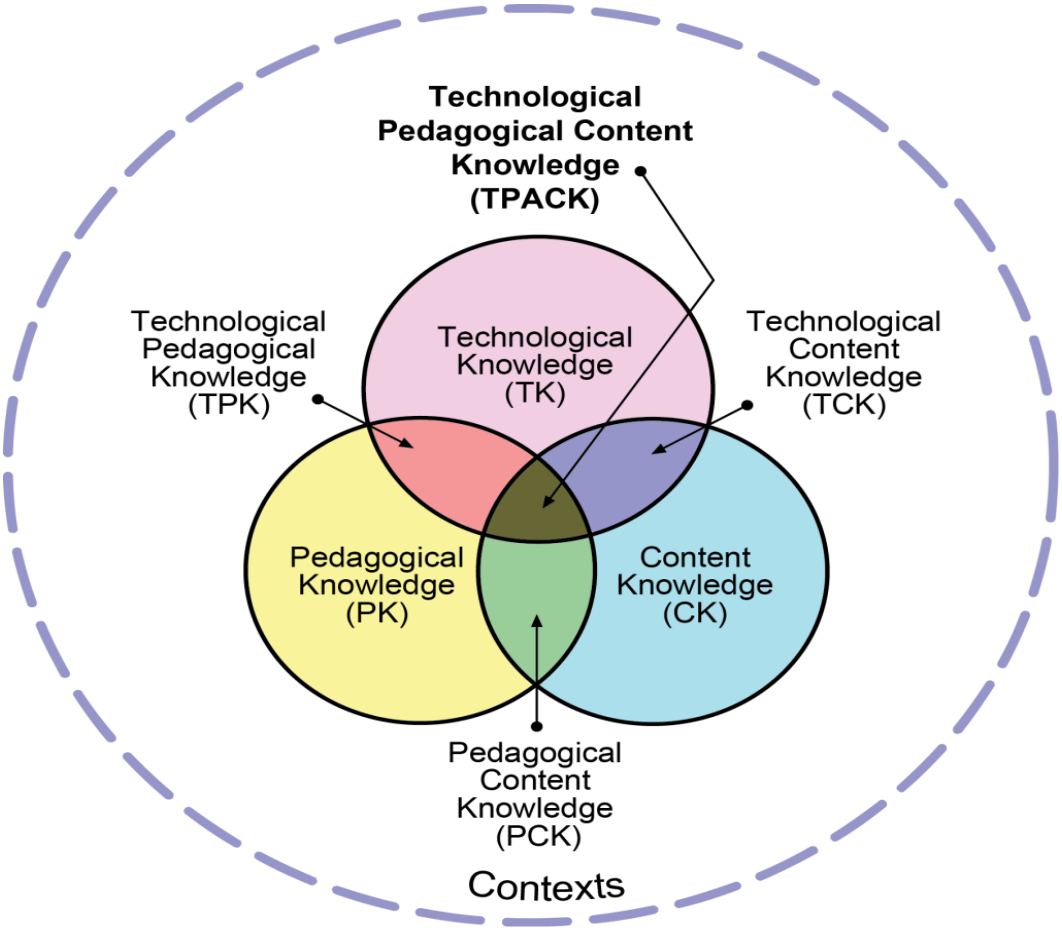


Figure 2.3: *The TPCK Framework and Its Knowledge Components (adopted from Koehler & Mishra, 2008)*

Historically, traditional teaching focused on the content knowledge of the teachers (Shulman, 1986; Veal & MaKinster, 1999). At present, the focus has shifted accordingly with the incorporation of a new technology or new medium for teaching. According to Koehler and Mishra (2006, p.1029), "TPCK represents a class of knowledge that is central to teachers' work with technology". This knowledge

requires teachers to have knowledge about technology. In addition, good quality of teaching needs teachers to integrate all three components as a whole, not in isolation because separating the three components will result in a real disservice to good teaching as teaching and learning with technology exist in a dynamic transactional relationship (Bruce, 1997; Dewey & Bentley, 1949; Rosenblatt, 1978).

The notion of TPCK emphasizes more on learning by doing (hands-on tasks) and less emphasis is placed on lecturing and traditional teaching. In other words, the actual process of learning promotes active learner roles where learners take control of their learning. Learners have to actively engage in practices of inquiry, research and design in collaborative groups in order to achieve the learning outcomes. Teachers, on the other hand, facilitate the learning process. Brown and Duguid (1991) further explain that the main role of the instructors in such environment is facilitator and problem solving expert rather than content expert.

Conclusion

As Blended Learning has become more prevalent at the college and university level, this approach has been shown to both directly impact and substantially enhance students' learning experiences. With Blended Learning, the combination of face-to-face and online delivery methods is believed to influence student perceptions of the learning environment and subsequently, their study experiences and quality of learning. In Malaysia, the integration of Web-based learning in teaching and learning has changed the way curriculum is designed, the way students learn, and the way they communicate with each other. Online learning has become an increasingly significant part of the teaching and learning experience to the instructors and also to the students.

References

Abdullah Sanusi Ahmad. (2003). Addressing e-learning challenges via blended learning: Open University Malaya approach. *Monsoura, Egypt*,1-14.

Beadle, M., & Santy, J. (2008). The early benefits of a problem-based approach to teaching social inclusion using an online virtual town. *Nurse Education in Practice*, 8(3), 190-196.

Beothel, M. & Dimock, K. V. (2000). *Constructing knowledge with technology*. Austin, TX: Southwest Educational Development Laboratory.

Blanton, B. B. (1998). The application of the cognitive learning theory to instructional design. *International Journal of Instructional Media*, 25(2), 171-177.

Bliuc, A. M., Goodyear, P., & Ellis, R. A. (2007). Research focus and methodological choices in studies into students' experiences of blended learning in higher education. *The Internet and Higher Education*, 10(4), 231-244.

Brown, A. L., & Duguid, P. (1991). Organisational learning and communities of practice: Towards a unified view of working, learning, and innovation. *Organisational Science*, 2(1), 40–57.

Brown, H. D. (1987). *Principles of language learning and teaching* (2nd Ed.). Englewood Cliffs, NJ: Prentice-Hall.

Bruce, B. C. (1997). Literacy technologies: What stance should we take? *Journal of Literacy Research,* 29(2), 289–309.

Bruner, J. (1990). *Acts of meaning*. Cambridge: Harvard University Press. Cuban, L. (2001). *Oversold and underused: computers in the classroom*. Cambridge, MA: Harvard University Press.

Chitravelu, N., Sithamparam, S., & Choon, T.S. (1995). *ELT methodology principles and practice*, Malaysia: Penerbit Fajar Bakti Sdn. Bhd.

Dewey, J. (1981). The experimental theory of knowledge. In McDermott, JJ (ed.), *The philosophy of John Dewey, University of Chicago Press, Chicago.*

Dewey, J., & Bentley, A. F. (1949). *Knowing and the known.* Boston: Beacon.

Duhaney, D. C. (2000). Technology and the educational process: transforming classroom activities. *International Journal of Instructional Media*, 27(1), 67- 72.

Entwistle, N., McCune, V., & Hounsell, J. (2002). Approaches to study and perceptions of university teaching–learning environments: Concepts, measures and preliminary findings. Edinburgh, UK: *Enhancing Teaching-Learning Environments in Undergraduate Courses Project*, University of Edinburgh, Coventry University, and Durham University.

Farahiza Zaihan Azizan. (2010). Blended learning in higher education institution in Malaysia. *in Proceedings of Regional Conference on Knowledge Integration in ICT* (pp. 454-466).

Fisher, K. (2010). *Technology-enabled active learning environments: an appraisal*. Australia: University of Melbourne.

Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, 7(2), 95-105.

Graham, C. R. (2006). Blended learning system: Definition, current trends and future direction. In: Bonk, C. J., Graham, C. R. (eds.), *Handbook of Blended Learning: Global Perspectives, Local Designs*, (pp.3- 21). Pfeiffer, San Francisco.

Gredler, M.E., (2005). *Learning and instruction: theory into practice (5th Ed.)*. New Jersey: Prentice Hall.

Harris, P., Connolly, J., & Feeney, L. (2009). Blended learning: Overview and recommendations for successful implementation. *Industrial and Commercial Training*, 41(3), 155-163.

Hisham Dzakiria, Che Su Mustafa & Hassan Abu Bakar. (2006). Moving forward with blended learning as a pedagogical alternative to traditional classroom learning. *Malaysian Online Journal of Instructional Technology (MOJIT)*, 3(1), 11- 18.

Hofman, D.W. (2002). Internet-based distance learning in higher education. *Tech Directions,* 62(1), 28–32.

Hung, D. (2001). Theories of Learning and Computer- Mediated Instructional Technologies. *International Council for Education Media.* Retrieved from http://www.tandf.co.uk/journals.

Koehler, M.J., & Mishra, P. (2008). Introducing TPCK. AACTE committee on innovation and technology (Ed.), *The handbook of technological pedagogical content knowledge (TPCK) for educators* (pp. 3-29). Mahwah, NJ: Lawrence Erlbaum Associates.

Lizzio, A., Wilson, K., & Simons, R. (2002). University students' perceptions of the learning environment and academic outcomes: Implications for theory and practice. *Studies in Higher Education,* 27(1), 27-52.

Lungu, I. (2013). The increasing need for blended learning models in courses of english for specific courses in romanian universities. *Journal of Social and Behavioral Sciences*, 76, 470- 475.

Marlia Puteh & Supyan Hussin. (2003). Internet and language teaching. In: Konvensyen PTPM, *PersatuanTeknologi Pendidikan Malaysia* ke-16, 13 - 16 June 2003, City Bayview Hotel, Melaka**.**

Merriam, S. B. & Caffarella, R. S. (1999). *Learning in adulthood: A comprehensive guide. (2ndEdition)*. San Francisco: Jossey-Bass.

Mitchell, A., & Honore, S. (2007). Criteria for successful blended learning. *Industrial and Commercial Training*, 39(3), 143-149.

Piaget, J. (1960). *The psychology of intelligence*. NJ: Littlefield, Adams & Co.

Rosenblatt, L. M. (1978). *The reader, the text, the poem: The transactional theory of literary work*. Carbondale: Southern Illinois University Press.

Ruiz, J. G., Mintzer, M. J. and Leipzig, R. M. (2006). The impact of e-learning in medical education. *Academic Medicine, 81*(3), 207-212.

Saltzberg, S., & Polyson, S. (1995). Distributed learning on the World Wide Web. *Syllabus,* 9(1), 10- 12.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4–14.

Singh, H., & Reed, C. (2001). A White Paper: Achieving success with blended learning. *ASTD State of the Industry Report, Alexandria, VA: American Society for Training & Development, 1-11.*

Smyth, S., Houghton, C., Cooney, A., & Casey, D. (2012). Students' experiences of blended learning across a range of postgraduate programmes. *Nurse Education Today*, 32(4), 464-468.

Soyemi, J., Ogunyinka, O. I, &Soyemi, O. B. (2012). Integrating self- paced e-learning with conventional classroom learning in Nigeria educational system. *Mediterranean Journal of Social Sciences, 3(4), 127-133.*

Stacey, E., & Gerbic, P. (2007). Teaching for blended learning: Research perspectives from on-campus and Distance Students. *Education and Information Technologies*, 12, 165- 174.

Stansfield, M., McLellan, E., & Connolly, T. (2004). Enhancing student performance in online learning and traditional face-to-face class delivery. *Journal of Information Technology Education*, 3, 173-188.

Subramaniam, G. (2013). Change teaching approach in schools first. *The Star Online*. Retrieved from http://www.thestar.com.my/News/Nation/2013/09/08/Melta-Change-teaching-approach-in-schools-first/

Vaughan, N. D. (2007). Perspectives on blended learning in higher education. *International Journal on E-Learning,* 6(1), 81-94.

Veal, W. R., & MaKinster, J. G. (1999). Pedagogical content knowledge taxonomies. *Electronic Journal of Science Education*, 3(4). Retrieved from http://unr.edu/homepage/crowther/ejse/ejsev3n4.html.

Vrasidas, C., & Mc Isaac, M. S. (2000). Principles of pedagogy and evaluation for Web-based learning. *Educational Media International*, 37(2), 105-112.

Wan Fatimah Wan Ahmad Afza Shafie, Josefina Barnachea Janier & Aliza Sarlan (2007). Exploring Universiti Teknologi PETRONAS students' attitudes towards learning application of integration using courseware. *Proceedings of 1st International Malaysian Education Technology Convention, UTM* (pp. 313-319).

Wang, L. C.,& Bagaka's, J. G.(2002). Understanding the dimensions of self-exploration in web-based learning environments. *Journal of Research on Technology in Education*, 34(3), 364-375.

Williams, N. A., Bland, W., & Christie, G. (2008). Improving student achievement and satisfaction by adopting a blended learning approach to inorganic chemistry. *Chemistry Education Research and Practice,* 9(1), 43-50.

Yang, S.C. & Chen, Y. J. (2006). Technology-enhanced language learning: A case study. *Journal of Computers in Human Behavior,* 23, 860-879.

This page intentionally left blank

Chapter

3

This page intentionally left blank



Chapter 3

Blended Learning Readiness in Malaysia

Mohammad Amin Embi, Norazah Mohd Nordin & Ebrahim Panah

Universiti Kebangsaan Malaysia

Introduction

Recently, learning has appeared as presenting classroom content online. Subsequently, a new generation of e-Learning has focused on the combination of both classroom based delivery and online teaching termed as Blended Learning. Singh (2003) emphasized that Blended Learning presents more benefits and is more effective compared to traditional e-Learning. Considering a continuum in teaching and learning approach, at one end will be fully traditional learning and at the other end will be fully online learning where Flipped Learning will be placed in between. Studies show that e-Learning has been a hot issue for both researchers and teachers for a long time. A bulk of researches has been conducted in this area but with controversial results. Several researches emphasize the importance of Blended Learning readiness across different disciplines. Some of these studies are case studies. Some are survey approaches using questionnaire. However, the previous studies have come up with controversial and mixed results.

Past studies highlight the importance of Blended Learning. The result of different studies appeared to be controversial. Some studies report that the trainee teachers' Blended Learning readiness is at an acceptable level, while others found that the trainee teachers' Blended Learning readiness is low and unsatisfactory (Haron *et al.,* 2012).

Many higher learning institutions in Malaysia implemented e-Learning because of its effectiveness as an alternative learning approach (Jaryani *et al.,* 2013). Currently, public higher learning institutions in Malaysia are moving from solely e-Learning into Blended Learning (Haron *et al.,* 2012). However, studies have shown that lecturers/ teachers are apprehensive about teaching in Blended Learning (Shih, 2010). This necessitates a study in Malaysian context to investigate the current level of adoption of Blended Learning among the academicians, and identify the factors influencing the adoption of Blended Learning.

Although some studies have been reported on Blended Learning in Malaysia, little research involving learners from several states has been conducted. The objective of this chapter is to identify the factors affecting the use of Blended Learning in Malaysia. This chapter also describes the Malaysian trainee teachers' readiness in terms of Blended Learning.

Literature Review

The significance of e-Learning has widely been recognized as a means to foster accessibility and quality of teaching learning process (Shraim & Khlaif, 2010). e-Learning is regarded as a tool for providing opportunities for marginalized as well as disadvantaged students or those who are unable to attend classes due to physical, social and economic constraints (Shraim & Khlaif, 2010). A wider range of students can be reached anytime and anywhere provided that the Internet connection is available, thus increasing the number of learners who have access to education system. Moreover, significant literature has indicated that online learning, particularly, Virtual Classroom (VCR) reinforced critical thinking and problem-solving skills.

Generally, technologies provide opportunities. The real challenge is not only associated with guaranteeing that certain requirements, such as literacy, access to ICT tools and networks are met for e-Learning but also is related to how to change the perceptions of teachers and students towards e-Learning. To implement e-Learning successfully, it is important to assess the readiness of teachers, learners and organizations to adapt this learning approach (So & Swatman, 2006). An e-Learning readiness assessment can assist an organization in identifying potential aspects necessary to guarantee that the design of e-Learning strategies is custom-made to meet learners' needs (So & Swatman, 2006) and how teachers and learners perceive and employ an e-Learning approach as well.

A significant literature has addressed various issues related to readiness to e-Learning. For instance, Aydın and Tasci (2005) assessed the organizational readiness for e-Learning in Turkey using instrument including four constructs, namely technology, innovation, people and self-development. In this regard, Watkin *et al.,* (2004) have developed an instrument to assess an individual's perceived readiness to engage in e-Learning. Their proposed instrument contains several items including technology access, online skills and relationships, motivation, ability

to use online audio/ video, ability to use Internet discussions and importance to learner's success. Correspondingly, Agboola (2006) has also evaluated the awareness and perceptions of academic staff in using e-Learning tools in a post-secondary institution in Malaysia. He reported that e-Learning confidence and e-Learning training were of practical significance in predicting e-Learning adoption as well as e-Learning readiness. Likewise, So and Swatman (2006) have examined the readiness of primary and secondary school teachers in Hong Kong in terms of acceptance and adoption of e-Learning. They reported that teachers are not yet completely prepared to employ e-Learning technologies. They found that there were differences in readiness perceived between secondary and primary school teachers, male and female and between teachers from different secondary schools.

Plata (2013) conducted a study on students' perceived readiness to engage in e-Learning. In his study, evaluation has been administered to the experimental group prior to the actual implementation of the virtual learning environment (VLE) in the classroom to measure their readiness to engage in virtual learning. The weighted mean for the 6 research constructs were as follows: Technology access (4.31), online skills and relationships (4.35), Motivation (4.14), online audio/ video access (4.16), online discussions (4.17) and Importance to students' success (4.47). The importance to students' success area had the highest weighted mean rating of 4.47 or equivalent to "Agree". This indicates that students perceived that the role of the instructors, quick technical and administrative support, frequent participation throughout the learning process, experiences with online technologies, and ability to instantaneously apply course materials were important for them to succeed with online coursework. With the same "Agree" description, motivation got a lower weighted mean rating of 4.14 but positively indicates that students remain motivated even if the instructor is not online at all times, and students would be able to complete work even when they are online. Overall, the grand mean was 4.30 or equivalent to "Agree". This showed that students perceived that they are satisfactorily ready to engage in e-Learning and Blended Learning. Similar results were found in the literature in support of the findings.

Correspondingly, Changiz *et al.,* (2013), found that the students' readiness scores in total and all subscales ("technology access", "online skills and relationships", "motivation", "online audio/ video", "readiness for online discussions", and "importance of e-Learning to your success") were above 3. Comparing different subscales, students' mean scores in "motivation" and "internet discussion" subscales were less than others, although the difference was not significant. There were no significant gender differences in the readiness scores. Students who were academic staff had significantly higher scores than others in total and in "motivation", "online skills and relationship" subscales.

In this study, students' readiness for e-Learning was surveyed among applicants in master degree program on medical education, as a step in learner analysis. All students have shown a good readiness in all components of the scale: 'technology access", "online skills and relationships", "motivation", "online audio/ video", "readiness

for online discussions", and "importance of e-Learning to your success". According to the slightly lower scores in "motivation" and "online discussion" subscales, they recommended that these two constructs be more stressed.

In Malaysia, Haron *et al.,* (2012) examined the adoption of Blended Learning among academicians. The theoretical framework for their study was based on Mezirow's Transformational Learning Theory. Accordingly, five independent variables demonstrating an individual's frame of reference were examined for their relationship with the attitude of adoption of Blended Learning. The study used a quantitative approach. Data were gathered through surveys among academicians in a public university where Blended Learning was implemented. Findings revealed that the Blended Learning adoption rate was low, as reflected from the study result where only 13% of the academicians adopted the Blended Learning approach. Among the factors that influenced the adoption of Blended Learning were perceived usefulness of the system, learning goals, and educational technology preference.

However, a comprehensive quantitative study using assessment scale developed by Watkins *et al.,* (2004) yet to be undertaken in Malaysian context.

Methodology

This research employed a survey approach using a five-scale questionnaire (from completely disagree to completely agree). The original questionnaire contained some constructs such as Technology Access, Online Skills and Relationships, Motivation, Ability to Use Online Audio/ Videos, Internet Discussions, and Importance to your success developed by Watkins *et al.,* (2004). In this research, some constructs extracted from literature like Technology and Ability, Blended Learning Awareness, respondents suggestion of f2f vs. online, content format, course tasks/ assignments/ project papers submission method and frequency of f2f meeting with the course instructor/ lecturer were added. To determine the reliability of the study construct, a pilot study was conducted and the result showed that the study construct has high level of reliability .i.e. 0.9. The study sample involved 144 Malaysian trainee teachers from different states. The study sample was randomly selected. The obtained data was analyzed using descriptive statistics (percentage and frequency). In addition, to triangulate the data and delve into the issue, after some constructs, the participants answered open-ended questions. The qualitative data was analyzed using description.

Results and Discussion

This section illustrates the study findings and discussion. This section is presented in two sections: respondents' demographics and descriptive statistics. The first section shows respondents' demographics.

Section One: Respondents' Demographics

In this section, respondents' demographics in terms of current status of study, current place of residence and gender are represented.

Concerning the current status of study of the respondents, data illustrates that 61 (42.4%) participants are full time students, while 83 (57.6%) participants are part time students. In total, 144 students took part in the study. Regarding the current place of residence of respondents, data shows that majority of the participants are from Selangor (52.1%). Negeri Sembilan with 17.4% and Melaka with 9.7% of participants ranked 2 and 3 respectively. Perak has the least number of participants 1.4% (2 participants). The rest of participants locations are Kelantan 8 (5.6%) participants, Kedah 3(2.1%) persons, Penang 1 (0.7%) person, Terengganu 4(2.8%) persons, Perak 2 (1.4%) persons, Pahang 4 (2.8%) participants, and Johor 8 (5.6%) persons. In terms of gender, 106 (73.6 %) participant were female, while 38 (24.4%) persons were male.

Section Two: Descriptive Statistics

A: Technology Access

The data shows that concerning the construct of "Technology Access" in Blended Learning readiness, 87 participants completely agree that they have access to computer with net connection; 53 persons completely agree that they have access to a fairly new computer (e.g., enough RAM, speakers & CD-ROM) and 76 participants completely agree that they have access to a computer with adequate software (e.g., Microsoft Word & Adobe Acrobat). Hence, data demonstrates that most of participants have access to the internet (131 from 137). It also shows that most of them (115 from 137) have fairly new computer. Furthermore, data reveals that 130 from 135 have access to computers with adequate software necessary for Blended Learning. Overall, data shows that the participants have access to necessary technology to carry out Blended Learning.

The result of the study is consistent with the finding of a study by Changiz *et al.,* (2013) who reported that their participants had good access to technology for Blended Learning. This is because as the technology develops, correspondingly access to new technology will be facilitated for learners.

B: Online Skills and Relationships

Regarding the online skills and relationships, three categories were identified. As Table 3.1 shows, in category one, between 80 and 100 participants completely agree that they have basic skills to operate a computer and can send an email with a file. In the second category, between 60 and 80 participants completely agree that they have the basic skills for finding their way around the Internet; they would be comfortable using a computer several times a week; they would be able to communicate effectively with others using online technologies; they would be

able to use online tools to work on assignments. In the third category, between 30 and 50 participants, completely agree that they would be able to express themselves clearly through their writing; they would be able to schedule time to provide timely responses to other students and/ or the instructor and would be able to ask questions and make comments in clear writing. However, 12 persons claim that they are not sure that they would be able to communicate effectively with others using online technologies. Also, 21 persons believe that they are not sure that they would be able to express themselves clearly through their writing. Likewise, 12 persons are not sure that they would be able to use online tools to work on assignments. Similarly, 17 persons are not sure that they would be able to schedule time to provide timely responses. Moreover, 20 persons are not sure that they would be able to ask questions and make comments in clear writing.

Overall, data shows that regarding online skills and relationships the respondents have acceptable level of readiness for Blended Learning. The finding of the current study is in line with a study by Changiz *et al.,* (2013) who found that their participants had sufficient knowledge and ability in term of online skills and relationships. The finding is also consistent with a study by Plata (2013) who reported that online skills and relationships had the mean of 4.35, indicating that learners had acceptable level of on line skills and relationships.

Table 3.1 Online Skills and Relationships

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
I have the basic skills to operate a computer (e.g., saving files, creating folders).	0	2	3	46	84	135
I have the basic skills for finding my way around the Internet (e.g., using search engines).	0	1	4	56	73	134
I can send an email with a file attached.	0	0	2	38	94	134
I think that I would be comfortable using a computer several times a week to participate in a course.	0	2	8	58	67	135
I think that I would be able to communicate effectively with others using online technologies (e.g., chat).	0	2	12	57	62	133
I think that I would be able to express myself clearly through my writing (e.g., emotions, humor).	1	6	21	72	34	134
I think that I would be able to use online tools to work on assignments with students in different places.	0	2	12	53	66	133

I think that I would be able to schedule time to provide timely responses to other students and/ or the instructor.	0	0	17	76	42	135
I think that I would be able to ask questions and make comments in clear writing.	0	1	20	74	39	134
answered question						**135**
skipped question						**9**

C: Motivation

As seen in Table 3.2, in terms of motivation, 75 participants strongly agree that they would be able to remain motivated even though the instructor is not online at all times and 30 persons completely agree that they have this motivation, while 24 persons are not sure and 6 persons strongly disagree. In relation to being able to complete their work even when there are online distractions, 58 participants strongly agree and 44 persons completely agree, whereas 21 persons are not sure and 10 participants strongly disagree. Regarding being able to complete work even when there are distractions at home, 65 participants strongly agree and 30 persons completely agree. Nevertheless, 24 participants are not sure and 13 participants strongly disagree. All in all, data shows that the participants have sufficient motivation to adopt Blended Learning.

The finding is consistent with the study by Bliuc *et al.,* (2011) as they say "A primary motivation underlying the teacher's use of a blend of face-to-face and online discussion was the observation that some of the students taking the course were more reluctant to engage in the face-to-face discussion. One of the central aims of adding the online dimension to the face-to-face discussion was to provide the best context for a broader range of students to participate in discussion"(p.856). Correspondingly, Shea and Bidjerano (2010) suggest that learning presence represents elements such as self-efficacy as well as other cognitive, behavioral, and motivational constructs supportive of online learner self-regulation. Similarly, Aragon *et al.,* (2002) reported that motivation was the only variable which appeared to affect course performance. However, Plata (2013) reported that motivation got a lower weighted mean rating of 4.14, though positive, compared to other constructs.

Table 3.2 Motivation

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
I think that I would be able to remain motivated even though the instructor is not online at all times.	0	6	24	75	30	135
I think that I would be able to complete my work even when there are online distractions (e.g., friends sending emails or Websites to surf).	2	10	21	58	44	135
I think that I would be able to complete my work even when there are distractions in my home (e.g., television, children, and such).	3	13	24	65	30	135
answered question						**135**
skipped question						**9**

D: Online Audio/ Video

As Table 3.3 shows, regarding the ability to use online audio/ video, data show that 59 participants strongly agree that they would be able to relate the content of short video clips; 37 persons completely agree that they have this ability. However, 35 participants are not sure that they have this ability. Concerning the ability to take notes while watching a video on the computer, 66 participants strongly agree and 39 persons completely agree, while 20 participants are not sure. In terms of the ability to understand course related information when it is presented in video formats, 63 participants strongly agree and 45 persons completely agree, while 22 participants are not sure.

Overall, the data shows that students are able to use online audio/ video for the purpose of education. This means that they are ready to adopt Blended Learning. Past studies (Changiz *et al.,* 2013; Plata, 2013) also indicated learners' ability in using online Audio/ Video for Blended Learning.

Table 3.3 Online Audio/ Videos

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
I think that I would be able to relate the content of short video clips (1-3 minutes typically) to the information I have read online or in books.	0	4	35	59	37	135
I think that I would be able to take notes while watching a video on the computer.	1	8	20	66	39	134

I think that I would be able to understand course related information when it is presented in video formats.	0	3	22	63	45	133
answered question						**135**
skipped question						**9**

E: Internet Discussions

As given in Table 3.4, regarding internet discussion, 64 participants strongly agree that they would be able to carry on a conversation with others using the Internet. Accordingly, 59 persons completely agree that they have this ability, while 10 participants are not sure. Concerning the ability to have several discussions taking place in the same online chat, 62 participants strongly agree and 41 participants completely agree, while 23 participants are not sure. In terms of ability to follow along with an online conversation, 65 participants strongly agree and 46 persons completely agree, while 20 persons are not sure. In reference to preference to have more time to prepare responses to a question, 73 participants strongly agree and 34 persons completely agree, whereas 24 persons are not sure.

To sum up, data reveals that the participants have enough ability and comfort to do internet discussion. The finding is also in line with past studies on internet discussion (Changiz *et al.,* 2013; Plata, 2013).

Table 3.4 Internet Discussions

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
I think that I would be able to carry on a conversation with others using the Internet (e.g., Internet chat, instant messenger).	0	2	10	64	59	135
I think that I would be comfortable having several discussions taking place in the same online chat even though I may not be participating in all of them.	0	9	23	62	41	135
I think that I would be able to follow along with an online conversation (e.g., Internet chat, instant messenger) while typing.	0	4	20	65	46	135
I sometimes prefer to have more time to prepare responses to a question.	1	2	24	73	34	134
answered question						**135**
skipped question						**9**

F. Importance to your success

As Table 3.5 shows, regular contact with the instructor, quick technical and administrative support, frequent participation throughout the learning process, prior experiences with online technologies and the ability to immediately apply course materials are regarded as important factors to students success. Data shows that 70 participants strongly agree that regular contact with the instructor is important to success and also 54 persons completely agree that regular contact with the instructor is important to success.

Regarding quick technical and administrative support, 56 participants strongly agree and 69 persons completely agree. In terms of frequent participation throughout the learning process, 76 persons strongly agree and 49 participants completely agree. In reference to prior experiences with online technologies, 56 participants strongly agree and 70 persons completely agree. Concerning the ability to immediately apply course materials, 66 students strongly agree and 60 completely agree.

Overall, data demonstrates that these four factors are almost equally significant to students' success.

Table 3.5 Importance to Your Success

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
Regular contact with the instructor is important to my success in online coursework.	0	3	7	70	54	134
Quick technical and administrative support is important to my success in online coursework.	0	1	8	56	69	134
Frequent participation throughout the learning process is important to my success in online coursework.	0	1	8	76	49	134
I feel that prior experiences with online technologies (e.g., email, Internet chat, online readings) are important to my success with online course.	0	0	8	56	70	134
The ability to immediately apply course materials is important to my success with online courses.	0	0	8	66	60	134
answered question						**134**
skipped question						**10**

In a related study, Changiz et al.(2013) reported that the students' readiness scores in total and all subscales ("technology access", "online skills and relationships", "motivation", "online audio/ video", "readiness for online discussions", and "importance of e-Learning to your success") were above 3. A study by Plata (2013) also showed

the significance of abovementioned factors. He reported that the Importance to Students' Success area had the highest weighted mean rating of 4.47, indicating that this construct is of paramount importance.

G: Technology and Ability

The data in Table 3.6 shows that the technology and ability in Blended Learning can be categorized into three group levels. First, the aspect of regular access to a computer or laptop, regular access to internet, access to a printer, proficient at emailing, able to use a web browser/ search engine to navigate the internet, experience using software such as Microsoft Office, where most of participants completely agree between 70 and 90. The second group includes the aspects of access to headphones or speakers, experience downloading/ installing programs or plug-in, able to work independently, able to work in groups, comfortable asking for assistance when needed, experience using a Learning Management System, proficient typing on a keyboard, which were selected as completely agree by participants (between 50 and 70 participants). The third group includes the aspects of access to a microphone for courses, good at managing/ planning time, able to meet deadlines on a regular basis, able to spend approximately 9 hours a week on lessons/ activities, proficient reader, good at following directions, comfortable learning in an environment in which they come to campus infrequently, good at conveying ideas in writing, able to learn from a various instructional formats, able to describe oneself as self-motivated, and comfortable receiving constructive feedback, which were selected by many participants as completely agree (between 30 and 50 participants each).

Overall, data shows that in terms of technology and ability, participants are at good level. This means that they have the required readiness for Blended Learning. This is consistent with a study by Shraim and Khlaif (2010) who reported that students had positive attitude towards the usefulness of e-Learning.

Table 3.6 Technology and Ability

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
I have regular access to a computer or laptop each week for my course(s) (4 to 5 times a week).	1	1	5	42	83	132
I have regular access to the internet each week for my course(s) (4 to 5 times a week).	1	3	7	38	83	132
I have access to a printer.	1	2	4	42	82	131
I have access to headphones or speakers for courses that may have video conferences or require student-recorded presentations.	1	13	14	51	53	132

I have access to a microphone for courses that may have video conferences or require student-recorded presentations.	2	23	24	43	40	132
I am able to use a web browser/ search engine to navigate the internet (e.g., Firefox, Safari, Internet Explorer, and Google).	0	0	7	48	77	132
I am proficient typing on a keyboard.	0	0	8	65	60	133
I have experience using software such as Microsoft Office (e.g., Word, PowerPoint, and Excel)	0	0	4	48	79	131
I have experience downloading/ installing programs or plug-in such as Java, Adobe Reader, Quick Time, etc.	1	2	11	50	69	133
I am proficient at sending/ receiving emails.	0	0	1	44	88	133
I am proficient at sending/ receiving emails with attachments.	0	0	2	46	83	131
I am very good at managing/ planning my time well.	0	2	30	66	35	133
I am able to meet deadlines on a regular basis.	0	1	14	75	43	133
I am able to work independently.	0	2	16	61	54	133
I am able to work in groups.	0	3	5	67	53	128
I am able to spend approximately 9 hours a week on lessons/ activities/ homework/ readings for very 3-credit course in which I am enrolled.	0	8	24	70	30	132
I am comfortable asking for assistance when needed.	1	3	9	70	50	133
I am a proficient reader.	0	1	25	69	38	133
I am good at following directions.	0	0	9	80	43	132
I am good at conveying my ideas in writing.	0	2	28	69	31	130
I am comfortable receiving constructive feedback.	0	1	16	78	38	133
I have experience using a Learning Management System (iFolio, SPIN, Moodle, etc.)	0	0	6	61	65	132
I am comfortable learning in an environment in which I come to campus infrequently or not at all.	1	4	23	64	41	133
I can learn from a various instructional formats (e.g., text, video, podcast, online discussions, video conferencing).	0	3	12	70	46	131
I would describe myself as self-motivated.	0	1	14	70	48	133
answered question						**133**
skipped question						**11**

H: Blended Learning Awareness

Table 3.7 illustrates that around 73.5% of participants are aware of Blended Learning, while 26.5% stated that they have no idea about Blended Learning. This awareness can be considered as rewarding and it can step up the process of adoption of this approach for teaching and learning.

Table 3.7 Blended Learning Awareness

Are you aware of Blended Learning?		
Answer Options	**Response Percent**	**Response Count**
Yes	73.5%	97
No	26.5%	35
answered question		**132**
skipped question		**12**

In a related study, Mathew (2014) revealed that only 65% of the teachers are familiar with Blended Learning strategy. But, nobody is using Blended Learning strategy for teaching.

Chew (2012) studied the Blended Learning readiness in UM, UTAR, UOL and UOG. He reported *"The awareness of academic interviewees related to Blended Learning. Most of the research interviewees from UM and UTAR perceive Blended Learning and e-Learning as synonymous; many participants from UOL are confused by the blurred definition of Blended Learning and they would rather use e-Learning instead; whereas all participants in UOG are aware of the term "Blended Learning" due to the clear institutional commitment such as the VC's vision and Blended Learning Champions in each faculty as an endorsement (p.209)"*. His study shows that a few implementations across the institutions have effectively and successfully raised the Blended Learning awareness in the academics and the students.

Although a study by Chew (2012) shows that, learners in some universities have mixed ideas about Blended Learning, the current study found that trainee teachers studying at UKM from different states have acceptable awareness of Blended Learning.

Qualitative Data

Regarding students' awareness of Blended Learning, three themes have been extracted: learning through technology, using internet and face-to-face and non-face (online).

Table 3.8 Respondents' Blended Learning Awareness

Theme	Number
Learning Through Technology	11
Using Internet	27
Face to Face And Non-Face to Face (Online)	61
Other	33

Some participants state that Blended Learning is learning through technology. Around 11 participants are of the opinion that Blended Learning is learning through technology. Respondent 1 believes Blended Learning is: "*Learning through technology instruments like ICT, mobile etc. This purpose to make the learning sessions easier and more efficient*". Likewise, respondent 49 defines Blended Learning as "*Using all the technologies and theory to implement learning in well equip environment'.*

Some participants (27) define Blended Learning as "using internet". Accordingly, respondent 24 defines Blended Learning as "*Online learning. Students have their own time to study, submit assignments and complete other tasks. Lecturers giving instructions trough mail, lectures recorded in video or audio format. Discussions can be made with all people all over the world since it is done online*". Similarly, participant 84 believes "*Blended Learning is a formal education program which students learn through internet".*

Some participants (61) define Blended Learning as "Face to Face and Non-Face to Face (Online)". Participant 34 defines Blended Learning as "*Using the combination of 2 methodologies in learning; face-to-face learning and online learning*". Likewise, participant 44 defines it as "*Blended Learning is mixing between face-to-face learning and online learning*". Similarly, participant 72 claims it "*Is a mixed method of learning where students will not only have to attend classes (face-to-face learning) but also be involved in online learning i.e. discussion, task etc.*" However, 33 respondents have other views of Blended Learning.

Overall, data shows that the majority of participants (61 respondents) define Blended Learning as "*Face to Face and Non-Face to Face (Online)".* This means that they are almost aware of Blended Learning.

Although a study by Chew (2012) demonstrated that students had different views of Blended Learning, in the current study, most of the participants defined Blended Learning properly. This means that on the whole Malaysian teachers are aware of Blended Learning.

I: Respondent's Suggestions of f2f vs. Online

Table 3.9 shows respondents suggestion of f2f vs. online. Data shows that 28% participants are of the opinion that face-to-face and Blended Learning should comprise 50% of course delivery equally. Around 18.9 % believe that f2f should be 60% and online should make up for 40% of learning, whereas 9.1% state that it should be the other way round. About 14.4% hold the view that f2f should be 70% and online should be 30%, while 11.4% are of the view that it should be vice versa. Interestingly, 5.3% believe that the proportion should be f2f 80% vs. online 20%, while the same percentages believe that it should be the other way round. Likewise, 3.8% opine that the proportion should be f2f 90% vs. online 10%, while the same percentage view the vice versa. Therefore, as data shows, the majority of participants agree with the idea that Blended Learning should be a part of teaching and learning process. The finding of this study is consistent with past studies. In this vein, Aragon *et al.,* (2002) reported:

> *"It is interesting to note that, while there was a significant difference between the online and face-to-face students in terms of cognitive control functions, it seemed to have little impact on course performance. The significant results from the correlation analyses for the face-to-face students also serves to reaffirm what we know contributes to positive learning outcomes for students. As student participation increased and avoidance decreased, performance was shown to increase. Finding suggests that learners can be equally as successful in the online environment regardless of learning style."*

Table 3.9 Respondents Suggestion of f2f Vs. Online

If the faculty plans to implement Blended Learning, how much of face-to-face (f2f) vs. online do you prefer?		
Answer Options	**Response Percent**	**Response Count**
f2f 90 %: Online 10 %	3.8%	5
f2f 80 %: Online 20 %	5.3%	7
f2f 70 %: Online 30 %	14.4%	19
f2f 60 %: Online 40 %	18.9%	25
f2f 50 %: Online 50 %	28.0%	37
f2f 40 %: Online 60 %	9.1%	12
f2f 30 %: Online 70 %	11.4%	15
f2f 20 %: Online 80 %	5.3%	7
f2f 10 %: Online 90 %	3.8%	5
answered question		**132**
skipped question		**12**

This shows that learners with different learning styles can take advantage of Blended Learning.

Yang and Chuang (2013) conclude that in addition to fostering learning outcomes, Blended Learning approach also enables learners to do self-regular learning considerably. Learners may discover by themselves over their perplexities in order to make an in-depth learning. They also suggested that the best Blended Learning should be complementing the traditional face-to-face learning. Khoo *et al.,* (2012, p.127) reported:

> *"the use of different online tools was effective for engaging students and helped them develop critical insights into key course concepts. However, careful planning and reflection on different pedagogical approaches were needed so that student learning could be supported in meaningful and relevant ways".*

On the whole, an appropriate proportion of blending of online and traditional face-to-face learning can be productive for teaching and learning.

J: Content Format

Table 3.10 demonstrates the format of online materials based on participants' suggestions. Data shows that 73.5% of participants believe that the material should be in the form of PowerPoint with video explanation, while 62.5% suggest PowerPoint with audio explanation. Around 56.8% are of the opinion that reading text be in PDF format. About 49.2% believe that text should be with video explanation. 48.5% suggest PowerPoint presentation only. A total of 47.7% recommend that it should be Animated PowerPoint (e.g. Flipped PowerPoint). Around 39.4% hold the view that Text should be with Audio (Notes with audio explanation). A total of 31.8% believe that it should be Animated Text (e.g. Flipped Notes/ Articles). About 45.5 % are of the view that there should be Video Only (Video recording of teaching content). A total of 23.5% prefer Audio Only (Audio recording of teaching content).

Table 3.10 Content Format

If the faculty plans to implement Blended Learning, what format? Do you prefer the teaching content to be made available online? (you may chose more than 1 answer)		
Answer Options	**Response Percent**	**Response Count**
Reading Text Only (e.g. PDF)	56.8%	75
PowerPoint Presentation Only	48.5%	64
Audio Only (Audio recording of teaching content)	23.5%	31
Video Only (Video recording of teaching content)	45.5%	60
PowerPoint with Audio (PowerPoint with audio explanation)	62.9%	83
PowerPoint with Video (PowerPoint with video explanation)	73.5%	97
Animated PowerPoint (e.g. Flipped PowerPoint)	47.7%	63
Animated Text (e.g. Flipped Notes/ Articles)	31.8%	42
Text with Audio (Notes with audio explanation)	39.4%	52

Text with Video (Notes with video explanation)	49.2%	65
Other (please specify)	6.1%	8
answered question		**132**
skipped question		**12**

Therefore, as data shows, most of them (73.5%) suggest that the material should be in the form of PowerPoint with video explanation, while only 23.5% opine that the material be only in audio format. This means that learners are mostly interested in variety in terms of material formats.

The qualitative data also shows that online material should be of different formats. For example, participant 1 claims: "*it can be anything with valuable information*". Similarly, participant 2 states: *"I would prefer any type of information as long as I can access".*

Thus, a teacher/ lecturer should exploit various material formats to motivate the students in Blended Learning classroom.

K: Course tasks/ assignments/ project papers submission method

Table 3.11 demonstrates the submission methods based on students suggestions. Data reveals that 50% of participants believe that they like to submit by hand/ postal or online, while 47.7% are of the view that they like to submit online only. Analysis discloses that only 2.3% participants believe that they like to Submit by hand/ postal only. A study by Fish (2012) reported that students favor online homework regardless of the delivery method.

Table 3.11 Course Tasks/ Assignments/ Project Papers Submission Method

If the faculty plans to implement Blended Learning, how would you prefer to submit the course tasks/ assignments/ project papers?		
Answer Options	**Response Percent**	**Response Count**
Submit by hand/ postal only	2.3%	3
Submit online only	47.7%	63
Submit by hand/ postal OR online	50.0%	66
answered question		**132**
skipped question		**12**

Since nowadays the use of internet is prevailing, the submission of course assignment would be more efficient for both lectures/ teacher and students.

L: Frequency of f2f Meeting with the Course Instructor/ Lecturer

Table 3.12 Frequency of f2f Meeting with the course Instructor/ Lecturer

If the faculty plans to implement Blended Learning, how often do you prefer to meet face-to-face with the course instructor/ lecturer?		
Answer Options	**Response Percent**	**Response Count**
Once a week	15.2%	20
Once every two weeks	45.5%	60
Once every three weeks	12.9%	17
Once a month	22.7%	30
Once a semester	0.0%	0
Other (please specify)	3.8%	5
answered question		**132**
skipped question		**12**

Table 3.12 shows that 45.5% of respondent are of the opinion that they prefer to meet face-to-face with the course instructor/ lecturer once every two weeks, while 22.7% believe that they like to meet face-to-face with the course instructor once a month. Around 15.2% claim that they prefer to have a meeting once a week. About 12.9% state that they like to meet their instructor once every three weeks. A total of 3.8% have other views. Hence, data shows that most of participants prefer to meet their lecturer once every two weeks meaning that they are somehow ready for Blended Learning.

In addition, the obtained qualitative data shows that one respondent believes that "twice a week". Another respondent opines that it should be "when needed". Another respondent states that it should be "two times a week", respondent 4 claims that it should be 4-5 times per semester. Finally, respondent 5 concludes it should be "based on mutual needs".

Therefore, students are not required to attend the university campus often. This means that they can be ready for Blended Learning.

Implication of the Study

The data analysis shows that Malaysian trainee teachers have acceptable level of readiness in Blended Learning. However, although the equipment required for online and Blended Learning is available and learners exhibit that they are ready to adopt this approach, the practice of online and Blended Learning in Malaysia is not satisfactory. In this context, appropriate training on the usefulness and effectiveness of the technology can play an important role to concretize the adoption of Blended Learning among the lecturers/ teachers and students. Therefore, user training in Blended Learning could solidify the adoption of Blended Learning approach. Hence, the study implication is that different steps need to be taken by Ministry of Higher Education and stakeholders. To marry research findings and real classroom practice, teachers should be trained in the use of Blended Learning. Also, students should be encouraged to embrace this new approach.

Conclusion

This study focused on the Malaysian trainee teachers' readiness in the use of Blended Learning. To this end, a survey approach using questionnaire was employed. The study identified different Blended Learning readiness factors such as technology access, online skills and relationships, Motivation, Ability to use online audios/ videos, internet discussions, importance to success, Technology and ability, etc. The results show that Malaysian trainee teachers have the readiness to adopt the Blended Learning approach. Future study is recommended on the Blended Learning readiness of teachers of all states of Malaysia. In addition, studies on the impact of Blended Learning on students' achievement, motivation, discipline, etc. are suggested.

References

Aydın, C. H., & Tasci, D. (2005). Measuring readiness for e-learning: reflections from an emerging country. Educational Technology & Society, 8(4), 244-257.

Agboola, A. K. (2006). Assessing the Awareness and Perceptions of Academic Staff in Using E-learning Tools for Instructional Delivery in a Post-Secondary Institution: A Case Study. The Public Sector Innovation Journal, 11.

Aragon, S. R., Johnson, S. D., & Shaik, N. (2002). The influence of learning style preferences on student success in online versus face-to-face environments. *The American Journal of Distance Education*, 16(4), 227-243.

Bliuc, A. M., Ellis, R. A., Goodyear, P., & Piggott, L. (2011). A blended learning Approach to teaching foreign policy: Student experiences of learning through face-to-face and online discussion and their relationship to academic performance. *Computers & Education*, 56(3), 856-864.

Changiz, T., Haghani, F., & Nowroozi, N. (2013). Are postgraduate students in distance medical education program ready for e-learning? A survey in Iran. *Journal of Education and Health.*

Chew, E. (2012). A blended learning model in higher education: A comparative study of blended learning in UK and Malaysia.

Fish, L. A. (2012). A Comparison of Student Perceptions of Traditional versus Online Homework in an Introductory Operations Management Course. *Business Research Consortium of Western New York.*

Haron, H., Abbas, W. F., & Rahman, N. A. A. (2012). The Adoption of Blended Learning among Malaysian Academicians. Procedia-Social and Behavioral Sciences, 67, 175-181.

Jaryani, F., Sahibudin, S., Zamani, M., Masrom, M., Salehy, S., & Jamshidi, J. (2013). E-Learning effects on learning quality: A case study of Iranian students. *Journal of Administration and Development, Mahasarakham University*, 1(3), 16-27.

Khoo, E., Johnson, E., & Zahra, A. (2012). I learnt a whole lot more than churning out an essay: Using online tools to support critical collaborative inquiry in a blended learning environment.

Mathew, R. P. (2014). Developing an interdisciplinary synthetic model for the teaching of population education at the secondary level.

Plata, I. (2013). A Proposed Virtual Learning Environment (Vle) For Isabela State University (Isu). In *The second international conference on e-technologies and networks for development (ICeND2013*) (pp. 28-41). The Society of Digital Information and Wireless Communication.

Shea, P., & Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficacy, self-regulation, and the development of a communities of inquiry in online and blended learning environments. *Computers & Education*, 55(4), 1721-1731.

Shraim, K., & Khlaif, Z. (2010). Students' Readiness Towards E-learning: A case study of Virtual Classrooms for secondary education in Palestine. *In The 3rd Annual Forum on e-learning Excellence in the Middle East. Dubai (pp. 1-4).*

Shih, R. C. (2010). Blended learning using video-based blogs: Public speaking for English as a second language students. *Australasian Journal of Educational Technology*, 26(6), 883-897.

So, T., & Swatman, P. M. (2006). E-Learning readiness of Hong Kong teachers. *In Hong Kong IT in Education Conference (*pp. 6-8).

Tripathi, M., & Jeevan, V. K. J. (2010). e-Learning Library and Information Science: A Pragmatic View for India. *DESIDOC Journal of Library & Information Technology,* 30(5), 83-90.

Watkins, R., Leigh, D., & Triner, D. (2004). Assessing readiness for e-learning. *Performance Improvement Quarterly*, 17(4), 66-79.

Yang, Y. T. C., Chuang, Y. C., Li, L. Y., & Tseng, S. S. (2013). A blended learning environment for individualized English listening and speaking integrating critical thinking. Computers & Education, 63, 285-305.

Chapter

4

This page intentionally left blank



Chapter 4

Meaningful Blended Learning via iFolio@UKM*

Mohamed Amin Embi & Afendi Hamat

Universiti Kebangsaan Malaysia

Introduction

Many e-Learning initiatives nowadays do not produce promising results because they fail to provide learners with meaningful Blended Learning experiences within the e-Learning context. In this aspect, a nation-wide study on the implementation of e-Learning in Malaysian institutions of higher learning (Mohamed Amin Embi, 2011a/2011b) reveals that despite most higher education institutions (HEIs) having their own Learning Management Systems (LMSs), the common practice has been limited to uploading digital contents (e.g. lecture notes & supplementary course materials) into the central LMS for easy access and download by the students; leaving very little 'engaging' and 'meaningful' learning activities. For instance, the findings show that the main (97%) file formats provided by lecturers and downloaded by students were common file types such as pdf, ppt, doc, and xls. In addition, most students (85%) actually read course materials offline rather than online. In other words, the e-Learning environment available was not optimized to create meaningful Blended Learning experience for the learners (Mohamed Amin Embi *et al.*, 2012).

Recent research (e.g. Govindasamy, 2002; Woo & Reeves, 2007; Sun *et al.*, 2008) has indicated that meaningful e-Learning experiences can only be achieved if the e-Learning environment is designed to facilitate Blended Learning tasks/ activities that promote i) active, ii) authentic, iii) constructive, and iv) collaborative learning.

This chapter describes a UKM case study depicting a portfolio-based management system known as iFolio employed to promote meaningful Blended Learning experiences within an e-Learning environment. Before describing findings of the case study, this chapter describes briefly features essential to create meaningful Blended Learning within an e-Learning context.

Blended e-Learning Environment

In the past decade, the concept of e-Learning has gone through evolutionary changes. It has been defined differently by different people and organizations. Google alone provides more than 37 million Web pages for the search term 'definitions of e-Learning', while Kahiigi *et al.*, (2008) and Ellis *et al.*, (2009) claim that the term seems to be used in radically different ways by different people. However, according to Afendi Hamat and Mohamed Amin Embi (2009), most definitions of e-Learning share two common features. Firstly, it refers to the use of digital technology in the forms of computer and internet technology. Secondly, there is the assumption that there will be a spatial gap between the learners and teachers. This could be a difference in time or place, or both. In short, e-Learning can be viewed as the use of technology to deliver learning. Nonetheless, it is important to note that many e-Learning definitions are described not only based on the technology, but also on the paradigm of its use, like learning networks (Harasim, 2000), technology enhanced/ delivered learning (Mor & Winters, 2007) and Blended Learning (Garrison & Vaughan, 2008). E-Learning environment, on the other hand, is often referred to as a distinct, pedagogically meaningful and comprehensive asynchronous/ synchronous environment by which instructors and learners can contribute in the instructional and learning process at anywhere and anytime with no requirement of being physically together (Kuzu & Ceylan, 2010). In addition, an e-Learning environment is also sometimes referred to as a virtual learning environment (VLE) and a learning management system (LMS) (Weller, 2007). As mentioned earlier in Chapter 1, one of the most common definitions of Blended Learning recognizes a combination of physical (face-to-face) and e-Learning environments (online learning).

Meaningful Learning

Meaningful learning is the opposite of rote learning and refers to a learning way where the new knowledge is related with previous knowledge (Ausubel, 2000). According to Jonassen *et al.*, (1999; 2002), in order for meaningful learning to occur, the task or activity that students do should engage active, constructive, authentic, and collaborative activities. In other words, tasks that require active, constructive, collaborative and authentic learning will result in more meaningful learning. They add that technologies provide students the opportunities to engage in meaningful learning when they learn *with* the technology, not *from* it. In other words, students should use the technology to represent what they understand rather than memorizing what the instructors and textbooks tell them. Besides,

technologies afford rich and flexible media for representing what students understand and what they are learning. The question is how can students learn *with* technologies? Jonassen *et al.*, (1999, 2002) posit that learning technologies can be any environment that engages students in active, constructive, authentic and collaborative learning. They add that technologies should function as intellectual tool kits that enable learners to build more meaningful personal interpretation and representation of the world. Jonassen (2000) also suggests the following roles for technologies in supporting meaningful Blended Learning:

1. Tools to support knowledge construction.
2. Authentic context to support learning by doing.
3. Social mediums to support learning by conversing.
4. Intellectual partners to support learning by reflecting.

The UKM Case Study

This case study depicts a portfolio-based management system known as iFolio employed to promote meaningful Blended Learning experiences in an undergraduate course at UKM. It involves a group of 30 first year undergraduate students who completed the 14 weeks course in a Blended Learning mode. The main course contents were delivered via a weekly task-based online tutorial that the learners have to complete before they meet for the weekly two hour face-to-face (f2f) session. Before describing in detail how students are engaged in meaningful Blended Learning within the e-Learning environment, this chapter briefly describes iFolio and its features.

iFolio

iFolio is the acronym for integrated portfolio management system. It is designed to address the shortcomings of the current generation of Learning Management Systems (LMSs). It is a research-based and learning-driven integrated portfolio and learning management system with the focus on allowing effective and meaningful Blended Learning. Its primary advantage compared to other LMSs is that it achieves true integration of learning and teaching portfolios with the functions of an LMS. The philosophical approach in iFolio is to allow for true learning and a sense of ownership by both learners and instructors. This is in contrast to other LMSs that offer portfolios as mere 'plugins', often more as an afterthought rather than a pedagogical backbone. Typical LMSs in use at most universities in Malaysia also end up being used more as an online file repository rather than a learning system. iFolio, on the other hand, is designed to avoid such a possibility. It is made up of three seamlessly integrated electronic portfolios: the Learning Portfolio, the Teaching Portfolio and the Course Portfolio. Figure 4.1 illustrates the relationship between the three. However, in this chapter, only the Learning and the Course portfolios will be described.

Learning Portfolio

The Learning Portfolio is meant to allow a learner to add, edit and delete his or her portfolio 'pages' using the system. It is designed to assist a student in the process of documenting and reflecting the learning processes as well as the highlighting of a student's strong points for public viewers. The design objectives for the Learning Portfolio are as follows:

1. An avenue for students to document and reflect on the learning process within the e-Learning environment.
2. A place where there is a sense of ownership over the learning experience. An electronic portfolio that can be updated and maintained for a lifelong duration.
3. Easy online editing which includes embedding of Web 2.0 resources (e.g. YouTube & Slideshare) and linking to existing resources.

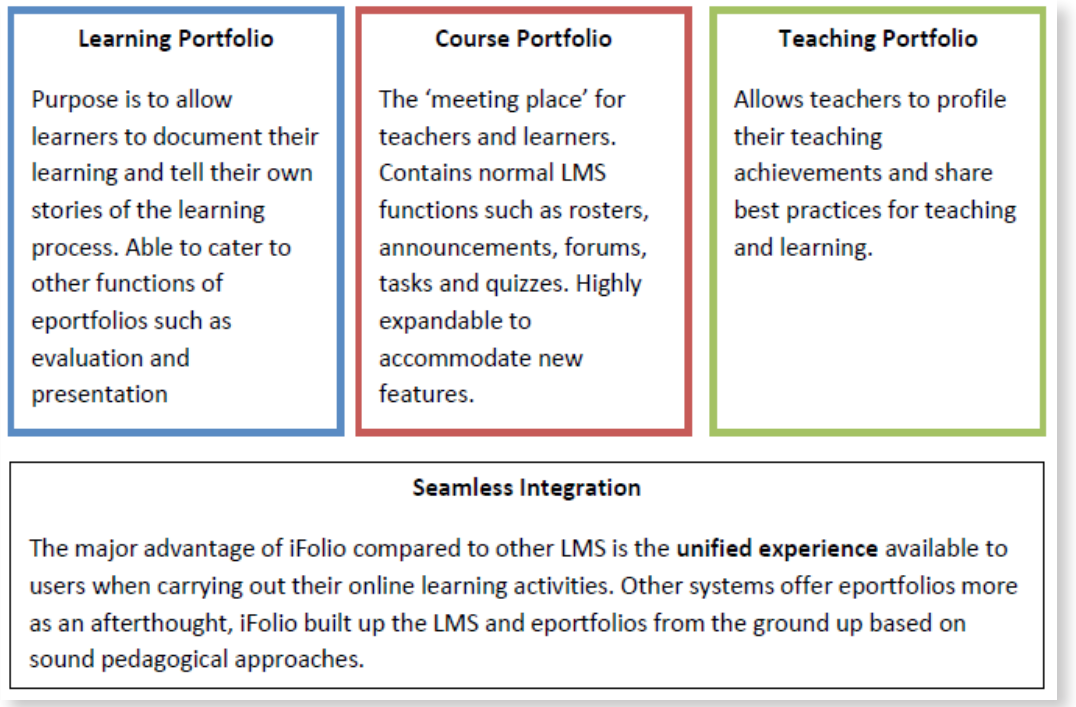


Figure 4.1: *iFolio Framework*

Course Portfolio

The Course Portfolio in iFolio is the learning management component where learners and instructors interact. It has the normal tools associated with an LMS like announcements, forums, quizzes and file manager. The list of tools is growing as it is designed to accommodate additional tools depending on the requirements. This modularity makes iFolio more flexible and powerful. A unique feature in the Course Portfolio is the 'Tasks' sub-module. It functions to help instructors manage

engaging and meaningful Blended Learning activities as well as interactions drawing its theoretical underpinnings from the Activity Theory (Halverson, 2002) and Constructivism (Jonassen, 2000; Ertmer & Newby, 2008).

Active Learning in iFolio

Jonassen *et al.*, (1999, 2002) postulate that meaningful learning requires learners who are actively engaged by a meaningful task in which they manipulate objects and parameters of the environment they are working in and observing the results of their manipulations. According to Bean (2011), active learning requires learners to do meaningful learning activities and think about what they are doing. Active learning is often contrasted to the traditional lecture where students passively receive information from the instructor (Prince, 2004). In iFolio, the task-based module allows instructors to create engaging activities that can promote meaningful Blended Learning. In this case study, the undergraduate students were required to complete the following tasks:

Task 1: Learners provide their own initial conception of the topic that they are going to learn after viewing an interactive PowerPoint (see Figure 4. 2).

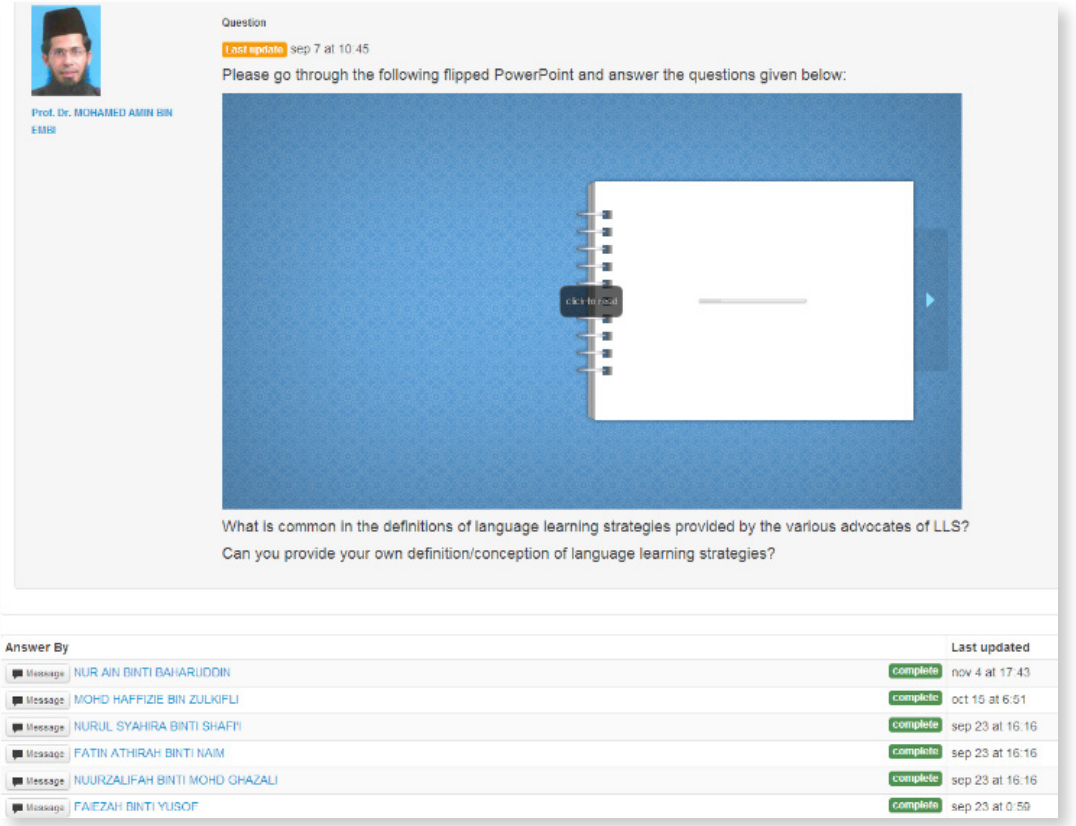


Figure 4.2: *Task 1*

Task 2: Learners create a five minutes video about themselves and describe the strategies they have utilized to learn English (which in itself is the overarching theme for this 'Learner Strategy' course) and post the video to YouTube. They then embed the video in iFolio for discussion during the f2f session (see Figure 4.3).

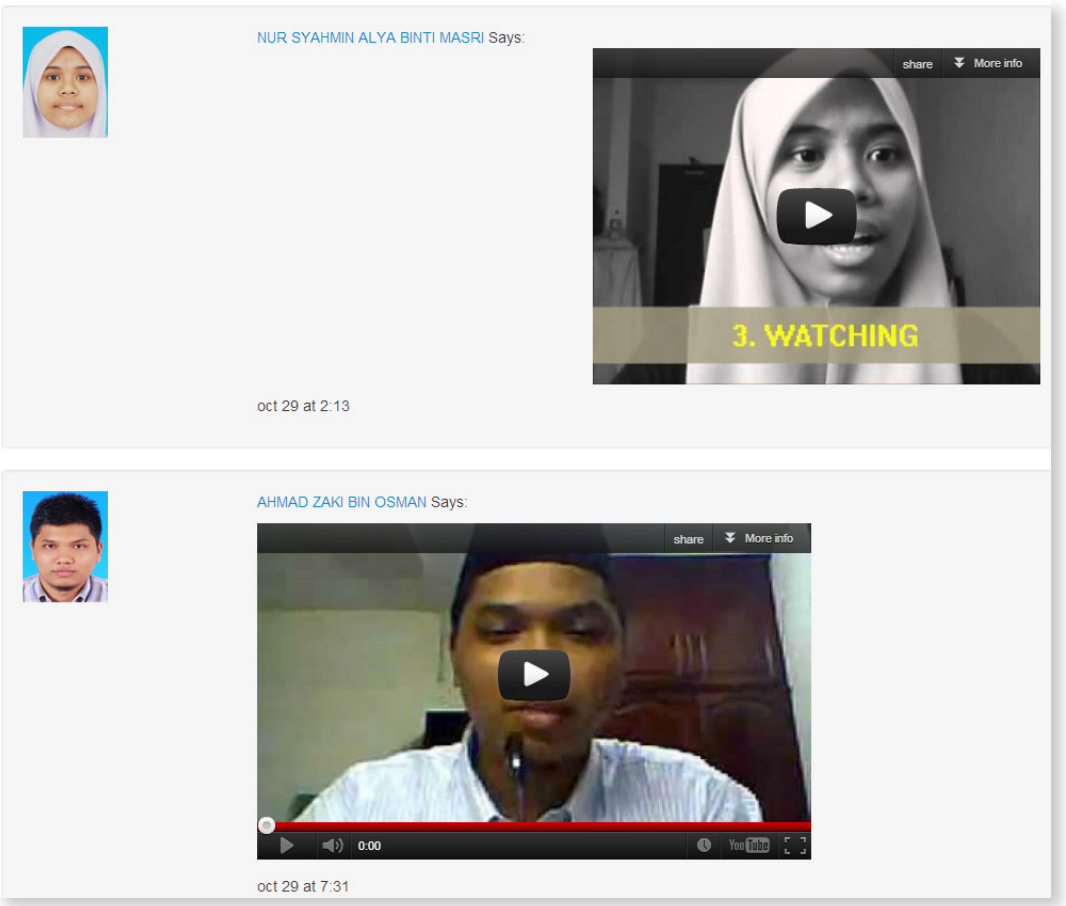


Figure 4.3: *Task 2*

Task 3: Learners provide some reflections by answering two questions related to YouTube videos and a site which is embedded in the task given to them.

Task 4: Learners provide a short summary after viewing interactive e-notes related to a particular learning topic.

Task 5: Learners (in groups) search for Web-based/ online materials related to the course and post selected ones (describing the value/ relevance of each material) in the form of sticky notes on an online digital board embedded in the task (see Figure 4.4).

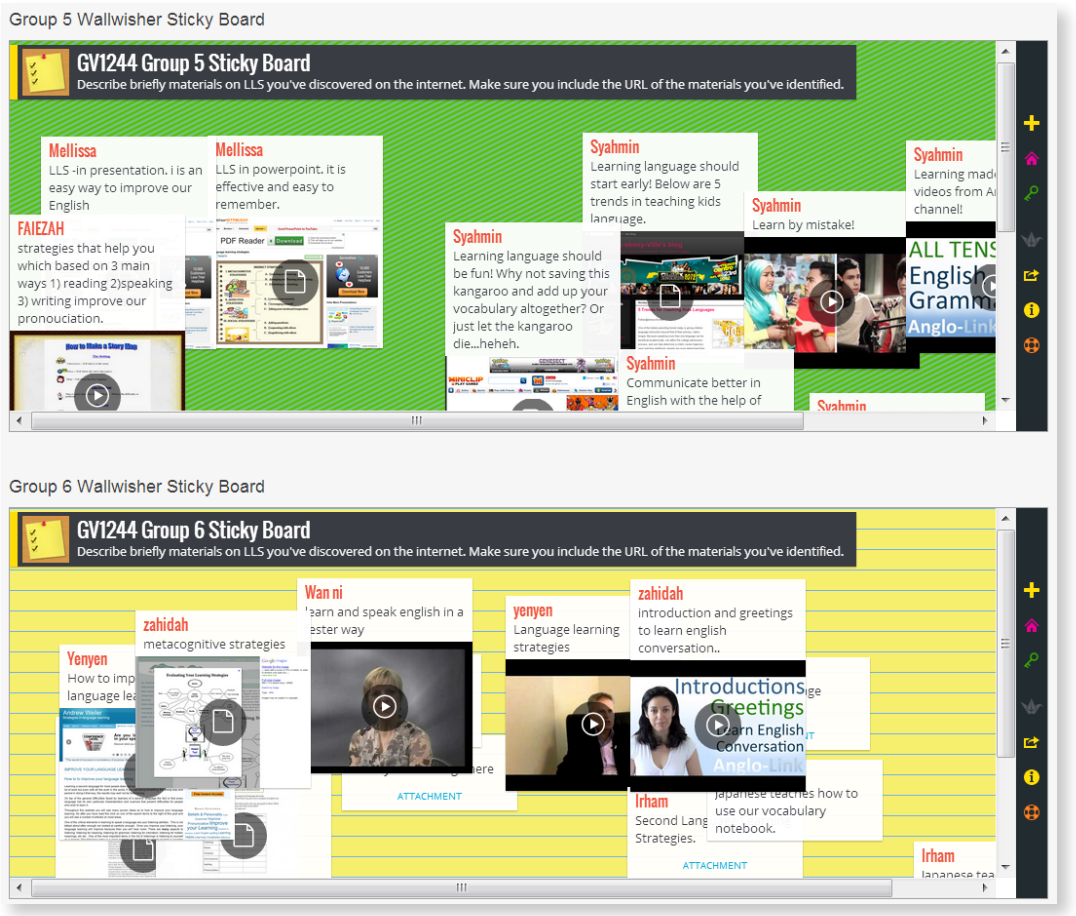


Figure 4.4: *Task 5*

Task 6: Learners are given a step-by-step guidance on how to identify prominent advocates of 'Learner Strategy'. They gather as much information about these advocates and create a brief biography of them in the form of an interactive flipped album. They embed this flipped album in iFolio for discussion during the f2f session (see Figure 4.5).

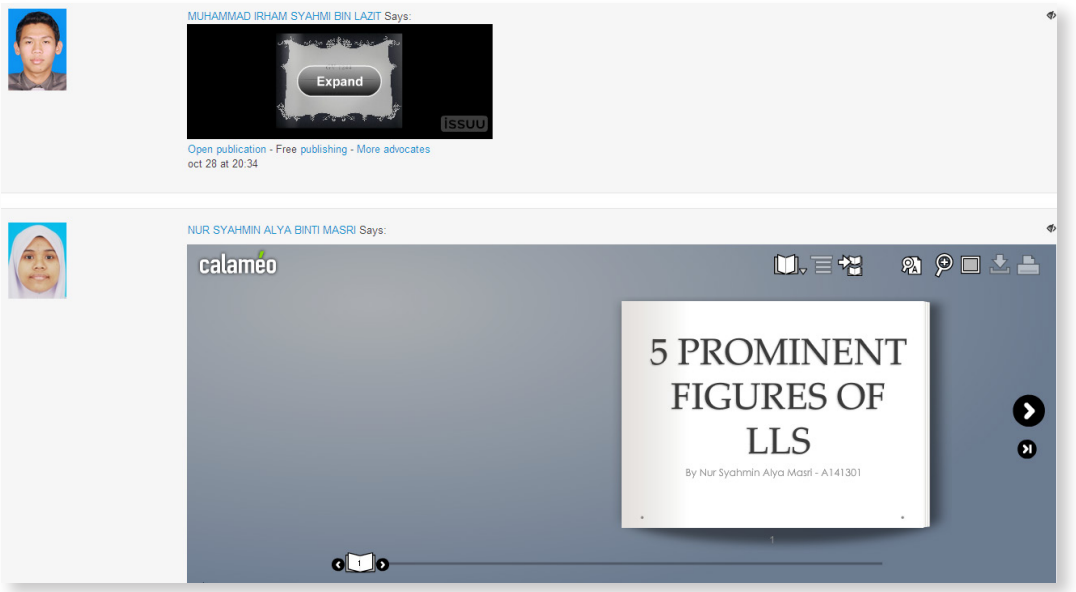


Figure 4.5: *Task 6*

Task 7: Learners create an online mind-map for a topic that they are learning. They then embed this online mind-map in iFolio for discussion during the f2f session (see Figure 4.6)

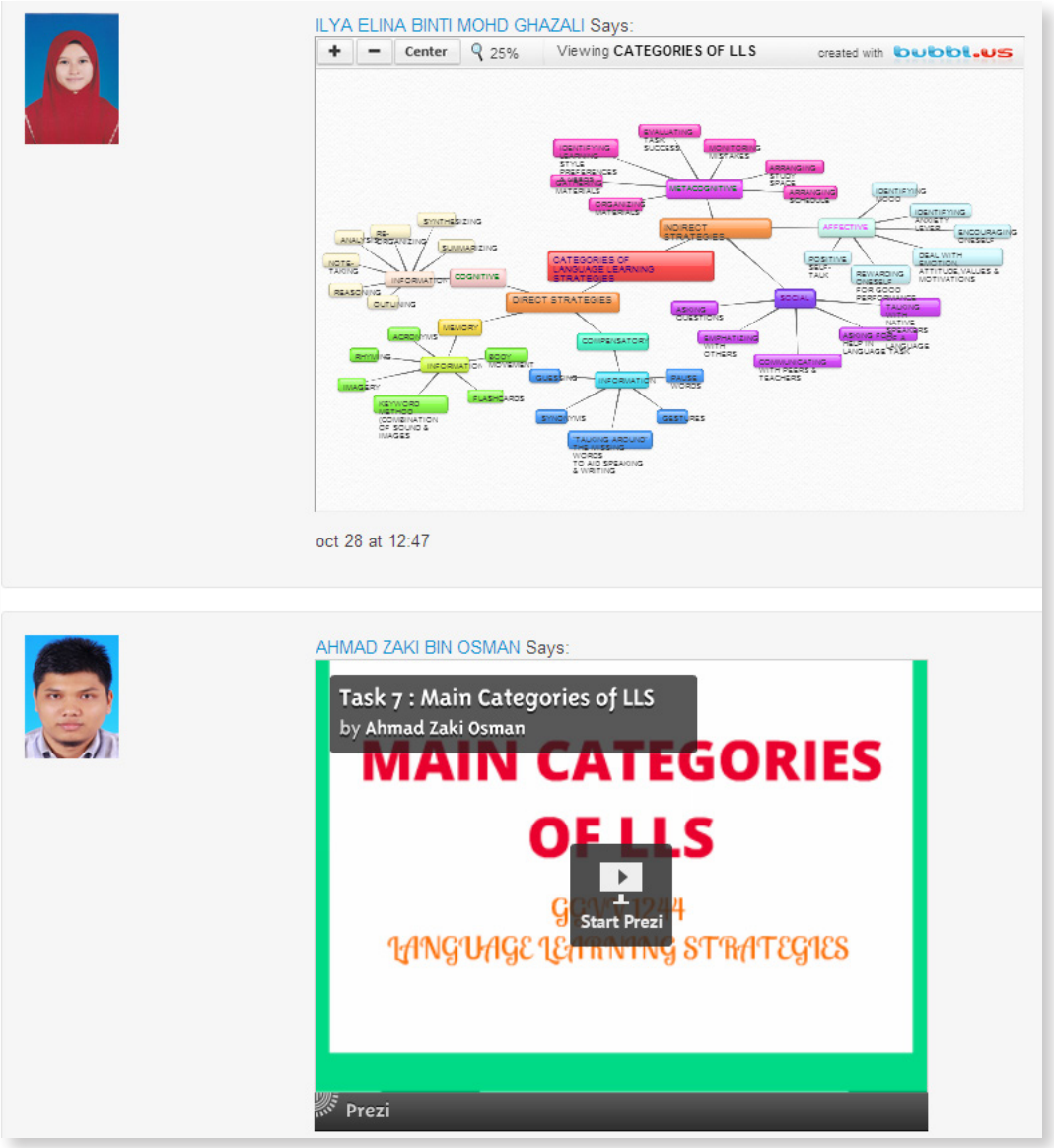


Figure 4.6: *Task 7*

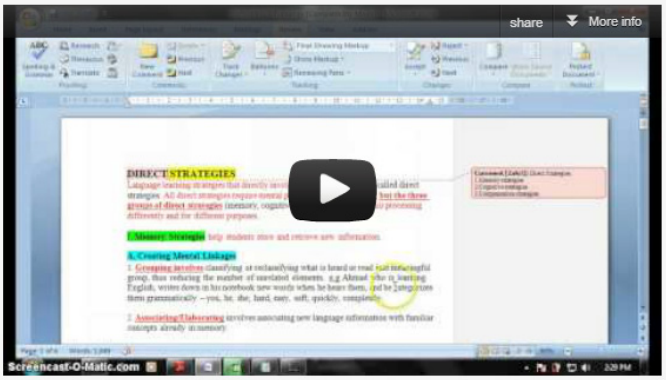
Task 8: Learners create a screencast explaining the strategy they utilized to understand/ memorize a particular topic. They embed this video in iFolio for discussion during the f2f session (see Figure 4.7).

Task 9: Learners (in groups) convince each other why their choice to complete a particular task is better than others via an asynchronous online tool embedded in the task (see Figure 4.8).



AHMAD ZAKI BIN OSMAN Says:

Task 8 : Understanding & Memorising Oxford's LLS Typology



nov 15 at 15:31



NURUL SYAHIRA BINTI SHAFI'I Says:

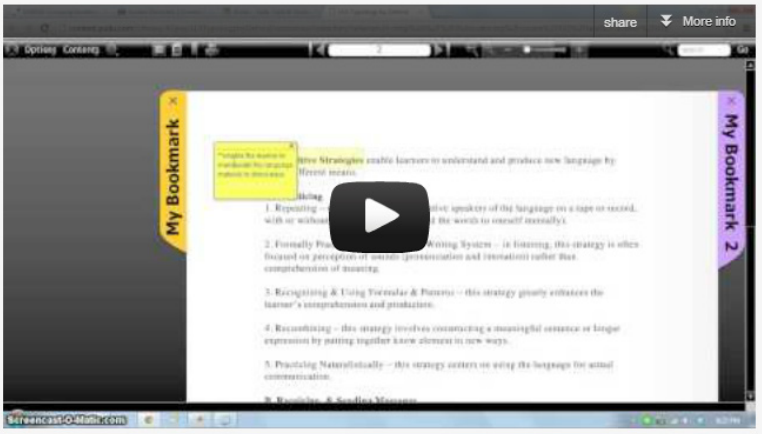


Figure 4.7: *Task 8*

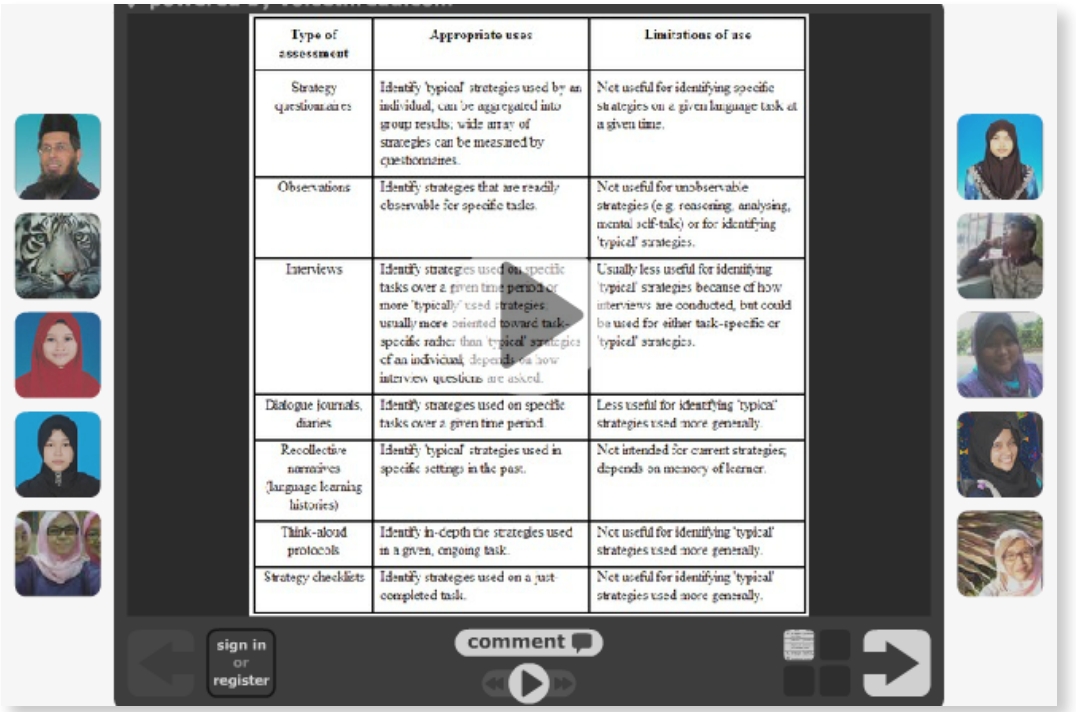


Figure 4.8: *Task 9*

Task 10: Learners create an online survey (see Figure 4.9) to collect authentic data on a particular topic. This online survey is embedded in iFolio for their peers to view and participate. The survey is also embedded in their preferred social networking sites so that they can collect authentic data from the public.

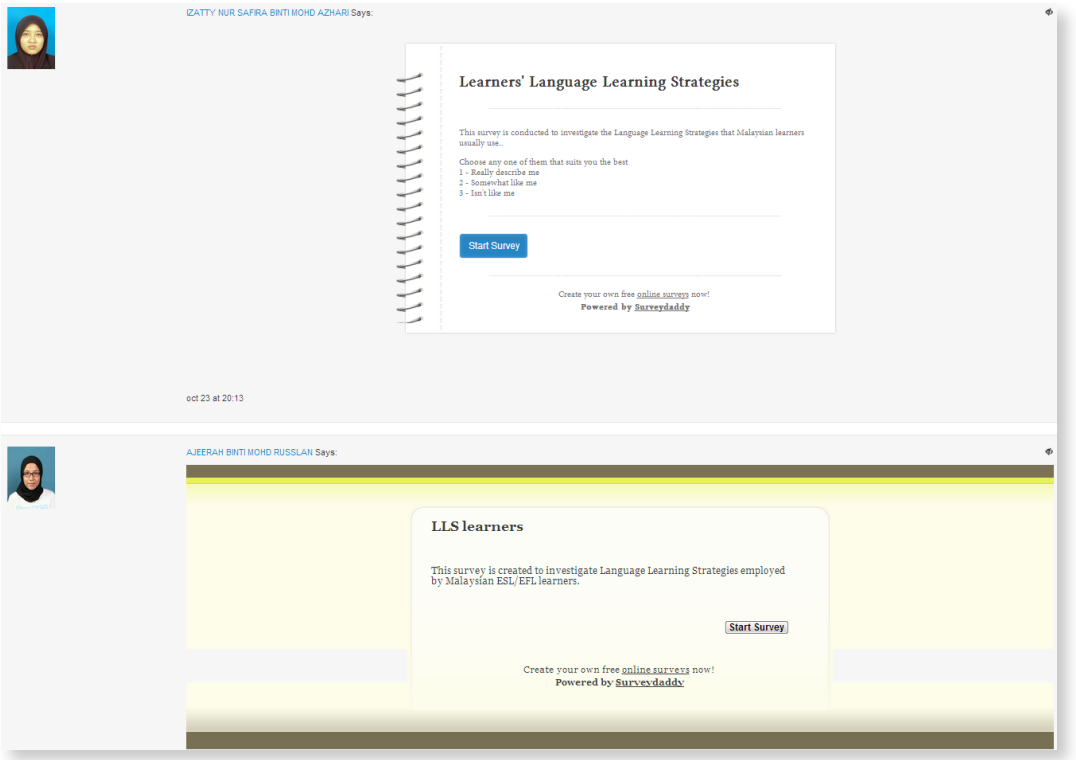


Figure 4.9: *Task 10*

Task 11: Learners search for some materials on the internet and present their findings/ summary in the form of a slide presentation that they post in slideshare.net. They then embed this online slide presentation in iFolio for presentation and feedback during the f2f session (see Figure 4.10).

Task 12: Learners provide initial interpretation of some raw data provided to them in the form of e-notes.

Task 13: Learners provide a possible interpretation of a pictorial quote posted in the task.

Task 14: Learners posed questions based on two sets of reading materials for a particular topic. Each student is required to post at least one question on the course online board embedded in the task (see Figure 4.11). Collectively, the students vote to prioritize the questions that should be dealt with during the f2f session.

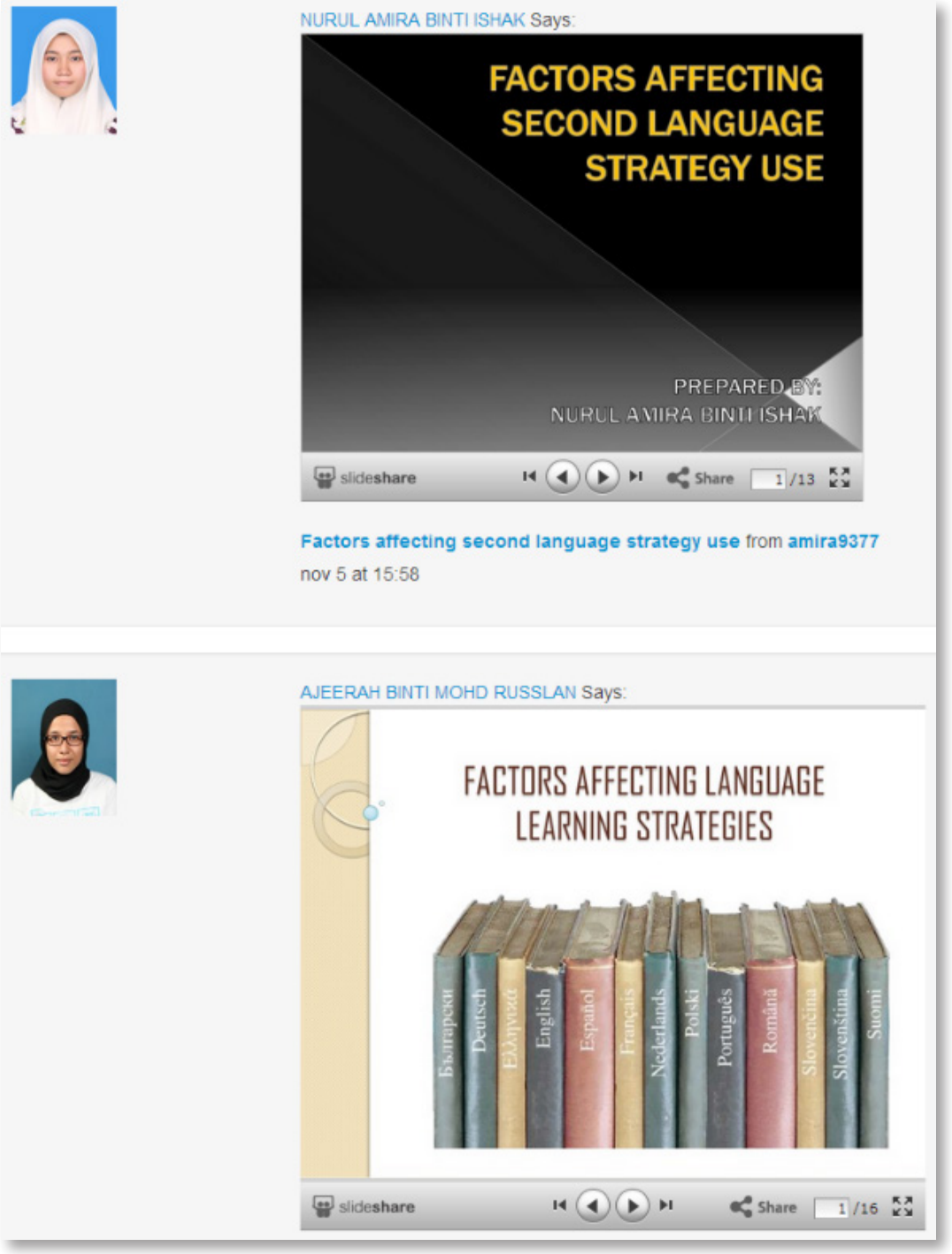


Figure 4.10: *Task 11*

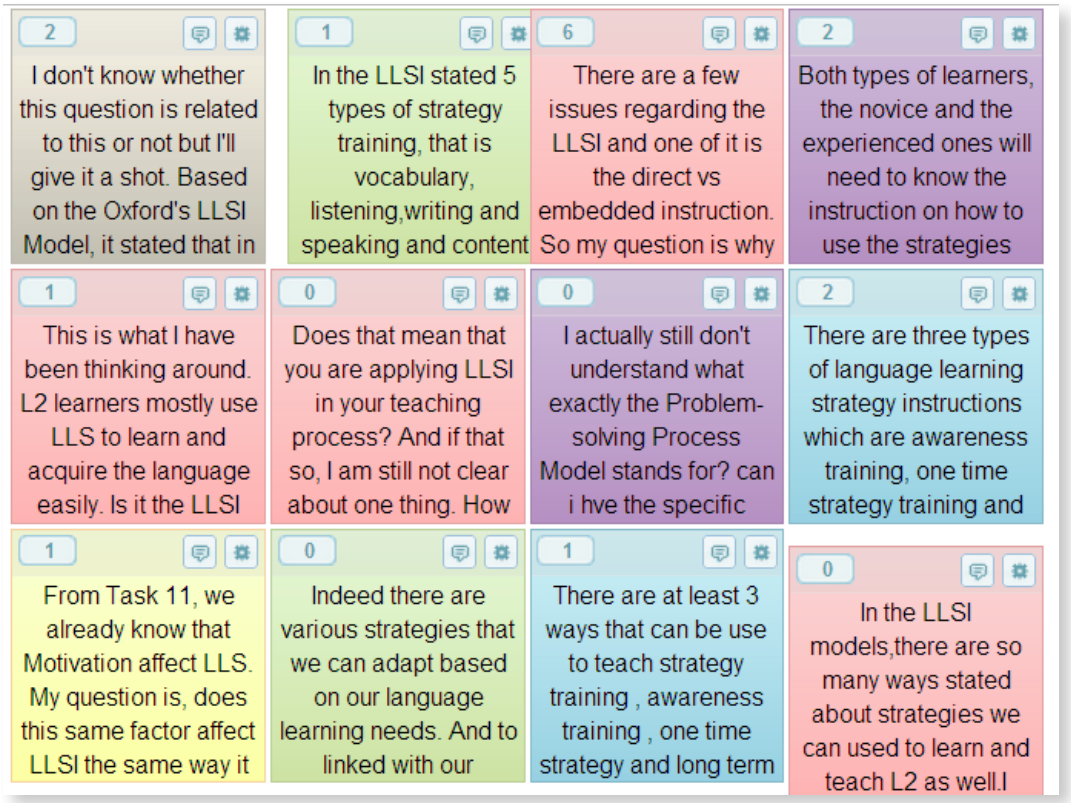


Figure 4.11: *Task 14*

In short, capitalizing on the e-Learning environment in iFolio, students are provided with the opportunities to engage in meaningful Blended Learning by learning *with* the technology. More specifically, Web 2.0 tools and social media are embedded within iFolio through its online editor (see Figure 4.12) to support knowledge construction. Among the tools that were embedded to engage the learning process include sharing tools (Mohamed Amin Embi, 2011c), collaborative tools (Mohamed Amin Embi, 2012a), survey/ polling tools (Mohamed Amin Embi, 2012b), research tools (Mohamed Amin Embi, 2012c), e-publishing tools (Mohamed Amin Embi, 2012d), content creation tools (Mohamed Amin Embi, 2012e) and mindmapping/ brainstorming tools (Mohamed Amin Embi, 2012f).

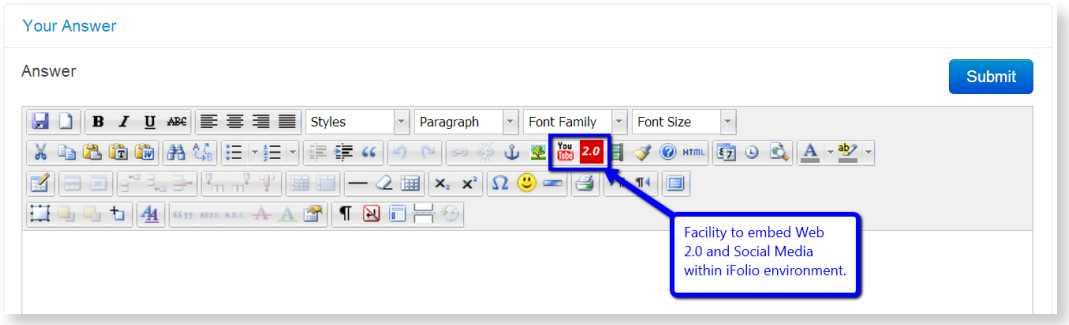


Figure 4.12: *An Online Editor with Web 2.0 Facilities*

Constructive Learning

For constructive learning to happen, it is essential that learners articulate what they have accomplished and reflect on their activity and observations. In iFolio, this is done by allowing the students to create their own individual Learning Portfolio (see Figure 4.13). In the Learning Portfolio, students can highlight output of selected tasks they have completed and provide initial reactions to the tasks given and reflect on what they have learnt as a result of completing the tasks (see Figure 4.14 & 4.15).

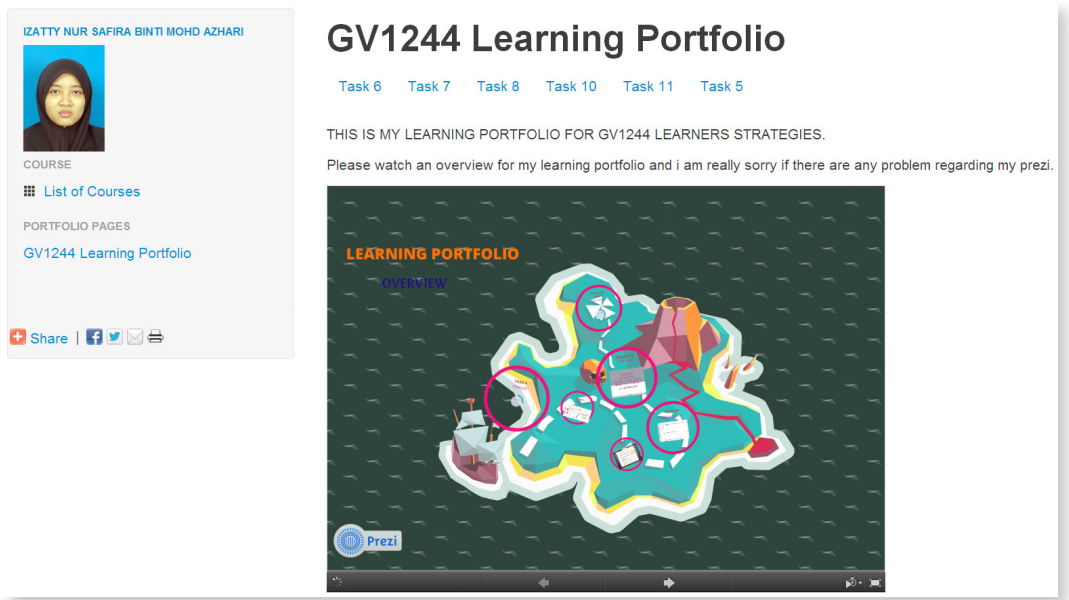


Figure 4.13: *An Example of a Learning Portfolio*

Initial Reaction

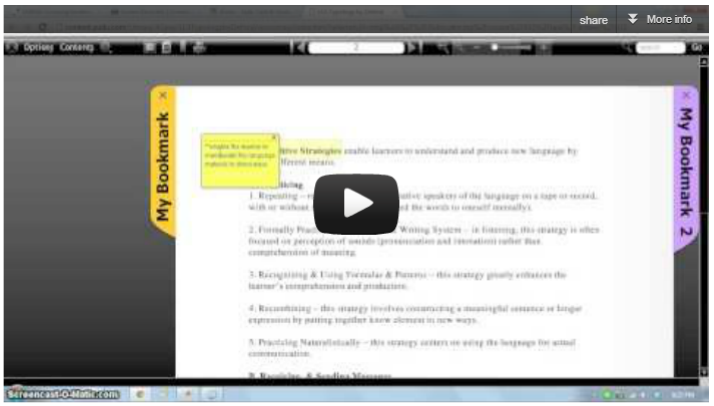
" oh,thats a lot of individual language learning strategies ! ".

" How am i going to memorize it ? "

Well, that was how my reactions when i first got this task. But then , when i try to understand the task requirement by going through the flipped note i realised that there are some ways thati can use to memorize it.

Therefore , i will share with you on how i understand and memorize Oxford's LLS typology.

The task



Reflection

After finished my Task 8 , i found that it was not really hard to understand and memorize what is Oxfrod's LLS typology. If the right way is used, then we can remember it well . I am pretty sure that everyone has got their own way to memorize it.

Apart from that , i also learned something new . I learned how to use **Screeen-cast-o-matic** to represent my way and how i can comunicate with another about it. Eventhough ,i felt a little bit awkward and somehow like " oh ,it is really troublesome to use this ."

Figure 4.14: *An Example of self-reflection*



Figure 4.15: *Another examples of self-reflections*

Authentic Learning

Most research (e.g. Jan *et al*., 2003; Tony & Jan, 2006) points to the fact that learning tasks that are situated in some meaningful real-world task or simulated in some case-based or problem-based learning environment are not only better understood and remembered but also more consistently transferred to new situation. Students' reflections in their Learning Portfolio show how some of tasks embedded in iFolio appear to prepare them for work-based situation. For example, in completing Task 2, S2 (students are numbered from S1 to S30) indicates that '*this task has indeed planted confidence and self-esteem within me which later on will play important roles in my teaching career*'. In addition, upon completing Task 10, he feels that '*It surely left a great impact on me as to think creatively and critically in choosing and developing my ideas (lesson plan) later on*'. S3, in completing Task 8 shares a similar view. According to her, '*From this task, we can practice as a teacher because we need to record our voice while we are showing the way to understand and memorize the notes given. We also can gain our self-confidence because we have to explain on the spot just like a teacher*'. Upon completing Task 6, S5 posits that '*As teacher-to-be, I hope I can apply the flipped album during my lesson so that my students will not get bored during class*'. According to S9, Task 11 *'gives me a lot of benefit to me as a future teacher on how to deal with many kinds of student and how to design appropriate materials for them'*. In fact, S11 is convinced that one of the Web tools she has learnt as a result of completing Task 7 *'is also very useful for me as I can use this as an instruction tool when I become a teacher*

one day'. Similarly, S13, upon completing Task 6, states that '*As a teacher-to-be, I can use this tool in my teaching process later because I am sure the students will feel bored with the same way of presenting teaching materials*'. She adds (upon completing Task 5) that '*I will definitely use this tool in my teaching later to share with my students related materials to the subjects because, nowadays, online materials are everywhere in the internet*'. Another student (S14, upon completing Task 6) feels that '*This task was meaningful to me because I can use this type of flipped album in the future when I become a teacher*'. On the same note, S15 (upon completing Task 10) realizes that '*The task opened up my mind because I can relate the topic to real life situations. Other people's opinions make me think from a different perspective. I also learn a new method that is very useful for me as a teacher-to-be*'. Interestingly, S16 believes that she '*can make use of this knowledge* [upon completing Task 10] *to pursue my studies in Masters and PhD in the future*'.

Collaborative Learning

Collaborative learning helps students achieve meaningful knowledge through shared goals and the mutual construction of new meaning (Palloff & Pratt, 2001). It is an effective method to equip learners with valuable social skills for the workplace. Jonassen *et al*., (1999, 2002) posit that collaboration often requires conversation among participants. Technologies can support this conversational process by connecting learners in the same classroom, or around the world. When learners become part of knowledge-building communities both in class and outside of school, they learn that there are multiple ways of viewing the world and multiple solutions to most of life's problem. In this case study, there were two collaborative tasks embedded within iFolio; namely, Task 5 and Task 9. S6, for example, appreciated the later task because *'we were given a chance to speak out our ideas and opinion. By sharing and exchanging ideas between group members, we can know what is the best way to investigate LLS*'. Similarly, S7 loves '*doing this task because as group members we can give our opinions and share our thoughts. We can have a two way discussion because we can see what others are thinking and we also can give our comments*'. For S10, the important thing is that '*We managed to exchange our opinions and we don't have to gather in one place to discuss about specific topics. We can do it at everywhere we want to*'. In a similar fashion, while completing Task 5, S14, posits that '*we are able to share about our findings with the others. In other words, we learn to share in an amazing and interesting way*'.

Meaning Blended Learning Experience within iFolio

Besides what has been described earlier, reflections gathered from the students' Learning Portfolios also indicate that the environment created within iFolio is meaningful to them because i) they generate new ideas, ii) it increases their motivation and self-confidence, and iii) it enhances their creative and critical thinking as displayed in Table 4.1:

Table 4.1 Blended Learning Experience

How was it meaningful?	Student	Task
Generate/ earn New Ideas		
• *I also find that by doing this task we can generate ideas and also think how to make the video more interesting.*	S1	2
• *Surely this task has broaden up my knowledge on implementing some new tools and to be able to think outside of the box in completing this task.*	S2	7
• *I learned something new and I started to use flipbooks to present my work.*	S8	6
• *Happy learning something new that is very useful.*	S18	6
• *I got to know what kind of learner I am. That makes me know more about myself.*	S18	7
• *This task is meaningful to me because I now know how to memorize something quickly and efficiently.*	S26	8
• *I really enjoy doing this task because I learn a lot of new things.*	S27	8
• *While doing this task, I have found a lot of useful information.*	S28	5
Increase Interest/ Motivation/ Confidence		
• *It also sparks my interest to become a vloger like Mat Luthfi and Anwar Hadi.*	S1	2
• *This task has indeed planted confidence and self-esteem within me.*	S2	2
• *The task itself has created a positive thought in me, being able to actually involved in this net discussion group,*	S2	5
• *The task is really meaningful to me because it helps me gain my confidence when speaking in English.*	S5	2
• *After doing this assignment, my confident level increased.*	S9	2
• *First, my confidence to record myself even though I was very shy to do it. This is a big step in improving my speaking skill.*	S13	2
• *The task was meaningful to me as I manage to build my self-confidence to create my first video.*	S14	2
• *My confidence level is up.*	S15	2
• *Video recording myself really boost my confident. By making a video, my fear of people watching is just not there because I cannot see who is watching my video, literally.*	S17	2
• *Well, I feel really motivated upon completing this task.*	S17	11
• *My self-confidence has increased slowly by listening to this video. It makes me believe that I can improve a lot.*	S18	2

• *Make learning process more interesting and lively.*	S18	6
• *I've learnt how to manage my confident level and try to talk and speak in English.*	S19	2
Enhance Creative/ Critical Thinking		
• *It surely left a great impact on me as to think creatively and critically in choosing and developing my ideas (lesson plan) later on.*	S2	10
• *This task has developed me to think creative and critically.*	S8	10
• *It taught me to be more and more creative in life and also preparation as a creative teacher-to-be for my students.*	S16	5
• *Doing this task has make me become more creative.*	S28	7

Conclusion

The implementation of an e-Learning environment that actually encourages and supports meaningful and successful Blended Learning represents a significant change of paradigm for e-Learning in Malaysia. The design model or previous generation Learning Management System is no longer sustainable as there is an urgent need to engage learners at deeper levels than what is afforded by those Learning Management Systems. Based on the results of the case study presented in this chapter, iFolio seems to be delivering on the ability to engage learners at much more meaningful levels through tasks/ activities that encourage active, constructive, authentic and collaborative Blended Learning. The integration inherent in the different portfolios within the system means that the learner experience is truly unified, and this advantage is reflected in the positive views of the learners as presented in the chapter.

*The earlier version of this article was presented at the 3rd International Conference on e-Learning and Distance Education, Riyadh, 2013.

References

Afendi Hamat, A. & Mohamed Amin Embi. (2009). *Course management systems: Research, design and development*. Shah Alam: Karisma Publication Sdn Bhd.

Ausubel, D.P. (2000). *The acquisition and retention of knowledge: A cognitive view*. New York: Kluwer Academic Publishers.

Bean, J.C. (2011). *Engaging ideas: The professor's guide to integrating writing, critical thinking & active learning in the classroom. San Francisco: Wiley & Sons, Inc.*

Ellis, R.A., Ginns, P., & Piggott, L. (2009). E-learning in higher education: Some key aspects and their relationship to approaches to study. *Higher Education Research & Development*, 28(3), 303- 311.

Ertmer, P.A. & Newby, T.J. (2008). Behaviourism, cgnitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quality*, 6(4), 50-72.

Garrison, D.R. & Vaughan, N.D. (2008). *Blended learning in higher education: Framework, principles & guidelines*. New York: John Wiley & Sons, Inc.

Govindasamy, T. (2002). Successful implementation of e-Learning: Pedagogical considerations. *The nternet & Higher Education*, 4, 287-299.

Halverson, C.A. (2002) Activity theory and distributed cognition: Or what does CSCW need to do with theories?. *Computer Supported Cooperative Work*, 1(2), 243-267.

Harasim, L. (2000). Shift happens: Online education as a new paradigm in learning. *The Internet & Higher Education,* 3(1), 41-61.

Jan, H., Ron, O., & Reeves, T.C. (2003). Patterns of engagements in authentic online learning environments. *Australian Journal of Educational Technology*, 19(1), 59-71.

Jonassen, D.H. (2000). *Computers as mind tools in schools: Engaging critical thinking*. Columbus, OH: Prentice Hall.

Jonassen, D.H., Howland, J.L., Moore, J. & Maara, R.M. (2002). *Learning to solve problems with technology: A constructive perspective. New York: Prentice Hall.*

Jonassen, D.H., Peck, K.L. & Wilson, B.G. (1999). *Learning with technology: A constructive perspective*. New Jersey: Prentice Hall.

Kahiigi, E.K., Ekenberg, L., Hansson, H., Tusubira, F.F., & Danielson, M. (2008). Exploring the e-learning state of the art. *The Electronic Journal of e-Learning*, 6(2), 77-88.

Kuzu, B. & Ceylon, B. (2010). Typographic properties of online learning environments for adults. *Procedia Social & Behavioral Sciences*, 9, 879-883.

Mohamed Amin Embi, Afendi Hamat, & Abdul Halim Sulaiman.(2012). The use of learning management systems among Malaysian university lecturers. *International Journal of Learning,* 18(4), 61-70.

Mohamed Amin Embi. (2011b). E-Learning in Malaysian institution of higher learning. Keynote *address presented at the International Lifelong Learning Conference (ICLLL*), *Kuala Lumpur, 14- 15 November 2011*.

Mohamed Amin Embi. (2011c). *Web 2.0 sharing tools: A quick guide*. Bangi: Centre for Academic Advancement.

Mohamed Amin Embi. (2012a). *Web 2.0 collaborative tools: A quick guide*. Bangi: Centre for Academic Advancement.

Mohamed Amin Embi. (2012b). *Web 2.0 survey & polling tools: A quick guide*. Bangi: Centre for Academic Advancement.

Mohamed Amin Embi. (2012c). *Web 2.0 research tools: A quick guide*. Bangi: Centre for Academic Advancement.

Mohamed Amin Embi. (2012d). *Web 2.0 e-publishing tools: A quick guide*. Bangi: Centre for Academic Advancement.

Mohamed Amin Embi. (2012e). *Web 2.0 content creation tools: A quick guide*. Bangi: Centre for Academic Advancement.

Mohamed Amin Embi. (2012f). *Web 2.0 mind mapping & brainstorming tools: A quick guide*. Bangi: Centre for Academic Advancement.

Mohamed Amin Embi. (Ed.) (2011a). *E-learning in Malaysian higher education institutions: Status, trends and challenges.* Selangor: Ministry of Higher Education Malaysia.

Mor, Y. & Winters, N. (2007). Design approaches in technology-enhanced learning. *Interactive Learning Environments,* 15(1), 61-75.

Palloff, R.M. & Pratt, K. (2001). *Lesson from the cyberspace classroom: The realities of online teaching. California: Jossey-Dass, Inc.*

Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education,* 93(3), 223-231.

Sun, P., Tsai, R.J, Finger, G., Chen, Y. & Yeh, D. (2008). *Computers & Education*, 50(4), 1183- 1202.

Tony, H. & Jan, H. (2006). *Authentic learning environment in higher education*. Hershey, PA: Information Science Publishing.

Weller, M. (2007). *Virtual learning environments: Using, choosing & developing your VLE*. London: Routledge.

Woo, Y. & Reeves, T.C. (2007). Meaningful interaction in a web-based learning: A social constructivist interpretation. *The Internet & Higher Education,* 10(1), 15-25.

Chapter

5

This page intentionally left blank



Chapter 5

A Qualitative Study of In-service Teachers' Blended Learning Experiences via Schoology

Lee Kean Wah, Tan Choon Keong, Ng Shi Ing, Yoon Sook Jhee & Denis Andrew L. Lajium

Universiti Malaysia Sabah

Introduction

In an effort to improve the status and the professional qualification of non-graduate primary school teachers, the Ministry of Education, Malaysia recently mandated a large scale change effort to upgrade non-graduate teachers to become graduate teachers via a series of in-service training courses. The majority of these teachers come from primary schools in Borneo which are usually beset with various shortcomings such as remote schools with limited/ without electricity, water and internet access. Faced with numerous challenges, the course conveners used a Blended Learning approach to reach out to these teachers. The Blended Learning approach consists a mixed of f2f lecture, tutorial and conferencing, supplemented with a mixed online and CALL-related activities such as online discussion board, forum, and quizzes. This study examines the learning experiences of the first cohort of TESL teachers (N=120) undergoing a TESL course, titled *TW10303 Teaching of Listening and Speaking Skills*. The main objectives of this article were to investigate (1) the extend to which the Blended Learning approach which combines the traditional classroom learning, tutorial with Web-based learning help the in-service teachers in learning the course, and (2) the affordances and contradictions brought about by the learning system viewed via the theoretical lens of Activity Theory. This chapter reports how this approach was adopted in teaching the course in a local university in East Malaysia.

The main reason behind the drive to use technology in the delivery of the course is prompted by the "challenging" in-service teachers' demography. The fact that this cohort of in-service teachers is "full time yet part time in-service teachers" necessitates a change in delivery where these teachers face logistical encumbrances for evening tutorials or weekend study. In addition, there is a drive for what is known as lifelong learning, whereby these in-service teachers are returning to institutions of higher education to take mandated degree courses whilst in full-time employment, some situated in remote schools.

What is Blended Learning?

Blended Learning is not a new phenomenon, particularly in the context of higher education. According to the Centre for Educational Research and Innovation, Blended Learning courses are becoming increasingly significant (CERI, 2005). According to Garrison and Kanuka (2004), Blended Learning is a combination of traditional face-to-face (f2f) classes with Web-based material. It describes a learning environment that either combines teaching methods, delivery methods, media formats or a mixture of all these. It also refers to the integrated learning activities such as a mixture of online and face-to-face learning (Moebs & Weibelzahl, 2006). Singh (2003) elaborated Blended Learning as a set of learning strategies or dimensions that mixes various event-based activities, including traditional instructor-led training, synchronous online conferencing or training and asynchronous self-paced study. Sharpe *et al.*, (2006) pointed out that the term Bl*ended Learning* is quite difficult to define; it can mean different things to different people, institutions, or organizations. Generally, the various meanings of Blended Learning can be summarized to three definitions as follows:

1. the integration of traditional learning with Web-based online approaches;
2. the combination of media and tools deployed in an e-Learning environment; and
3. the combination of a number of pedagogical approaches, irrespective of the learning technology used.

Based on the three common definitions, Blended Learning can be described as a hybrid learning model where more than one delivery mode is being used to optimize the learning outcomes. Blended Learning often brings together the best of traditional learning and e-Learning modes. Figure 5.1 constructs the spectrum of delivery mode in terms of time and space, and illustrates the relationship among traditional learning, e-Learning and Blended Learning. As shown in Figure 5.1, the one-place-same-time traditional face-to-face classroom teaching fits at one end of the spectrum of the learning delivery mode, then pure e-Learning fits on the other end. The traditional learning style offers the learner face-to-face contact and support, whereas e-Learning can be delivered anywhere, anytime (asynchronously), for example at the learner's home or workplace. Blended Learning overlaps with both ends of the spectrum and occupies a wide range in the middle.

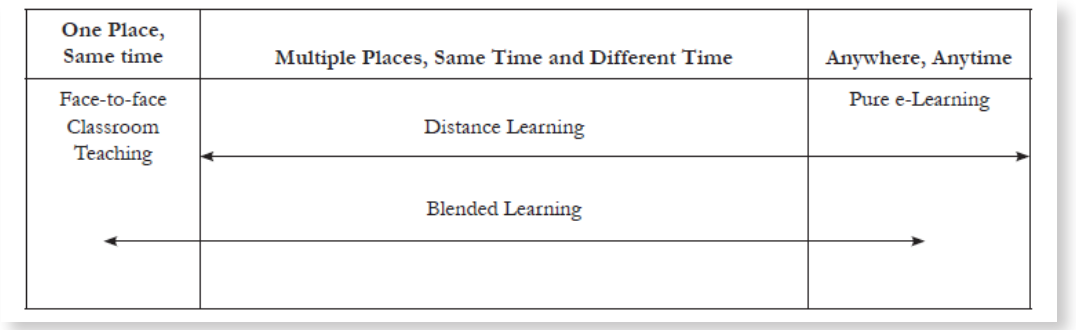


Figure 5.1: *Spectrum of Delivery Modes*

There are numerous claims being made about the positives of Blended Learning. Singh (2010) argues that Blended Learning resource provides greater opportunities to comprehend and extend the knowledge presented. In a study using Blended Learning with in-service teachers, Abraham (2007) stated that Blended Learning (i) provides in-service teachers with more control over learning; (ii) helps foster critical thinking; and (iii) effectiveness of online assessment. However, little research has been done into Blended Learning in undergraduate contexts, particularly with in-service teachers. Thus, far, published studies have tended to focus on the different methods of teaching and on the innovation introduced (Sharpe & Benfield, 2005), but not much serious attention has been given to students' experiences with this type of learning (Lim & Morris, 2009). The use of ICTs in higher education, particularly with in-service teachers requires an evaluation of the contribution of these tools to teachers' learning, especially when they are used as a complement to the more conventional f2f methods (Ginns & Ellis, 2009).

Therefore, the main objectives of the study were to examine the in-service teachers' experiences of the Blended Learning process. We sought to examine two aspects concerning their perceptions:

1. the perceived benefits gained participating in the Blended Learning learning environment and,
2. the challenges faced in learning how to learn in a blended environment.

It is hoped findings obtained will help throw more light into what works and what does not work in a Blended Learning environment in order to better understand the affordances and challenges faced in the introduction of the Blended Learning environment. Findings obtained from this study not only provide useful feedback regarding students' learning experience and course delivery, but also feed-forward to improving students' future learning and future course planning, implementation and evaluation.

The Module and the Medium

This study focused on a TESL course taught using the blended mode in Semester two of the B. Ed TESL program, currently being pursued by 120 in-service primary school English teachers at the University of Sabah, Malaysia. The course under investigation was among one of the 20 TESL courses offered over four-year duration, leading to a Bachelor degree in Teaching English as a Second Language (B. Ed. TESL). The majority of in-service teachers were between 33 and 43 years of age, coming from mostly remote primary schools in the state of Sabah. For the majority of the in-service teachers, this was their first experience in using an e-Learning platform, although most had previously informally used the web to gather information, or prepare coursework in schools or second-level education, prior to entering university.

The module was delivered by using a Blended Learning approach, supplementing 20 hours face-to-face intensive lectures and tutorials, with another 22 hours of e-Learning, which takes the form of online tasks such as discussion forum, printed modules of lecture notes and tutorial tasks, and interactive quizzes hosted on a social network-based tool called *Schoology,* shown in Figure 5.2.



Figure 5.2: *BL Materials used and hosted on Schoology*

Schoology amalgamates the main features of the well-known social networking site of Facebook with that of moodle-based learning management system (see Figure 5.3). Principally, Schoology consists two main contexts 1) interactive communication and 2) academic information exchange (Manning *et al.*, 2011). The facility for interactive communication permits teachers to create discussion questions, collaborative groups for assignments that allow some kind of dynamic interaction among the in-service teachers and their teachers. As for the second aspect of

academic information exchange, Schoology provides the in-service teachers the opportunity to access their grades, attendance records and teacher feedback on electronically-submitted assignments. In short, via Schoology, a range of different e-Learning tasks and assessments were included to complement the traditional intensive face-to-face meetings.

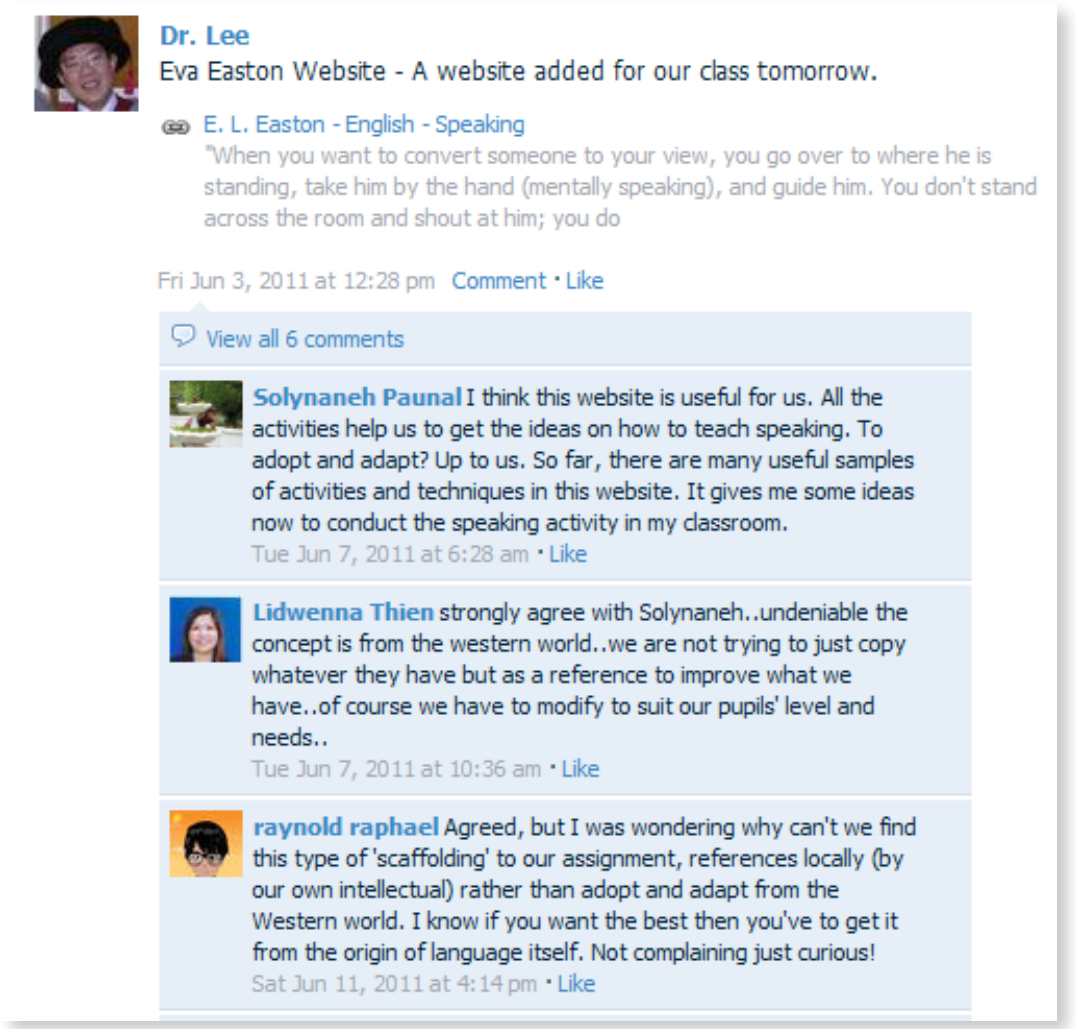


Figure 5.3: *Schoology combines LMS with Social network features*

Using Activity Theory and Blended Learning

Activity Theory (hereafter AT) has been used quite widely as a theoretical framework for the study of tensions and contradictions in an activity system. First developed by Leont'ev (1981), and realized as Cultural-Historical Activity Theory (Cole, 1996), it provides a tool for theoretical understanding of conflict, friction, contradictions and inconsistencies both between and within components of an activity system (Engeström, 1987, 1990; Blin & Munro, 2008). With regard to e-Learning, we are

aware of studies which have focused on the tensions arising from e-Learning implementations but without explicit reference to AT (e.g. Duffy & Kirkley, 2004). There has also been some speculation about the use of AT as a theoretical framework for e-Learning (Oliver *et al.*, 2007; Dyke *et al.*, 2007; Wold, 2011) as well as attempts to embed it in e-Learning tools (Joyes, 2006) but AT has not yet been systematically applied to the study of Blended Learning, with the exception of Wold (2011) who proposes the SEEP instructional design model for Blended Learning writing courses for English language learners (ELLs), and Gedera and Williams (2013) who examined contradictions in an online university course facilitated by moodle in New Zealand. Both studies by Wold (2011) as well as Gedera and Williams (2013) took place in the Western contexts, which socio-culturally is different from that of Malaysia.

In order to understand the in-service teachers' experiences of the Blended Learning courses, we adopted Engeström's (1987, 1990) cultural- historical activity theory that introduces six important dimensions, along with the dynamics among them: Subject, Object (the goal of the activity system), Norms, Division of Labour, Community and Instruments. Applying this framework to a university classroom in its day to day operations, we could assign the in-service teachers to the dimension 'Subject', the learning goals for the in-service teachers to the dimension 'Object', the implicit and explicit rules that structure social interaction to the dimension 'Norms', the prescribed roles of the lecturers and the in-service teachers to the dimension 'Division of Labour', the group of in-service teachers and their lecturers to the dimension 'Community' and different educational tools to the dimension 'Instruments'. AT is used as an investigative tool to analyze the Blended Learning environment in the form of tensions, frustrations, misunderstandings and miscommunication experienced by the teachers in undertaking the distance degree.

These contradictions may create conflicts, interruptions and misunderstandings. However, if they are resolved they can also be sources of change or development. Kuutti (1996) was attributed for coining the term, and he defines contradiction as a misfit within elements, between them, between different activities, or between different developmental phases of a single activity. Engeström (1987) proposed four levels of contradictions (1) primary, (2) secondary, (3) tertiary and (4) quaternary. Primary contradictions can occur within the elements of activity systems (e.g., within the community), while secondary contradictions may arise between the elements of an activity system (e.g. between the community & subject). Tertiary contradictions, on the other hand, arise when activity participants face situations where they have to use an advanced method to achieve an objective (e.g., when they are introduced to a new technology). Finally, quaternary contradictions occur between the central activity system and outside activity systems. In the context of our research, the contradictions that emerged within and between (primary and secondary) the elements of the activity system are illustrated in Figure 5.4. In other words, AT provides the researchers with a tool to analyze the opportunities afforded and the challenges faced in the introduction of the Blended Learning environment.

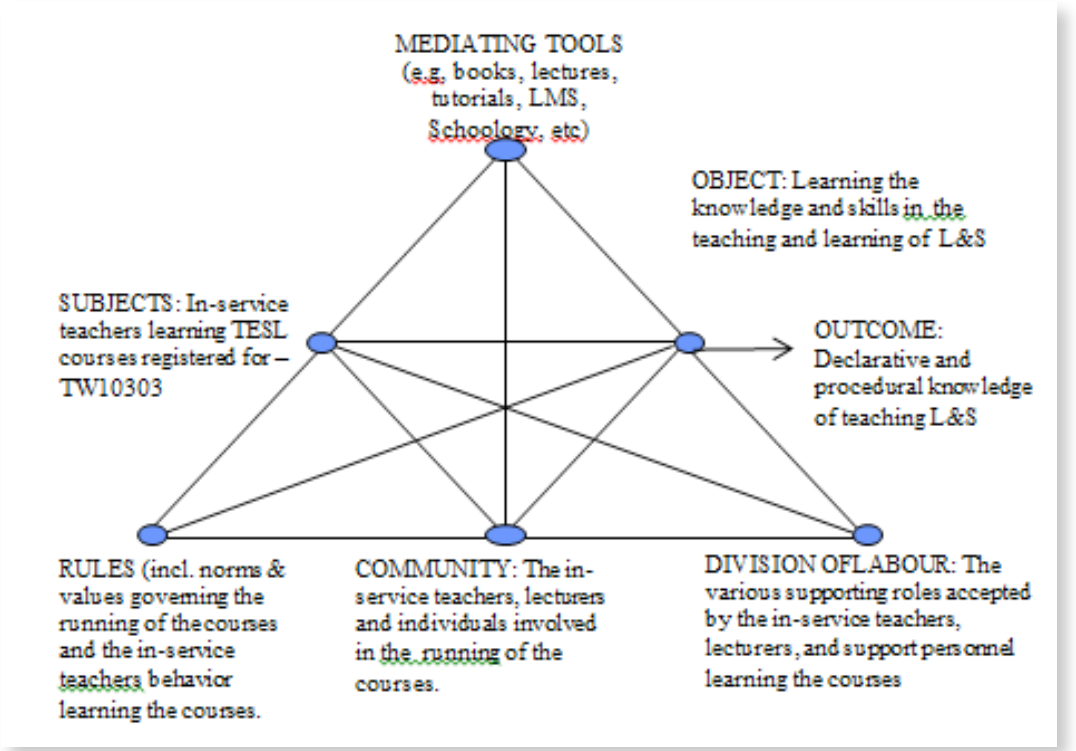


Figure 5.4: *Components of an Activity System*

In so far as the use of AT as a theoretical framework to study e-Learning or Blended Learning, its usage has not been that widespread. When it comes e-Learning, we are aware of studies which have focused on the tensions arising from e-Learning implementations but without explicit reference to AT (e.g. Duffy & Kirkley, 2004). There has also been some speculation about the use of AT as a theoretical framework for e-Learning (Oliver et al., 2007; Dyke et al., 2007) as well as attempts to embed it in e-Learning tools (Joyes, 2006) but to our knowledge, AT has not yet been systematically applied to the study of Blended Learning.

In order to understand the in-service teachers' experiences of the Blended Learning courses, we adopted the Engeström's (1987, 1990) cultural-historical activity theory that introduces six important dimensions, along with the dynamics among them: Subject, Object (the goal of the activity system), Norms, Division of Labour, Community and Instruments. Applying this framework to a university classroom in its day to day operation, we could assign the in-service teachers to the dimension 'Subject', the learning goals for the in-service teachers to the dimension 'Object', the implicit and explicit rules that structure social interaction to the dimension 'Norms', the prescribed roles of the lecturers and the in-service teachers to the dimension 'Division of Labour', the group of in-service teachers and their lecturers to the dimension 'Community' and different educational tools to the dimension 'Instruments'. Thus, in this study, AT is used as an investigative tool to analyse what

works and what does not in a Blended Learning environment, what factors affect the activity system, at what level and in relation to which factors. In short, AT provides the researchers with a tool to analyse the opportunities afforded and the challenges faced in the introduction of the Blended Learning environment.

Methods

To gain an appreciation of the in-service teachers' experience learning the course, *TW10303 Teaching of Listening and Speaking Skills,* with the Blended Learning environment, a qualitative approach was adopted. Two main methods were used, focus groups interviews and reflective journals. Both focus groups interviews and reflective journals helped gather the most relevant data of in-service teachers' experiences of the e-Learning process, as well as the challenges faced in learning how to learn in a blended environment.

Focus Groups

One of the primary aims of this research was to capture the *learner's* experience. Therefore, focus groups were selected as a mechanism to gather these stories and explicate the complexities involved in the learning system between the in-service teachers, the ICT tools and materials provided and the Blended Learning environment. Focus-group interviews were carried out with two groups of twelve and eleven in-service teachers respectively from each of the modules based on the following interview protocol:

Focus Group Interview

Purpose:

- To examine in-service teachers' concerns regarding the use of a Blended Learning approach in learning TESL academic courses using Activity Theory as a theoretical framework, the teachers were asked on the challenges faced and experiences gained under the Blended Learning environment. Their feedback was examined in the form of "tensions" and "opportunities" with the hope that further improvements could be made to the learning provision provided and shortcomings to be minimized.

Object

- Learning of the Course content/ Learning outcomes ***(the 'What')***
- Materials

Mediation tools

- The learning tools and learning environment provided (e.g. The Blended Learning environment – LMS, Schoology and the face-to-face meetings for lectures) ***(the 'How')***
- Schoology/ LMS as a learning medium?
- Any other preferences/ suggestions to enhance delivery?

Rules

- The "rules of engagement (requirements)" of the course (e.g. The number of times to meet f2f, frequency of participation in Schoology/ LMS, the learning module, tasks and assignments given; student-student and student-teacher engagement such as discussion and feedback sessions) ***(the 'When, and Where')***

Division of Labor

- Working individually/ collaboratively in doing tasks, assignments and assessments ***(with 'Whom')***

The focus groups were audiotaped and transcribed. Analysis of the focus group data elicited a variety of influence on in-service teachers' engagement with ICT for this module. These can be broadly grouped into individual factors, support factors, module, and course factors.

Reflective Journals

The reflective journals were used to help chart the in-service teachers learning of the course. As discussed in the earlier section, the main heuristic for the qualitative data was Activity Theory. Thus, in writing their reflections, participants were specifically asked to focus on the following dimensions, abstracted from theoretical lens of Activity theory, namely (a) Subject, i.e., in-service teachers learning the TESL courses; (b) Rules (When and where to learn?), i.e., the implicit and explicit rules that structure social interaction; (c) Object/ Outcome (What to learn?), i.e., learning of the course content, particularly the Learning outcomes (d) Division of Labour (Who does what to learn?), i.e., the prescribed roles of the lecturers and the in-service teachers; (e) Community, i.e., the in-service teachers, lecturers, and other stakeholders in the Blended Learning system; and (f) Mediation tools (How to learn?), i.e., the learning tools (e.g. the Blended Learning environment – Schoology, and the face-to-face meetings for lectures). In total, 60 reflective journals were returned and analyzed. Both the reflective journals and interview transcripts were then analyzed by comparing data with data to find similarities and differences of common ideas and beliefs and coded into themes.

Data Analysis

Qualitative data were thematically analysed and coded iteratively using Nvivo based on criteria of saliency and saturation (Lincoln & Guba, 1985). Credibility was addressed based on the techniques of prolonged engagement, triangulation, and referential adequacy (Lincoln & Guba, 1985). To ensure referential adequacy, attempts were made to capture and document the data in their original form. Verbatim quotes were used in some instances to give a flavor of the teachers' experiences in the Blended Learning environment.

Results and Discussion

What learning experiences supported or impeded teacher's learning using the Blended Learning approach?

The focus group interviews and reflections were thematically analyzed in an attempt to understand the Blended Learning experiences, viewed in terms of affordances and challenges faced. Analysis yielded ten categories, grouped under three dominant themes which are affordances, benefits and challenges as shown in Table 5.1 and Figure 5.5.

Table 5.1 Qualitative Data: Coded Themes and Categories

	Themes	Frequency	Categories	Frequency
1	Benefits	96	IT skills	60
			Pedagogical Skills	32
			Positive Attitudes	3
			Learning skill	1
2	Affordances	59	NF2F	21
			Working together	38
3	Challenges	43	F2F	25
			Internet connectivity	10
			Time	4
			Language barrier	4
	Total	198		198

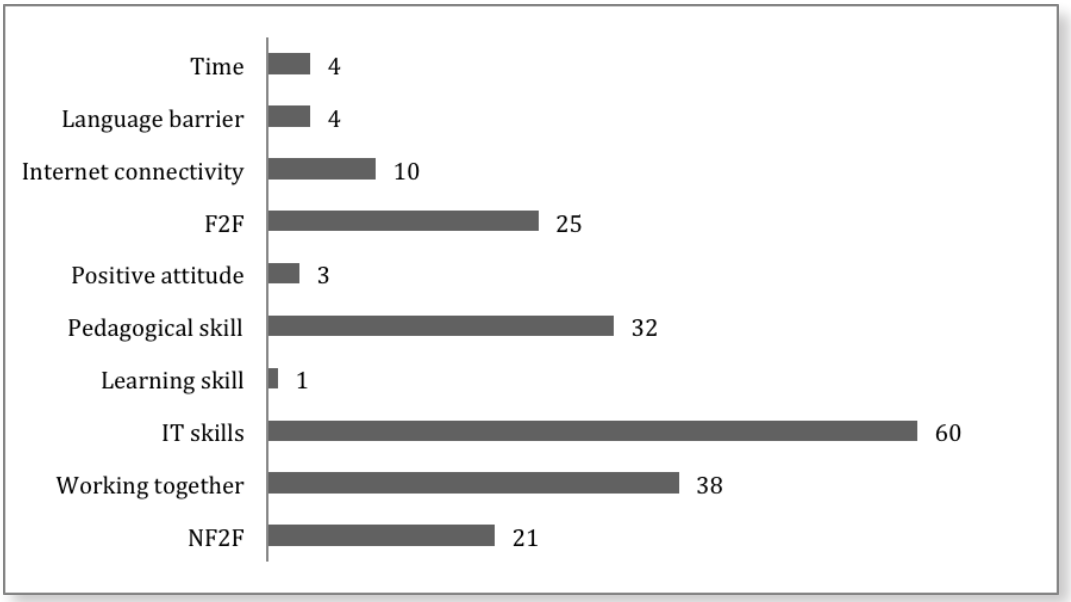


Figure 5.5: *Qualitative Findings Based On Thematic Analysis*

Benefits

The first theme generated is the factor of benefits. Benefits are defined as the advantages and positives derived from the learning outcomes of the TESL courses and the Blended Learning environment. Grouped under theme of benefits are the categories of (1) IT skills; (2) Pedagogical skills; (3) Learning skills; and (4) Positive attitudes. This theme recorded the highest number of counts, totalling 96 instances. It appears the course activities and the Blended Learning learning approach have improved the teachers IT skills and pedagogical skills significantly.

Besides that, a few teachers also claimed they have benefited in terms of learning skill and having a positive attitude towards learning. The majority of the teachers appear to acknowledge that the Blended Learning and the assignment given to produce digital storytelling materials for teaching Listening and speaking has improved their technological skills, which in turn also enhanced their pedagogical skills in their teaching and learning in the classrooms.

> *Three things that I benefited most from this course (sic). First the DST assignment is fantastic and it will really help me in my teaching in class. Second, I love the module. This is because the module not only helped me in preparing for my examination but also to critically reexamine how I teach phonics skills with my students. Third, I got many useful resources for my class through this course (S31).*

> *The learning content was really helpful and useful for me. I learned to integrate technology in my teaching materials such as creating our own DST and used it*

as one of my teaching resources in my classroom which it attracted my pupils' attention and they enjoyed it (S37).

Affordances

The second theme concerned the factor associated with affordances. An *affordance* is a quality of an object, or an environment, which allows an individual to perform an action (Wikipedia, free encyclopedia). In this study affordances are attributed to the unplanned outcomes that emerged from the Blended Learning environment. Grouped under the theme of affordances are the categories of (1) *Non-Face-to-face (Nf2f)*, which essentially concerns with the use of e-Learning/ mediating tools, and (2) *working together*, which relates to the teachers working collaboratively in learning and supporting one another. This theme recorded a frequency of 59 counts in total. Under the category of (1) Nf2f, the teachers used a variety of synchronous and asynchronous tools to get in touch with one another and to get access to the study materials, and to work together. It appears that e-Learning is used to help them to share knowledge or information, and to discuss and complete their assignments. Interestingly, the in-service teachers did not rely exclusively on Schoology, instead they also used other means of communication such as email, Facebook and SMS text messaging.

Schoology, and Facebook are the effective ways during Non-Face-to-Face (Nf2f) class. As myself, I can accept both learning tools (face-to-face and LMS) for this course (S08).

I don't face any problem with the Blended Learning- the f2f and schoology- it was a good medium of learning for long- distance students. The schoology, provide us a tools for discussion even when we were apart. During the f2f, more new things delivered for example the wikispace (S29).

In the case of category (2) working together, the nature of the distance education caused them to be creative to work collaboratively. As all of them are also full time teachers busy with school work and family commitment and teaching in different parts of Borneo, they learn to share ideas, knowledge, experiences and provided moral support to one another.

During the course, I also had the chance of working collaboratively doing tasks, assignments and assessments. Again, I think it was good not only because of the cooperation given by our group members but also I had the chance to learn more about how to use emails, facebook and schoology to discuss our assignments and pass materials to each other. Since we are in different districts, online collaboration was great for us. In other words the process of finishing our tasks and assignments were not just fun but highly informative but at times challenging in terms of connectivity (S15).

Challenges

The third theme inductively generated relates to the factor of challenges. Challenges in this study are deemed as learning experiences that impeded or were perceived as problems affecting the teachers' learning experiences. In terms of frequency count, this theme recorded the smallest number of counts, amounting to 43 instances. The four main categories making up this theme are (1) f2f, which relates to face-to-face lectures and/ or tutorials session (2) Internet connectivity; (3) Time; and (4) Language barrier. The f2f category is found to be particularly contradictory in nature. On the one hand, there are requests for more f2f sessions to support the teachers' learning, while there is another group who preferred to have fewer f2f sessions. A classic challenge was the Internet connectivity which seemed to have disrupted their collaboration and gaining access to the resources provided in the learning environment, in particular gaining access to Schoology. Language was also another factor which has dichotomous responses, whereby a large majority prefer to have English be completely used, and a smaller group suggesting a mixed-language approach, i.e., be allowed to code-switch between English to Malay and vice-versa wherever and whenever necessary.

> *It's important to have face-to-face with the lecturers and ask them directly our needs in our course and of course meet our friends around Sabah to discuss anything that is unclear (S01).*
>
> *UMS could use less the time for f2f during the holiday…I don't know about the others but, for me, this is precious time with my kids sob..sob.. (S22).*
>
> *I am learning more using Blended Learning using Schoology this semester. It is easier for students like me to get information about the courses. This is distance education but internet connection is very poor. It can be a problem, if I lose internet connection when I'm trying to submit or attend the quizzes given. This can affect to the results of the quizzes… so sad.... (R33).*

Findings thus far revealed that the teachers generally have positive perceptions of the blended course design. The impact of the blended course on the teachers' personal development, and in particular towards their 'academic maturity', also emanated strongly from the focus group discussions. In particular, two themes seem particularly dominant: (a) Blended Learning fosters self-reliance - much more time is spent on trying exercises independently before consulting; they learn to trust their own judgment more; and (b) Blended Learning approach helped them to become more independent learners, particularly in self-learning of the modules, and time management. However, there were also a number of drawbacks mentioned, in particular, poor internet connectivity, delayed feedback provided by tutors and peers in relation to online enquiries and task discussion.

Understanding Contradictions and Tensions Using Activity Theory

Based on the qualitative data analysed and presented, there are a number of contradictions and tensions exhibited. The findings revealed these contradictions occurred within and between the elements of activity systems in this context. These contradictions include issues related to willingness and attitudes towards learning the courses, Schoology and learning materials as tools, opinions related to 'teacher's presence' and collaboration (working together). This analysis revealed four main contradictions, mostly within the following components of the activity system.

Contradictions within the Mediating Tools Component

A first tension which emerged from the data set pertained to mediating tools, in particular those relating to issues of using Schoology and learning materials. The two courses used a mixed of printed teaching and learning materials (modules & hand-outs) and information and communication resources (Schoology – uploaded lecture notes, tutorial tasks, quizzes, you-tube videos & online forum) for the teaching and learning process. When the in-service teachers were asked about the efficacy of Schoology in supporting their learning, most expressed positive views and interest to learn via Schoology. Student 03 says,

> *Schoology is fun to use and it's just like Facebook. I don't have any problem navigating around. The learning resources are also easily obtainable with a click of a button.*

However, when it was pointed out that some of them had made minimal (or no) use of the learning resources provided, a number of the in-service teachers said that they did not mind having a lot of the resources available, but they felt that the materials provided were too extensive compared to other courses. As Student 09 remarks:

> *I feel I'm spending too much time on this course already! We also need to do another 5 courses, so it's a lot to try to cope.*

So, it appears that while in-service teachers did not object to the availability of material in terms of online resources, they were overwhelmed by the materials that had been uploaded.

Contradictions within the Object Component

The second tension concerned the 'object' of the Blended Learning system, i.e., acquiring the knowledge of teaching of listening and speaking and literature in primary schools via the Schoology LMS system and learning modules. Analysis of reflective journals yielded two dominant views regarding willingness and attitudes towards learning. The first concerned a group of learners who seem to want to learn as much as they can. To them, getting to study in the university is an opportunity not to be missed. They are keen to get a deeper understanding of the two courses and therefore were driven to learn the knowledge, and skills, and attitudes required

in the learning about the listening and speaking and literature courses. As Student 05 puts it,

> *I have waited a long time for this opportunity (to study in the university) so I'll try my best to learn the knowledge and skills given.*

Another student (Student 02) commented that

> *I checked out all the resources put up by the lecturers and my friends because I wanted to make sure I didn't miss out something important. They are all important to help me to understand the courses better and I visited most to see how they would help me with my assignment and exams.*

However, there was also another pertinent group of learners who seemed just happy to survive the courses, due to reasons of age, time and logistical constraints faced. Student 17 says

> *It's too much to study. I find there are too many resources used – the module, assignments, Schoology and online tutorials that I have to do. I'm not that young anymore and studying part time and travelling for hours to the university can be hard.*

From these contradictions, it appears that there are two different objectives of learning - one that favours learning as much as possible and another that favours just passing the course.

Contradictions within the Rules Component

The third tension which emerged refers to the rules for the Blended Learning approach. Firstly, the in-service teachers were encouraged (a) to study the printed materials provided in the module and (b) use the forum to pose questions and problems to the course instructor as well as discuss any issues which they deemed relevant. As in-service teachers reported in the interviews, visiting Schoology on a regular basis to keep up with the course developments posed an extra burden for them. Student 13 says,

> *We are not given a specific time for online discussion so sometimes we need to log on a number of times just to meet with the lecturer for online discussion. This can be a challenge as sometimes I cannot get connected because my place has no internet connectivity. Going to the town centre can be difficult if the weather is not good.*

As opposed to asking questions in class only, in-service teachers were provided with an opportunity to pose questions in between classes. However, only a few of questions were posted throughout the semester and these were basically about extending the deadlines. The in-service teachers reported that it was more practical to ask the lecturer than posting questions in the forum. Student 01 says,

In my opinion nothing can substitute f2f because with the lecturer present there is real-time communication. I don't have to wait for a while to get response. Plus getting the chance to see the lecturer in person is definitely more fun.

The issue of teacher's presence seems to be a tension which needs further examination and resolution. It supported the earlier qualitative findings where there was disagreement about how much f2f sessions should be provided.

Contradictions within the Division of Labour Component

Another noteworthy tension which emerged in the activity system was within the division of labour. As stated above, in-service teachers were required to work in small groups of 5-6 to design and develop two separate teaching and learning packages (consisting of lesson plans & materials) to teach the speaking or listening skills and the literature component. Collaboration on the project was compulsory and the main course deliverable was a group and not an individual one. Collaboration is highly valued in the course because 'working together collaboratively' is one of the affective domain objectives in the Programme Learning Outcomes (PLO). The joint creation of the teaching and learning package required a great deal of collaboration on the part of the in-service teachers. They need to divide up their work equitably and as such a lot of discussion and decisions had to be made.

In the case of task allocation, the lecturers did not interfere in the group formation and selection. It was done entirely by the students. It was observed that there were no clear criterion used informing groups, but most reported that group formation was done mostly on the basis of well-established social relations and locality. Student 02 says,

most of my team members are from the district of Tambunan (an interior district in Sabah). It's easier for us to gather together if needed to. However, we tend to FB one another first and if we can't solve the problem we will meet in one of our friends' house to discuss.

However, collaboration within groups was not always easy and smooth, especially when the group members were not close friends or were situated faraway from one another. Student 05 says,

it's not nice to say this but my group is not as collaborative as some other groups. Although we have 5 members in our group, mostly it is just the three of use making all the decisions and doing the work. The other two members seldom reply our texts or log on to FB for discussion. The excuses they always gave were there was no line and they staying too far away to meet.

Likewise, the issue of collaboration and student-sharing is another contradiction which requires further examination and resolution.

Conclusion

This study sets out to investigate two main issues; firstly to find out the extent to which the Blended Learning approach which combines the traditional classroom learning, tutorial with Web-based learning help the in-service teachers in learning the *TW10303 Teaching of Listening and Speaking Skills* course, and secondly to investigate and find out more about the learning experiences brought about by the Blended Learning system. In overall terms, the qualitative data revealed that the majority of the teachers had positive feelings and experiences of the blended course design and Schoology as a platform for learning. These findings seemed to support the positives elements posited by Singh (2010) that Blended Learning resource provides greater opportunities to comprehend and extend the knowledge presented. Findings also seem to support Abraham's (2007) study about Blended Learning benefiting in-service teachers with more control over learning and fostering critical thinking.

However, there are a number of areas of concern that need further attention and fine-tuning if these positive experiences are to be further enhanced, particularly the contradictions and tensions involving issues relating to 'teacher's presence' (how many f2f sessions needed) and Internet connectively. Gedera and Williams (2013) who examined contradictions in an LMS course in New Zealand found similar contradictions, i.e., problems in downloading materials and 'teacher's presence' may actually interrupt students to express their opinions. The use of Activity Theory helps us to understand that the Blended Learning environment is not a static system. Instead, it is dynamic and is always in a state of flux. To ensure effective learning, course convenors, education service providers and all stakeholders involved in the initiative have to continuously carry out monitoring and evaluation of the programme they are offering. Based on the findings presented, it appears that to optimise successful blending, efforts need to be expanded to understand the pedagogical attributes and affordances of new and emerging learning technologies, the most desirable aspects of face-to-face teaching and the ways in which these aspects can be appropriately integrated.

References

Abraham, A. (2007). Student centred teaching of accounting to engineering in-service teachers: Comparing blended learning with traditional approaches. *Proceedings of ASCILITE*. pp.1-9.

Blin, F. & Munro, M. (2008). Why hasn't technology disrupted academics' teaching practices? Understanding resistance to change through the lens of activity theory. *Computers & Education,* 50, 475–490.

Centre for Educational Research and Innovation (CERI). (2005). *E-learning in tertiary education: Where do we stand? Paris: OCDE Publishing.*

Cole, M. (1996). *Cultural psychology: a once and future discipline*. Cambridge, Massachusetts: The Belknap Press of Harvard University Press.

Duffy, T. M. & Kirkley, J. R. (2004). Learning theory and pedagogy applied in distance learning: The case of Cardean University. In T. M. Duffy & J. R. Kirkley (Eds.). *Learner-centered Theory and Practice in Distance Education: Cases from higher education* (pp.107–141).

Dyke, M., Conole, G., Ravenscroft, A. & de Freitas, S. (2007). Learning theory and its application to e- learning. In G. Conole & M. Oliver (Eds). *Contemporary perspectives in e-learning research: Themes, methods and impact on practice* (pp. 82–97). London: Routledge.

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research. Helsinki: Orienta-Konsultit.*

Engeström, Y. (1990). Activity theory and individual and social transformation. In Y. Engeström, R. Miettinen, & R. Punamaki, (Eds.), *Perspectives on activity theory* (pp. 19–38), Cambridge, MA: Cambridge University Press.

Garrison, D. R., & Kanuka, H. (2004). Blended learning: uncovering its transformative potential in higher education. *The Internet and Higher Education*, 7(2), 95–105.

Gedera, D. S. & Williams, P. J. (2013). Using Activity Theory to understand contradictions in an online university course facilitated by Moodle. *International Journal of Information Technology & Computer Science,* 10(1). 23-31.

Ginns, P., & Ellis, R. A. (2009). Evaluating the quality of e-learning at the degree level in the student experience of blended learning. *British Journal of Educational Technology,* 40(4), 652–663.

Joyes, G. (2006). An activity theory approach to the exploration of tutors' perceptions of effective online pedagogy. *Who's learning?,* 401–408.

Kuutti, K. (1996). Activity theory as a potential framework for human computer interaction research. In B. A. Nardi (Ed.). *Context and consciousness: Activity theory and human computer interaction* (pp. 17- 44. Cambridge: MIT press.

Leont'ev, A. (1981). *Problems of the development of mind*. Moscow: Progress.

Lim, D. H., & Morris, M. L. (2009). Learner and instructional factors influencing learning outcomes within a blended learning environment. *Educational Technology & Society*, 12(4), 282–293.

Lincoln, Y. S. & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, California: Sage Publications.

Maguire, C., & Zhang, J. (2006). Defining blended learning in the GDLN context. *Guide book on "Effective blended learning for development". Retrieved from http://www.jointokyo.org/files/cms/news/pdf/s3_blended_v6.pdf*

Manning, C, W. Brooks, V. Crotteau, A. Diedrich, J. Moser, and A. Zweifelhofer. (2011). Tech tools for teacher, by teacgers: Bridging teachers and in-service teachers. *Wisconsin English Journal,* 53(1), 24- 28.

Moebs, S. & Weibelzahl, S. (2006). *Towards a good mix in blended learning for small* and medium-sized enterprises –Outline of a Delphi Study. *Innovative Approaches for Learning and Knowledge Sharing, EC-TEL*, 10-17.

Oliver, M., Roberts, C., Beetham, H., Ingraham, B., Dyke, M. & Levy, P. (2007). Knowledge, society and perspectives on learning technology. In G. Conole & M. Oliver (Eds). *Contemporary perspectives in e-learning research: themes, methods and impact on practice(21-37)*. London: Routledge.

Sharpe, R., & Benfield, G. (2005). The student experience of e-learning in higher education: A review of the literature. *Brookes E-Journal of Learning and Teaching*, 1, 3. Retrieved from http://www.brookes.ac.uk/publications/bejlt/volume1issue3/academic/ sharpe_benfield.html.

Sharpe, R., Benfield, G. & Francis, R. (2006). Implementing a university e-learning strategy: Levers for change within academic schools. *ALT-J*. 14 (2), 135 -151.

Singh, H. (2003). Building effective blended learning program. *Educational Technology*, 43(6), 51-54.

Singh, T. (2010). Creating opportunities for students in large cohorts to reflect in and on practice: lessons learnt from a formative evaluation of students' experiences of a technology-enhanced blended learning design. *British Journal of Educational Technology*, 41(2), 271–286.

Wold, K. A. (2011). Blending theories for instructional design: Creating and Implementing the structure, environment, experience, and people (SEEP) model. *Computer Assisted Language Learning.* 24(4): 371– 382.

Chapter

6

This page intentionally left blank



Chapter 6

Regulating Learning through Linking, Flipping and Wrapping

Nor Aziah Alias, Johan Eddy Luaran & Ros Aizan Yahya

Universiti Teknology Mara

"When the winds of change blow, some people build walls,
and others build windmills"
- Chinese Proverb -

Introduction

We are windmill builders. Universiti Teknologi MARA (UiTM) academics in general, embrace technological change. The Vice Chancellor welcomes technology as one of the means to scaffold learning and to address nagging human resource and physical space issues. The uniqueness of the university is in its size and mission. A mega university with multiple campuses and seeking to educate the indigenous/ bumiputras sometime places UiTM in a bind and prone to problems regarding infrastructure and management of resources. There is no decrease in student intake but the infrastructural growth does not keep up. Space is scarce and priceless; thus warrants the use of online and virtual space to accommodate student learning. UiTM delved into online learning in 1998 with the first online flexible learning program in the country. We never look back. In 2005, the then Deputy Vice Chancellor of Academic launched the university virtual learning space or the i-Learn Learning Management System. Despite constraints in terms of finance and infrastructure, UiTM academics trudge on to capitalize on new technologies to help them impart knowledge in a meaningful and effective way. Blended Learning initiative started

in 2009 with several landmarks and pertinent changes have taken place since then. Even though the growth of e-Learning or Blended Learning has not been phenomenal, the effort has not receded. The steps taken by university administrators to ensure a steady progress in the Blended Learning program are shown in the diagram below.

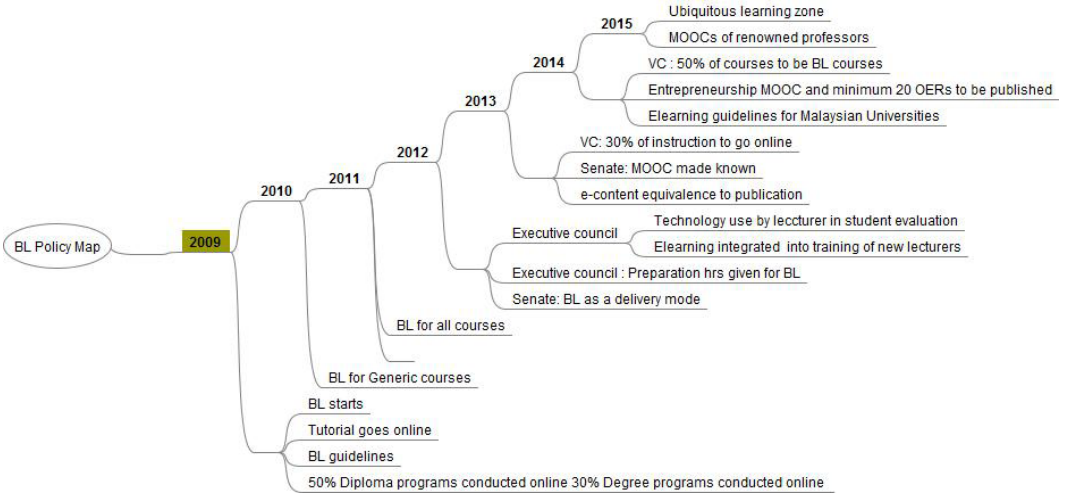


Diagram 6.1. Plans and Policies in place to support BL@UiTM

As illustrated in the diagram 6.1, proposals were presented to the university executive committee and senate for approval of various policies and programs. At this point in time (2014), UiTM is the only university that acknowledges the e-content equivalence to publication. The top management takes Blended Learning seriously, so much so interview topics raised in promotional exercises include Blended Learning.

In 2009, the first policy for the use of Blended Learning in UiTM came in place. Tutorials were initially conducted online in Blended Learning courses. University wide courses or generic courses in English, Islamic studies, Mathematics and many more were then targeted to go blended. E-content development projects were initiated to support the Blended Learning initiative. In 2013, the Vice Chancellor announced 30% of courses to be a mix of face-to-face and online teaching and learning. The percentage then increased to 50% in 2014. With such a stout champion and support from the highest level management, the Blended Learning initiatives were pushed to the masses with minimal resistance. Majority of the academic staff do not deny the advantage of the delivery mode but network speed and broadband access were very much the culprit. Those in branch campuses suffer excruciatingly slow network - this very much dampened the enthusiasm of many. Currently, the infrastructure is being upgraded and new measures are being taken to enhance the functionalities of the learning management system to cater for the needs of more adroit users who are owners of sophisticated devices capable of various tasks.

The i-Learn Learning Management System

For more than eight years, the users depend on the i-Learn LMS to manage their online learning and teaching, share contents and interact. One might think such an 'old LMS may be outdated and incapable of fulfilling the users' needs. However, the LMS has many functions that support online and pedagogically relevant activities (Wang, Woo, Quek, Yang & Liu, 2012). Figures 6.1, 6.2, 6.3 and 6.4 show the different functions including content upload, assignment/ assessment and forum discussion. These are the most utilized features of the LMS. Various forms of contents have been uploaded with a total of 187396 e-contents reported as of May 2014.



Figure 6.1: *Main content*

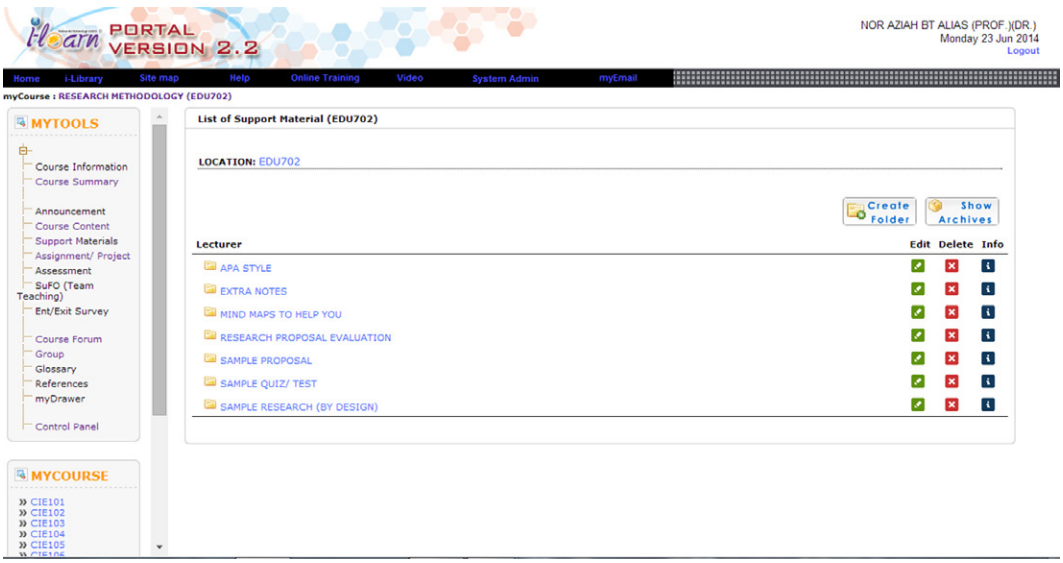


Figure 6.2: *Support materials*

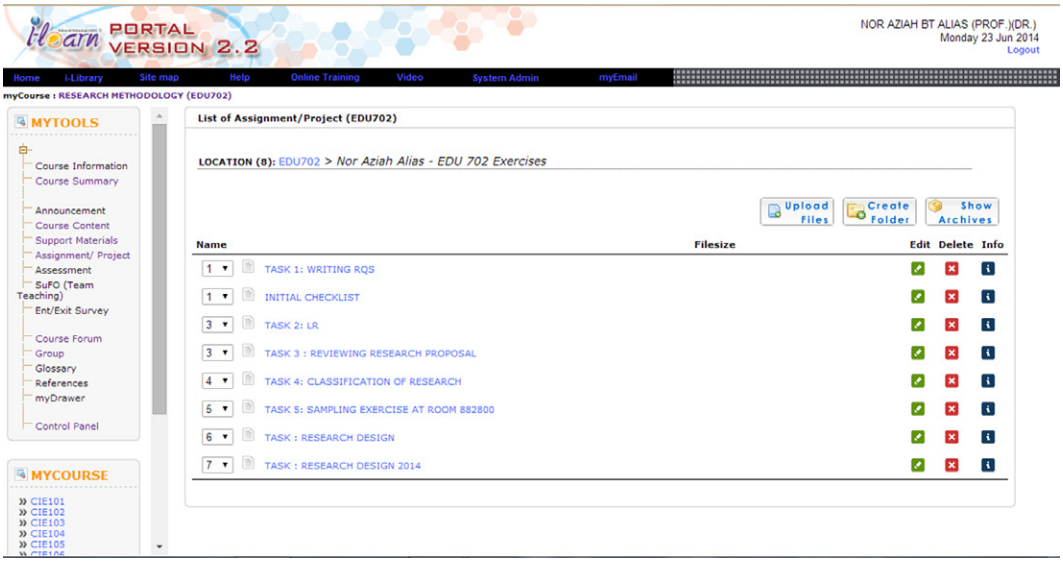


Figure 6.3: *Assignments and Projects*

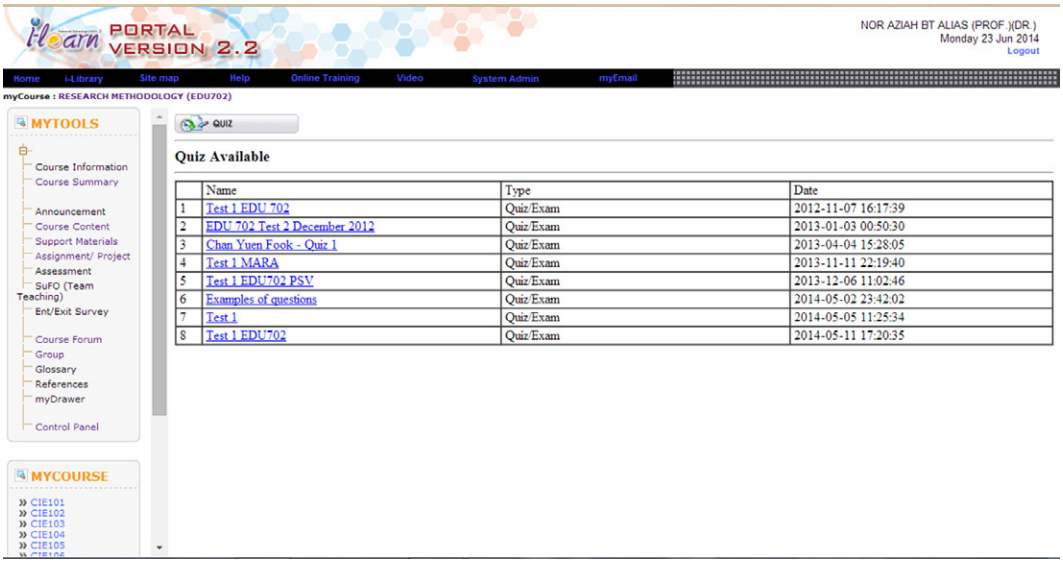


Figure 6.4: *Online assessments*

Blended Learning Models

With the policy in place and the i-Learn LMS running to support online learning and teaching, lecturers are coaxed and trained to adopt the delivery mode. More than 25 training modules are currently available; lecturers only need to access the online training system (http://www.sysilearn.uitm.edu.my/) to browse and register. To aid the lecturers in designing their Blended Learning course, five models have been introduced in UiTM (see Figure 6.5). Each lecturer may opt for a model that fits his or

her course activities and outcomes. Model A with a reduction of face-to-face on site hours is recommended to address the lack of space in the university.

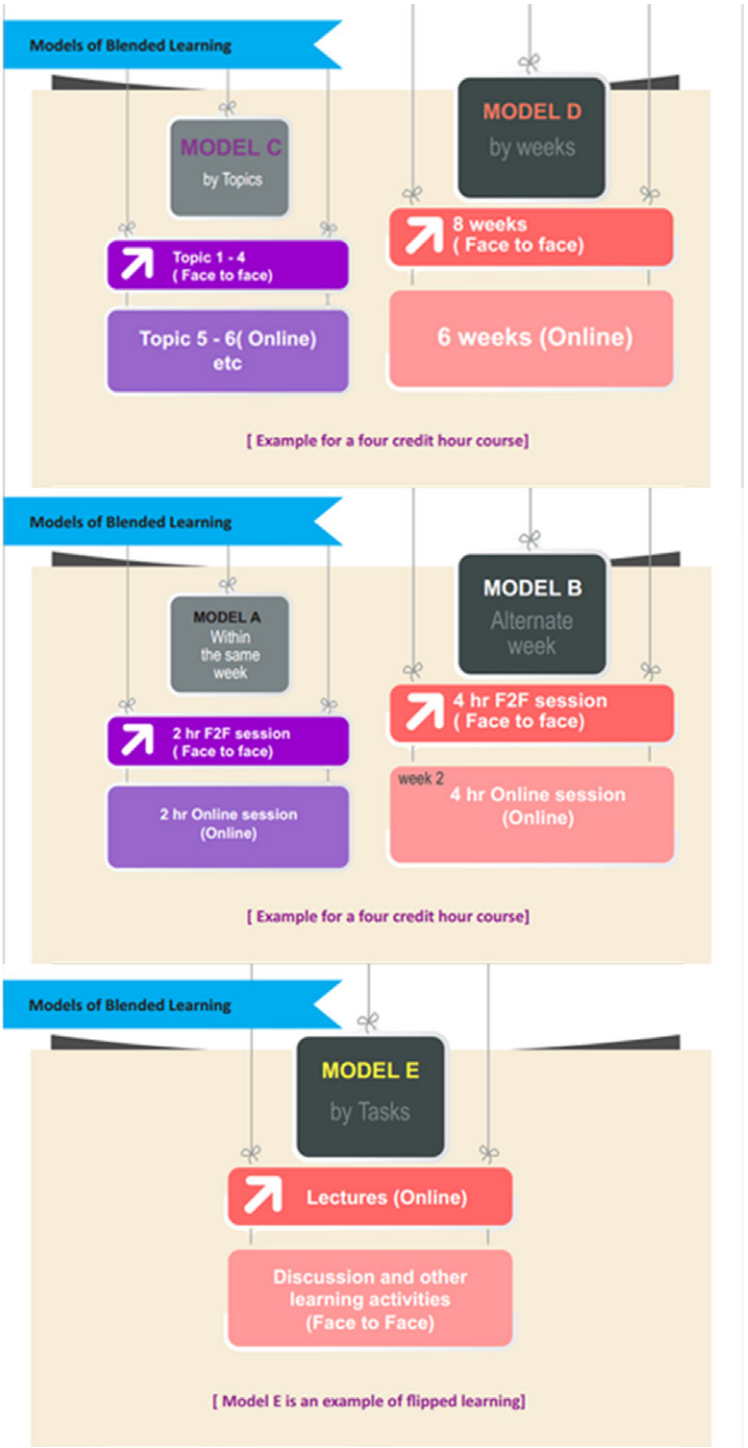


Figure 6.5: *Blended Learning Models*

The steady increase in Blended Learning course registration and system usage proves that the lecturers are opening up to less traditional method and capitalizing on the efficiency and learner engagement that technology can offer. A moderate 15% of the lecturers in UiTM are now recognized as active users who use three main components of the system i.e. content uploads, assignments/ assessments and forum discussion. The following sections described several cases of how lecturers blend their lesson to achieve their course outcomes. In all the cases described, the role of the lecturer is still pivotal despite the shift of the instructor's role away from the common didactic approach in traditional classroom setting.

Linking –The Lecturer Curates

Linking to other Webpages and Webtools is done to (1) supplement the functions in the LMS (2) create access to available resources and (3) add more recent and engaging learning activities. The most frequent linking done by lecturers is linking to Web 2.0 tools to support real time collaboration and cooperative work. The chat function is not available in the i-Learn LMS but it can be easily linked to etherpads and other tools such as Padlet.

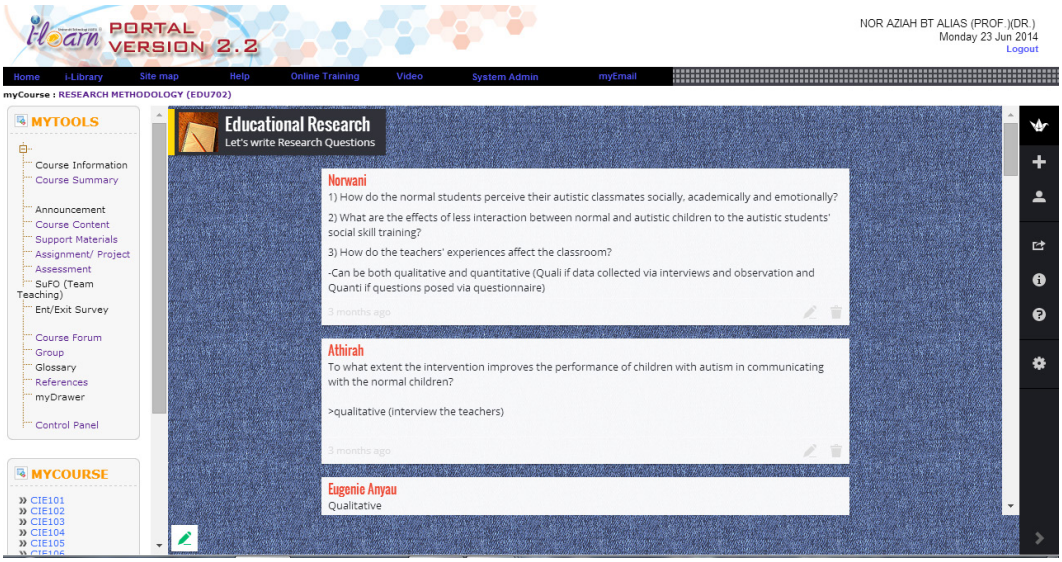


Figure 6.6: *Padlet linked via the iLearn LMS*

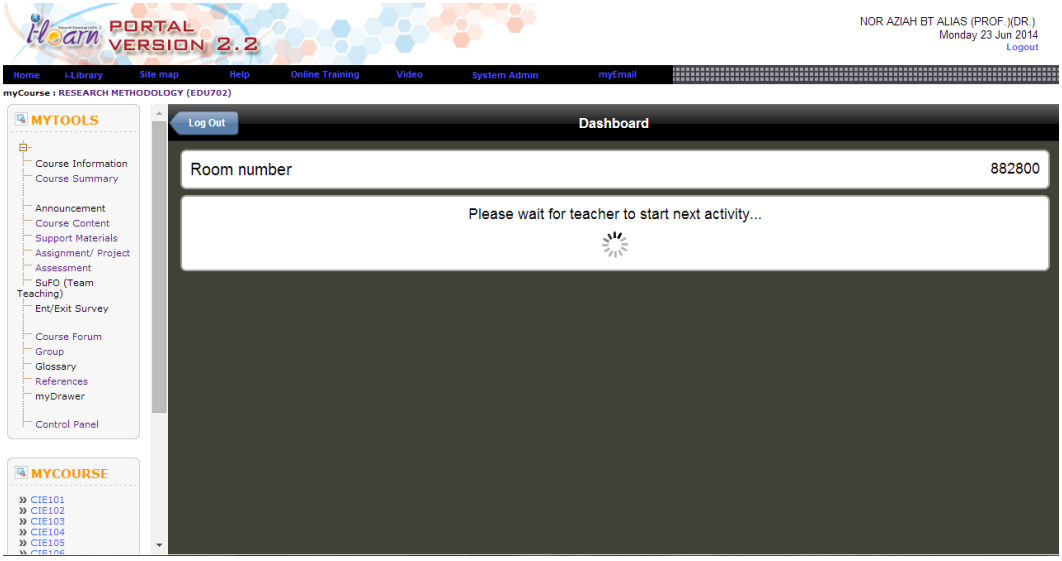


Figure 6.7: *Socrative linked via the iLearn LMS*

Linking to other Websites as references and games is also common. For instance, in a Math course, games and collaborative data sheet are accessed through the portal. When lecturers play the role of a curator and then link students to other resources, the LMS becomes more dynamic with a wealth of relevant materials and meaningful activities.

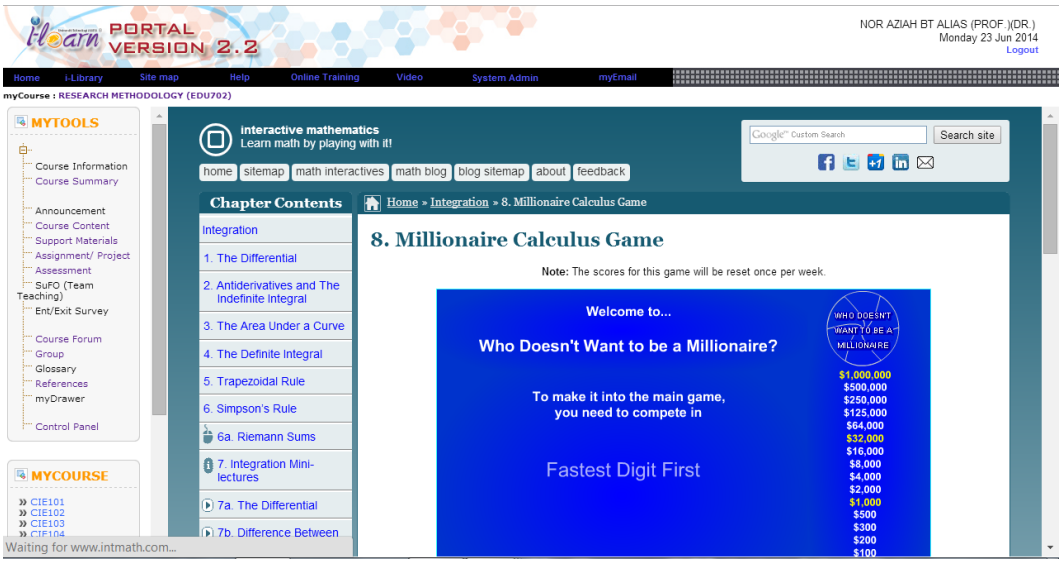


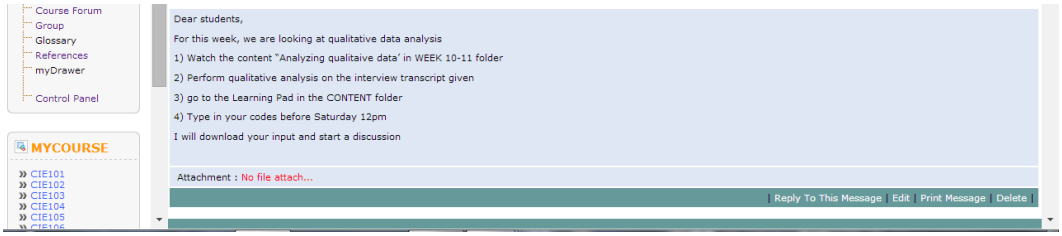
Figure 6.8: *A Math game linked via the iLearn LMS*

Lecturers agree that providing links through the LMS allows them to gauge student logins. Students welcome the links as lessons become more interesting without the hassle of remembering the different sites. In addition, students are also able to link websites and resources in their learning products.

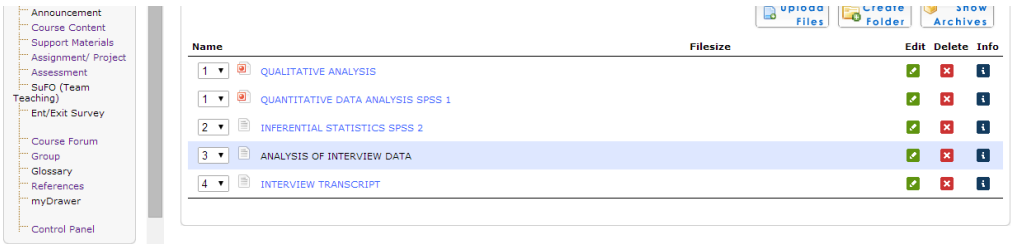
Flipping – The Lecturer Facilitates

The flipped classroom simply means a reversal of traditional teaching where students gain first exposure to new material outside of class, usually via reading or lecture videos, and then class time is used to do the harder work of assimilating that knowledge through strategies such as problem-solving, discussion or debates (Bishop & Verleger, 2013).

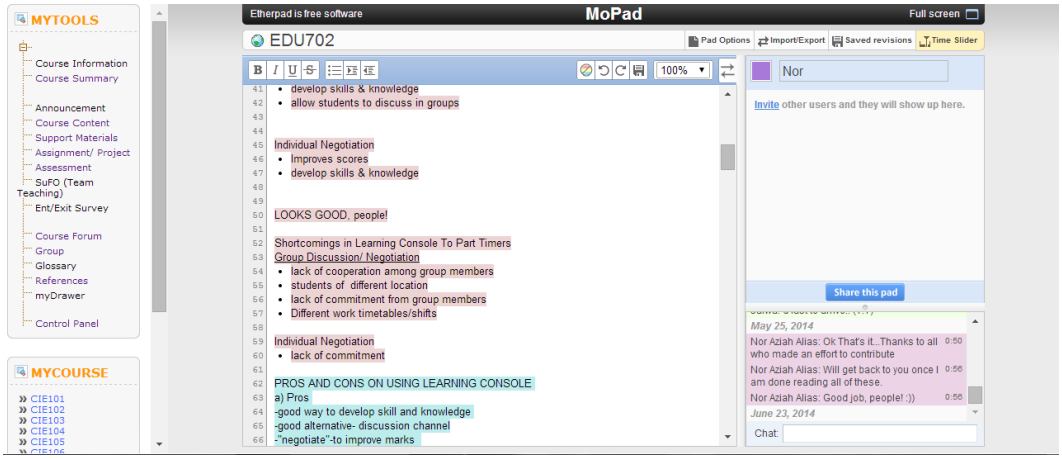
We have seen evidence of Flipped Learning motivated by lecturers who opt for more time spent on discussion and analysis of the content. Many believe Flipped Learning enhances both constructive and critical thinking since the students need to comprehend and digest the material before coming to class for a lively debate or discussion. In the example below (see Figure 6.9), the lecturer starts with instructing the students to watch a video. With the knowledge gained, the students proceed to perform the task on their own. The lecturer then joins the students in an online real time chat and discussion based on the input from students. The lesson further continues in the physical classroom and in a reflective forum. Questions given in a quiz that follows are based on the video, the discussion and the reflection made by the students.



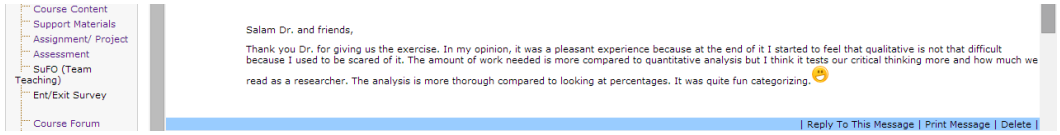
Instruction given



Materials provided



Real time discussion



Reflection

Figure 6.9: *An example of Flipped Learning*

Two lecturers describe their experience in flipping the classroom.

CASE 1

Course	:	Education and Human Development
Program level	:	Master
Approach taken	:	Blended Learning – flipped classroom approach with online forum discussions
Resources	:	Lecture notes uploaded on the LMS, videos from YouTube, articles retrieved from the library online database, the internet, CDs and others.

This was the first time that this approach was adopted by the lecturer. The class was a three-hour Masters class for students from the Visual Arts program. Students' level of English proficiency is quite low. The class was more of a hands-on class where content was taught during the first hour, then second hour students would sit in their groups to discuss the assignments, and the third hour would be class discussions about their understanding. Groups were allowed to continue after class depending on their group's decision.

Each student was asked to view the videos on the topic of the week, then prepare a folder containing all the information they have read and collected before class. The content should be articles, CDs, video recordings, and other materials

related to their group's chosen topic for the assignment. They were asked to bring this folder to class every week (class was held three hours continuously each week). During the second hour of each class, students were asked to take out their folders and share with each other in the group while the lecturer go round and check on each group. During this session, lecturer received a lot of questions from students almost about anything related to the course, from the assignment requirements to understanding of the materials their group members have collected, even to pronouncing certain English words and names correctly. Groups were allowed to swap their folders with members of other groups who wanted to learn more about their topic.

Feedback from students are all positive:

1. They were able to share their work with other members in the group consistently.
2. They had specific time to focus on doing their assignments with assistance from the lecturer.
3. Since they must bring their materials to class, file them in a folder placed on the table, therefore each member was compelled to keep up with their readings and information seeking outside of class.
4. Students know they will have work to do even if the lecturer had to come in late due to meetings or other official matters. Time was not wasted at all.
5. Some groups even came to continue their discussions during normal class time even though it was a public holiday.
6. Students realized they found a lot more information to complement the lecture. Some even found related videos which enhanced their understanding.
7. During the final few sessions, lecturer showed students how to check their essays through TURNITIN program. This opportunity actually helped them learn more about plagiarism and they had the chance to rewrite their essays with guidance from the lecturer.

Feedback from Lecturer:

1. Lecturer was able to keep track of students' understanding through group discussions done in class.
2. Individual assignments were also discussed after all group discussions had finished. This happened every week during the first half of the semester.
3. Weak students especially those who used to "free-ride" on others were no longer able to escape because every week the lecturer would ask each student for their folder and contents of the folder will be discussed, so students have no choice but to read and get information before class.
4. Lecturer was able to control dominant student/ s in a group by asking questions to the quiet ones.
5. Lecturer leaned a lot from the information students shared in class.

Outcome:

Last semester when the same course was done the traditional blended way (no flip classroom), students had difficulties in understanding the content as well as applying it through their assignments. Things as simple as the format of the assignment was wrongly interpreted, some even resubmit their old assignments thinking that the assignments were the same as those from other courses.

The final assignments submitted by students who have gone through the flip classroom approach are of higher quality from previous semester's students who were only involved in normal Blended Learning approach. Discussions done in class with the help of the lecturer actually helped them to correctly apply the knowledge gained to their assignments. A lot of questions were asked and mostly wanting some clarification of the requirements of the assignments and application of the content to their write-up.

Improvements:

Future classes should focus more on the assignments. Instead of one hour, two hours should be spent each weak on understanding the assignments, with one hour of lecture. The initial four weeks (out of 14 weeks) should be spent on understanding the requirements of the assignments especially for non TESL students since their level of English proficiency is quite low.

Students should be asked to present the progress of their group assignment and from there spend more time to talk about the assignments and the relation with the course content.

CASE 2.

Course	:	Computers in Education
Program level	:	Undergraduate
Approach taken	:	Blended Learning – linking and flipping

The lecturer describes:

Integrating Technology in my classroom helps me a lot. Especially when I utilize the i-Learn LMS in my course delivery. It saves my lecture time during the class and I can focus on the activity that I plan to do. For example, in the first two weeks of the new semester, I usually teach the students about the concepts of computer, how it works and how we as educators are able to utilize it in our teaching and learning.

Rather than waiting for the first meeting with them, I will post the content of the lecture in i-learn and ask them to browse through the materials before they come to the class. The materials that I post include Powerpoint slides and Web materials that I compile using Blendspace (includes Website, video, pictures and etc.). When I have my first meeting with them I just can browse through the materials and stop where there is a part which they need more clarification. I admit that some students

have not looked into the materials but as I go along in the class they feel lost and I noticed that their attitudes have changed when it comes to week 2-3 and onwards.

The features of the i-learn LMS allow us to embed Websites. It actually helps me a lot. I will post all the materials that I plan to cover during the class in i-Learn and the only thing I need is to open the Website through the i-Learn LMS during class.

One of the activities I do during the class is to ask the students to create learning materials for one subtopic. I will give them opportunity to discover any Websites and develop the material using the Web which they most comfortable with. The end product that I want is the URL. After they finish developing the material, they will post the link in i-learn. In the end, I am not the one able to view the content but the rest of the students can view it and comment on it. This actually cultivates collaboration among the students. Based on the comments given by me and their respective friends, I will give them opportunity to refine the materials before the final marks are given. This activity really attracts them because they actually learn through constructive comments given by their friends.

The lecturers differ slightly in their approach but they both describe linking and focusing on student centered learning and learner created content.

Wrapping – The Lecturer Guides

With a plethora of open resources in the form of OER (Open Educational Resources) and MOOC (Massive Open Online Courses), lecturers have the opportunity to take advantage of high quality courses to support their own. Wrapping a course around a MOOC for instance is evident in UiTM. In the case shown below, (see Figure 6.10) the lecturer requires the students to enroll in a 5 week course on statistics that runs parallel with her own course.



Date Posted : 30 Sep 2013 04:55:41 PM
(2 read/s)

Dear students,

I would like you to enrol in this course offered by University of Georgia. It will be most beneficial for those thinking of conducting quantitative research.
The description is given below:

I am again offering my MOOC on introductory uses of statistics in education. This section will run from October 7-November 11, 2013 on Canvas.net https://www.canvas.net/ .

Here's a link to the course site:

https://www.canvas.net/courses/statistics-in-education-for-mere-mortals-1

The course is free.

I designed the course for "mere mortals," meaning that I designed it for people who want to know about and use statistics as but one important tool in their work, but who are not -- and don't want to be -- mathematicians or statisticians. A special note that I also designed it with doctoral students in mind, especially those who are about to take their first statistics course. It could also be good for those students who just finished a statistics course, but are still fuzzy on the details.

However, this course would be useful to anyone who wants a good, short, hands-on, friendly introduction to the most fundamental ideas of statistics in education.

Here's my approach ... I provide a short presentation or two on each statistics topic, followed by a video tutorial where you build an Excel spreadsheet from scratch to compute the statistic. Then, I ask you to take a short quiz — consisting of sometimes just one question — where I ask you to plug in some new data into your spreadsheet and then copy and paste one of your new calculations as your answer. (And yes, there is also a short final exam on the conceptual stuff.)

Examples of specific skills to be learned include the scales of measurement, measures of central tendency, measures of variability, and the computation of the following: mean, mode, and median, standard deviation, z (standard) scores, Pearson product-moment correlation coefficient (r), correlated-samples t test (i.e. dependent t test), independent-samples t test, and a one-way analysis of variance (ANOVA).

Figure 6.10: *Wrapping around a MOOC*

The MOOC is a basic statistics course and is a much need requirement (Xu & Rhee, 2014). Students who do not have strong prior knowledge find the course helpful. Those who have a good understanding on statistics require less time on the MOOC.

The apparent problem in this approach seems to be the level of English used to conduct the course and deliver the content. Some students find it difficult to comprehend the materials. However, wrapping a MOOC has the potential to address a student's lack of prior knowledge. It also brings flavor to the lessons.

Concluding Remarks

The chapter provides an overview of ways how a lesson can be designed in a Blended Learning mode. The way we blend be it linking, flipping or wrapping provide students with self-paced and facilitated learning. There are many other antecedents to a successful Blended Learning experience. Broadband speed is one of them. But UiTM academics are taking this in stride. We believe in ubiquitous teaching and learning (T & L) and leveraging technology and to impart knowledge and skills in an efficient, effective and engaging way. With a different ecosystem, we have to approach Blended Learning in a modest way. We build smaller windmills but we are generating new energy through it.

References

Bishop, J. L., & Verleger, M. A. (2013, June). The flipped classroom: A survey of the research. In ASEE *National Conference Proceedings*, *Atlanta, GA*.

Wang, Q., Woo, H. L., Quek, C. L., Yang, Y., & Liu, M. (2012). Using the Facebook group as a learning management system: An exploratory study. *British Journal of Educational Technology*, 43(3), 428- 438.

Xu, M., & Rhee, S. Y. (2014). Becoming data-savvy in a big-data world. *Trends in plant science*, 1-4.

This page intentionally left blank

Chapter

7

This page intentionally left blank



Chapter 7

Morpheus UNIMAS: Strengthening Student Engagement in Blended Learning Environments

Chuah Kee Man & Hong Kian Sam

Universiti Malaysia Sarawak

Introduction

The implementation of e-Learning in Malaysian higher education institutions has always centred on supplementing access to learning materials. Learning Management Systems (LMSs) are widely used to disseminate course materials to students (Mohamed Amin Embi, 2011) with minimal efforts to increase students' participation in online activities that could enhance their learning attainment. Although several studies have reported higher students' satisfactions with regards to online learning experience across various disciplines (Harrison, Gemmell & Reed, 2014; Hong, 2002; Hong, Lai & Holton, 2003; Novo-Corti, Varela-Candamio & Ramil-Diaz, 2013; Paechter, Maier & Macher, 2010), most of these studies acknowledged the fact that there are problems in sustaining students' willingness and interest to engage in online activities. Hong (2002), for example, found that while students were generally satisfied with their experience in a Web-based course, they were expecting more teacher presence and group dynamics. The same findings are noted in the study conducted by Harrison *et al.* (2014), which clearly indicates students' expectation of better engagement in online learning platforms.

In relation to this, promoting students engagement in the online learning environment particularly in blended mode is regarded as a crucial attempt not only to sustain students' participations but also to ensure they could gain benefits from the experience. If the lurking behaviour among the students is minimised

(Chuah, 2014; Wang, 2007), students could actively be involved in online activities that sharpen their critical thinking and problem solving skills. As such, this chapter presents some of the techniques used in the learning management platform of Universiti Malaysia Sarawak (UNIMAS), known as Morpheus in strengthening student engagement. In particular, it showcases the features used in Morpheus based on a specific blended-learning course as a case study.

Student Engagement

The term 'student engagement' is defined rather differently by various scholars in the field of education and learning sciences. Coates (2008) mentioned that student engagement is largely related to students' involvement with activities and conditions that are likely to generate high-quality learning. Kuh *et al.*, (2007), however, defined student engagement as a form of participation in educationally effective practices, which usually result in several measurable outcomes. It is also relevant to look at student engagement as the extent to which students are engaging in activities that have been proven "to be linked with high-quality learning outcomes" (Krause & Coates, 2008, p. 493). Ascough (2007) discovered in his study that a friendly teaching and learning community is pivotal in ensuring online student knowledge acquisition that directly creates meaningful learning experiences. Nevertheless, promoting student engagement is a daunting task simply because there are many other factors that could affect their level of engagement, which include cultural background, gender and interest in the topic.

In the context of online learning, student engagement has always been related to their participation in assigned activities particularly in asynchronous online discussion. Several studies (Beaudoin, 2002; Dennen, 2008; Jung, Choi, Lim & Leem, 2002) have reported how the participation in online discussion is drastically dropping, signalling students' unwillingness to engage or communicate more online. Yet, Coates (2005) stipulated that in the case of Blended Learning, students do not really understand the need to be active online when they are able to discuss with their peers and instructors face-to-face in class. He further iterated that the usage of LMS in higher education to be re-examined in terms of permitting healthy engagement of intellectual exchanges to flourish and not merely as a continuation of what has been done in the classroom. Thus, it is imperative to consider the right techniques to promote student engagement in LMS settings, so that the students can maximise its potentials in improving their performance.

The Morpheus Experience

At UNIMAS, Moodle (Modular Object-Oriented Dynamic Learning Environment) is used as the platform for its LMS. The LMS is popularly known as Morpheus due to the traditional practice of the university in naming its servers using names taken from Greek mythology. Interestingly, Morpheus is regarded as the god of dreams, who was responsible for shaping dreams and giving shape to the beings who

inhabit dreams. This somehow illustrates the roles of the lecturers in shaping the students' learning experience through various activities conducted via the LMS. Morpheus @UNIMAS is largely used in a blended mode in which usual face-to-face classes are supplemented with online activities provided by the instructors. Figure 7.1 shows the main page of the platform.



Figure 7.1: *The Morpheus @UNIMAS Main Page*

Most of the common modules available in Moodle are included in Morpheus @ UNIMAS, which include forum, wiki, quiz, mindmap, and journal and so on. Some additional third-party features such as TurnItIn assignment, WiZiQ Live Class and NanoGong are also included to allow the instructors to fully utilise the LMS. In addition, the instructors are permitted to change the theme of their individual course page to allow more varieties in the user interface, so that the students would not feel bored seeing the same design for several courses that they are enrolled in.

The Case Study

The exploratory case study aims to showcase some of the techniques used to strengthen students' engagement in Morpheus @UNIMAS. Specifically, a course teaching academic reading and writing enrolled by 320 students was chosen for the purpose of this case study. The techniques used are essentially to increase students' participations in the assigned tasks. Students' general opinions on the used techniques in improving their engagement were obtained through post-course interviews (involving 30 randomly selected students) and their participations were observed.

Online Discussions

In most of the discussion conducted via the forum tool, the instructor tend to post questions in the form of statements. Some of these questions were reworded from those discussed in class. This usually does not attract students' attention and they would just read the posts without responding. To improve this, the use of comic strip as the topic starter for a discussion thread was tested. Students were required to look at the comic strip and respond to several questions posted as shown in Figure 7.2.

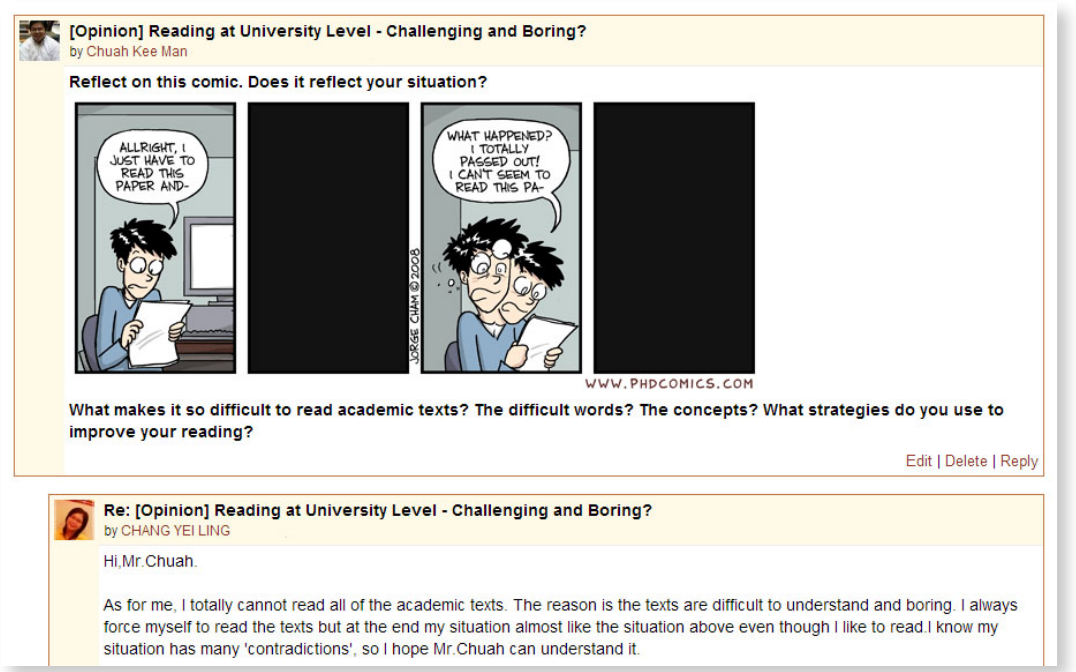


Figure 7.2: *Use of Comic Strip As Topic Starter*

The number of the responses for threads with comic strip as the topic starter was significantly higher than other threads. It is obvious that many students participated in the discussion when a comic strip was used. Conceivably, the nature of comic

strips which can be interpreted from different viewpoints has permitted the students to be more participative as opposed to the type of statement or question that may trigger a similar response from all students. Based on the interviews, the students supported this by stating that there were greater flexibility to accept a variety of responses when comic was used and open-ended questions seemed to generate more interests. Some of the responses given by the students are as follows:

> Respondent 1: *I love the openness. I mean I can give comments based on what I think of the comic. Don't have to follow what my friends posted.*
>
> Respondent 13: *Actually, it's good to use comic, I feel more willing to reply. Of course the comic strip has to be interesting too.*
>
> Respondent 24: *Because I understand the comic, then I respond. The comic you use is very catchy, I like it, that's why I reply.*
>
> Respondent 27: …*but to be honest, I don't like discussing online. But sometimes if the comic is talking about a good issue, I will respond.*

The feedbacks from the student show that comic strip could be a good trigger in luring them to participate and be more engaged. It is also important to note that some of them stated the comic strip has to be interesting and comprehensible (as indicated by Respondent 24), otherwise they would not be able to respond. This is true as some students asked the instructor to clarify the meaning of certain captions used in the comic just to make sure they understand it accurately. Moreover, a close inspection on the quality of their posts by the researcher also indicates the students showed greater efforts to be critical through reflections.

Content-related Videos

Besides the usual upload of lecture notes and slides, other useful materials in the form of YouTube videos are also presented in order to lure the students to be more active in browsing the course page. However, instead of posting them as links, the videos were appropriately embedded according to each unit as shown in Figure 7.3. Embedding the videos is regarded as a more effective way to grab students' attention since they are able to play them immediately.

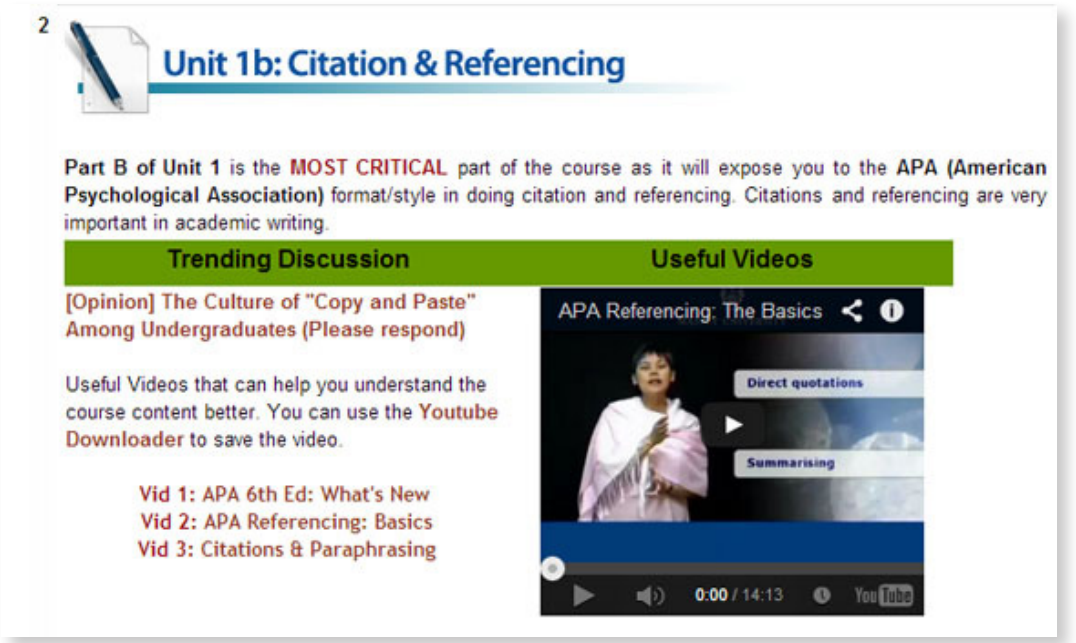


Figure 7.3: *Sample of Embedded Videos for Specific Unit*

The embedded YouTube videos allow students to view them directly without the need to open a new window. The students stated this is very convenient and also it highlights the important aspects of the course content.

> Respondent 5: *The videos are useful. I can click directly and play them. The important ones I also download and save to my computer.*
>
> Respondent 7: *Videos are useful and relevant to the course taught. At least I can view them first before reading the notes.*
>
> Respondent 18: *Makes my life easier. Don't have open new window just to view the videos. And watching videos are also good, it helps me understand.*
>
> Respondent 24: *The videos are presented neatly. Easier to see and focus. I check regularly just to see whether there are new videos posted.*

It is also interesting to note that the students were more engaged when the topic for discussion was linked with the YouTube videos that were presented. They were observed to be responding to postings made by their peers more regularly. Furthermore, it reflects the roles of the videos in helping them to grasp the important content of the learning units (as mentioned by Respondent 18). Most students prefer to watch and listen to important facts before reading the notes since it gives them a more holistic view of the course content. Incidentally, by having a better understanding, they are more engaged with the activities conducted via the LMS.

Student-Published Contents

To promote greater engagement in the LMS, students were given specific tasks to produce and share their contents. For instance, in their respective groups, students were assigned a specific sub-topic and they have to share their materials in the form of flipping book (as shown in Figure 7.4) using any tool that they prefer. The students were told to explore the tools on their own and contribute accordingly. Such self-direct learning activities not only add some "entertaining" elements to the course but also encourage the students to be more proactive in their learning.

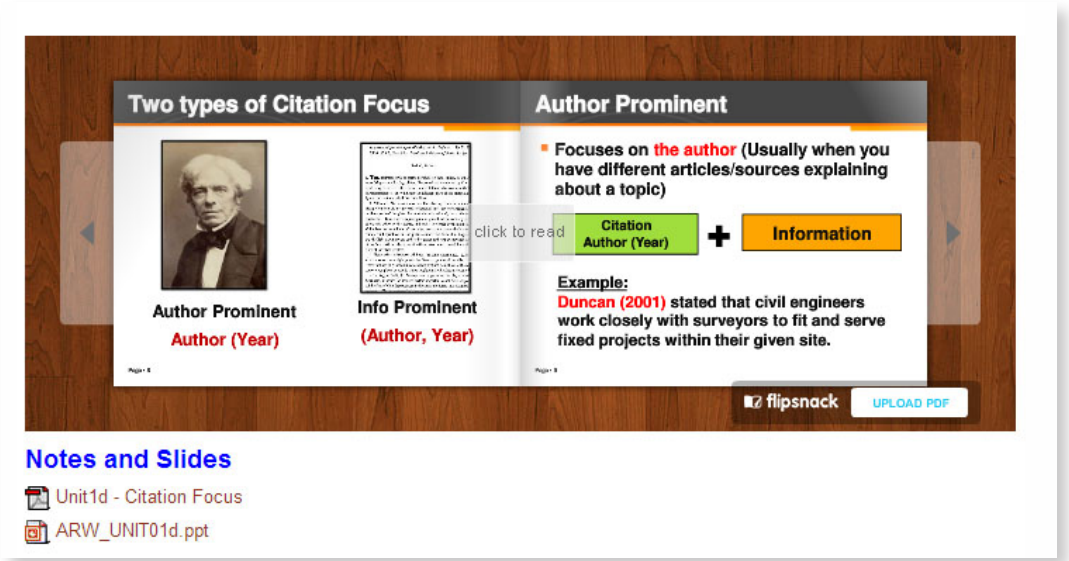


Figure 7.4: *Sample of Shared Content Published By Students*

Some of the responses provided by the students regarding the tasks are listed below.

> Respondent 3: *I enjoyed this task so much. I never thought flipping book is so interesting and nice. In fact, after learning this, I convert most of my notes to flipping book.*
>
> Respondent 11: *My groups love it, although it takes time to produce and some group members were not cooperative, we still learned a lot.*
>
> Respondent 20: *This is fun. At least not as boring as reading the PowerPoint hand-outs.*
>
> Respondent 29: *Okay, to me, it is okay, just that maybe the topic can be more diverse, like let us pick rather than given to us.*

Based on the responses, although students were generally enjoying the assigned task, there were at least two problems mentioned. The first problem is collaboration among the group members, which may be problematic if the topic is too simple and could be done individually. Secondly, when it comes to self-publishing, students

would love to be given more freedom in deciding the topic and content as indicated by Respondent 29.

Integration with WiZiq Live Class

Morpheus @UNIMAS allows its instructor to link their WiZiQ virtual live class session with their existing course page. This Moodle integration plug-in enables seamless creation of WiZiQ live classes directly via the Moodle platform. In this case, it was used as a weekly revision class on weekends for the students. The live class gives opportunities for students to recap on what they have learned while at the same time ask questions directly.

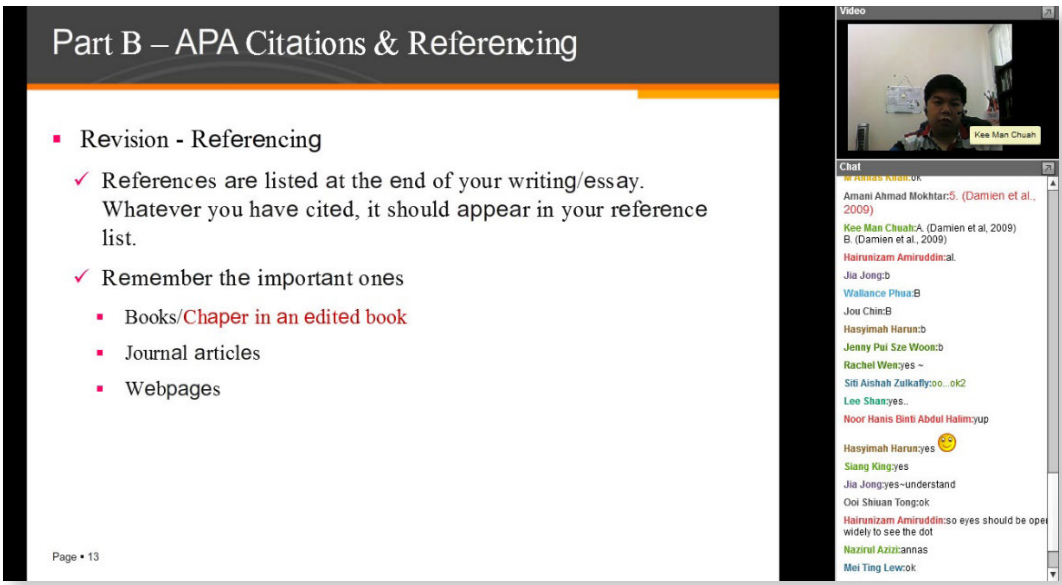


Figure 7.5: *Wiziq Live Class Session Integrated On Morpheus @UNIMAS*

Based on the feedback, the students really enjoyed the live class sessions which were integrated within Morpheus @UNIMAS. Some of the feedback obtained are:

> Respondent 9: *My first experience using this and I enjoy to the max. Wish all classes can be done like this.*
>
> Respondent 12: *Useful, very useful to me because I can refresh what I have learned and the session is smooth, no problem at all.*
>
> Respondent 26: *Generally good but my slow connection disturbed it. I cannot hear the voice sometimes.*
>
> Respondent 30: *I enjoy it so much. The experience was really good, and thanks for using it and let us experience it. I always look forward to the class.*

In terms of using WiZiQ live classes, it managed to increase students' participations and engagement in the activities posted on Morpheus @UNIMAS. Students were

able to engage in fruitful discussion and interactions. The virtual live class session were well-accepted by the students despite the problems with Internet connection. Some of them did complain about the speed (e.g. Respondent 26) which caused the voice to be fragmented. However, this problem was solved by using text-based chat. Through the text-based chat, students can type their questions and let the instructor respond.

Lessons Learnt

The four aforementioned techniques have managed to increase student engagement in the Blended Learning environments. Although not conclusive, it is important to note that all 320 participants were labelled as active, in which they logged into the course page at least once a day for 14 weeks (the end of the semester). The responses from the interview also revealed students' willingness to be involved in the activities despite no marks were awarded for their participations. There are four pertinent lessons learnt from this case study.

Lesson 1: Sense of belonging is important in sustaining students' engagement

Through the observation, students were noted to be more engaged among their peers from the same programme or faculty. While there was an attempt to get to know others (since this course is enrolled by students from different faculties), they seemed to enjoy replying to postings made by those familiar with. It can be said that students who are able to feel the sense of belonging to the virtual community or psychological closeness usually are more actively engaged to the online learning environment (Baker, 2010; Wang, 2007). In a blended environment, instructors could solve this by encouraging more social interactions in face-to-face classes and design activities or tasks that allow them to get to know each other more online.

Lesson 2: Equal opportunity for involvement increases students' engagement

Instructors should try their best to provide equal opportunity for students' involvement so that they are more willing to participate (Rovai, 2002). Often, students are not provided with ample time or opportunities to express themselves and the activities conducted online are dominated by only certain group of students. In such cases, the instructors may consider appointing moderators from each group of diverse abilities or backgrounds. These moderators function as the motivators in the online environments, encouraging the less active ones to participate (Boyle, Jinhee, Ross & Simpson, 2010). This is especially crucial in activities that involve group work. Students who are familiar with their members tend to collaborate better and produce output of higher quality.

Lesson 3: Instructor's competent online presence maintains student engagement

One aspect which is apparent in maintaining students' engagement is instructor's presence. Besides being active online, the instructor should also possess sufficient pedagogical and technological knowledge in scaffolding meaningful learning to

take place online. As revealed in the case study, the instructor's ability to make use of various online tools (e.g. WiziQ Live class & Web 2.0 tools) directly attracted students' attention and motivated them to be more engaged. Liu, Magjuka, Bonk, and Lee (2007) discovered that instructors who are capable of facilitating the virtual community significantly result in higher student satisfaction. Shea, Li and Pickett (2006) echoed the same findings in which instructors have to spend enough time to plan online activities in order to maintain student engagement.

Lesson 4: Flexible and appealing LMS interface promotes student engagement

Although Morpheus @UNIMAS is based on the Moodle platform, the flexibility permitted by the admin for the instructors to choose a different template design for their courses is actually a good move. Students stated that they prefer different courses to have different design so that they do not feel bored of looking at the same design all the time. In this case study, the instructor chose a more colourful interface, giving the page a more refreshing look. Interestingly, this somehow encourages the students to be more active to log into the course page. This is indeed in line with the findings by Ascough (2007) who discovered the importance of creating an online course page which is welcoming and hospitable.

Conclusion

All in all, the techniques introduced in the case study via Morpheus @UNIMAS are useful in strengthening students' engagement in Blended Learning environment. It highlights the fact that increasing students' engagement requires instructors to be well-equipped in knowledge and skills to promote students' participation beyond mere uploading of lecture notes. Instructors have to properly design learning activities that allows students to be actively involved in completing tasks that could sustain their level of engagement. In addition, instructors should try their best to find suitable ways to make students feel a strong sense of community. It is rather clear that strong connectedness among the students facilitates their involvements. In relation to that, Morpheus @UNIMAS will continue to serve as a flexible LMS that allows instructors at UNIMAS to complement their face-to-face classes with a more engaging online environment.

References

Ascough, R. (2007). Welcoming design: Hosting a hospitable online course. *Teaching Theology and Religion, 10(3), 131-136.*

Baker, C. (2010). The impact of instructor immediacy and presence for online student affective learning, cognition, and motivation. *The Journal of Educators Online*, 7(1), 1-30.

Beaudoin, M. F. (2002). Learning or lurking? Tracking the "invisible" online student. *Internet and Higher Education, 5, 147–155.*

Boyle, F., Jinhee, K., Ross, C., & Simpson, O. (2010). Student-student mentoring for retention and engagement in distance education. *Open Learning*, 25(2), 115-130.

Chuah, K. M. (2014). Luring the lurkers: Increasing participations in the online discussions of a blended learning course. *International Journal on E-Learning Practices*, 1(1), 49-58.

Coates, H. (2005) Leveraging LMSs to enhance campus-based student engagement. *Educase Quarterly,* 1, 66-68.

Coates, H. (2008). *Attracting, engaging and retaining: New conversations about learning. Australasian student engagement report.* Camberwell: Australian Council for Educational Research.

Dennen, V. P. (2008). Pedagogical lurking: Student engagement in non-posting discussion behaviour. Computers in Human Behavior, 24(4), 1624-1633.

Harrison, R., Gemmell, I., & Reed, K. (2014). Student satisfaction with a Web-based dissertation course: Findings from an international distance learning master's programme in public health. The International Review of Research in Open and Distance Learning, 15(1), 182-202.

Hong, K. S. (2002). Relationships between students' and instructional variables with satisfaction and learning from a Web-based course. Internet and Higher Education, 5, 267-281.

Hong, K.S., Lai, K.W. & Holton, D. (2003). Students" satisfaction and perceived learning with a Web-based course. Journal of Educational Technology & Society, 6(1), 116-124.

Jung, I., Choi, S., Lim, C., & Leem, J. (2002). Effects of different types of interaction on learning achievement, satisfaction and participation in Web-based instruction. Innovations in Education and Teaching International, 39(2), 153–162.

Krause, K., & Coates, H. (2008). Students' engagement in first-year university. *Assessment and Evaluation in Higher Education,* 33(5), 493–505

Kuh, G. D., Kinzie, J., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2007). *Piecing together the student success puzzle: Research, propositions, and recommendations*. San Francisco: Jossey-Bass.

Liu, X., Magjuka, R. J., Bonk, C. J., & Lee, S. (2007). Does sense of community matter? An examination of participants' perceptions of building learning communities in online courses. *The Quarterly Review of Distance Education,* 8(1), 9-24.

Mohamed Amin Embi. (Ed.) (2011). *e-Learning in Malaysian Higher Education Institutions: Status, trends and challenges.* Selangor: Ministry of Higher Education Malaysia.

Novo-Corti, I., Varela-Candamio, L., & Ramil-Diaz, M. (2013). E-learning and face to face mixed methodology: Evaluating effectiveness of e-learning and perceived satisfaction for a microeconomic course using the Moodle platform. *Computers in Human Behavior*, 29(2), 410- 415.

Paechter, M. Maier, B., & Macher, D. (2010). Students' expectations of, and experiences in e-learning: Their relation to learning achievements and course satisfaction. *Computers & Education*, 54, 222–229.

Rovai, A. (2002). Building sense of community at a distance. *International Review of Research in Open and Distance Learning,* 3(1), 1-16.

Shea, P., Li, C. S., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and Web-enhanced college courses. *The Internet and Higher Education,* 9(3), 175-190.

Wang, M. (2007). Designing online courses that effectively engage learners from diverse cultural backgrounds. *British Journal of Educational Technology*, 38(2), 294-311.

Chapter

8

This page intentionally left blank



Chapter 8

Investigating Faculty Adoption of Blended Learning

Mohd Feham Md Ghalib, Nuraihan Mat Daud & Muhammad Sabri Sahrir

International Islamic University of Malaysia

Introduction

A combination of face-to-face (f2f) instruction with Web-based delivery helps to meet the needs of diverse learners. Various terms have been used to refer to this combination of approaches. These include Blended Learning, hybrid learning, mixed mode learning, mediated learning, hybrid instruction, web-assisted instruction and web-enhanced instruction (Delialioglu & Yildirim, 2007; Gülbahar & Madran, 2009; Bonk, 2004). According to Dziuban, *et al.* (2004), which term to use, is a matter of preference. The terms are used interchangeably, and may be used to define one another. Colin and Moonen (2001), for example, define Blended Learning as "a hybrid of traditional face-to-face and online learning so that instruction occurs both in the classroom and online, and where the online component becomes a natural extension of traditional classroom learning" (Colis & Moonen, 2001 cited in Rovai & Jordan, 2004, p.3).



Figure 8.1: *Blended Learning Environment (Colis & Moonen, 2001)*

The flexibility of this approach facilitates the process of teaching and learning inside and outside the classrooms in both synchronous and asynchronous modes (Graham, 2006; Stubbs, Martin & Endlar, 2006; Akkoyunlu & Soylu 2006; Rovai & Jordan, 2004; Picciano, 2006). The lack of f2f communication in Web-based learning and vice-versa calls for a combination of both delivery methods. This increases students' satisfaction in terms of their learning experience. The strength of one overcomes the weakness of the other (Lim & Morris, 2009; Azizan, 2010).

Learning Management System (LMS) to Support Learning

A learning management system (LMS) is normally used to facilitate Blended Learning. Grace, Suleman and Marsden (2013) reported that among the facilities available on LMS that were frequently accessed by students were course outlines, announcements, assignments, resources and chat room. One would expect its integration with mobile phone for easy access to all these services. Unfortunately, many are not designed for mobile interaction making mobile phones the least used device for accessing LMS facilities. Ian, Lubin and Zhang (2010) stressed the need to have an easy interface design for an ideal LMS.

Students' willingness to use the system is yet another dimension that is worth analyzing. Though the system is available, it does not necessarily entail that students are willing to use the technology for learning. A study done by Mafuna and Wadesango (2012) indicated that the lack of resources and time constraints had a negative impact on the student learning experience where the LMS was concerned. They stressed the importance of having a good support system when an LMS is introduced. This finding is in line with Ian, Lubin and Zhang's (2010) study who found that the availability of technical and pedagogical support helped in organizing activities for students. They studied faculty's reactions when migrating to a new LMS system. The study implies the need to consider the pedagogy and instructional design associated with the utilization of technology tools, and the means to facilitate student interaction as well as the approach to motivate them to participate in the discussions (Dziuban *et al.*, 2006). Where these were observed, a positive trend towards the acceptance of blended approach was reported. According to Govender (2010), students found the mixed mode beneficial, and they felt that there was an improvement in the quality of education.

Where the faculty members were concerned, Hussein (2011) reported that there was no difference in their attitudes towards the system when their gender was compared. The same finding was made when the humanitarian, scientific and health colleges were compared. In general, faculty members felt that instructional time was one of the strength of blended approach yet they stressed that students should have the basic online facilitation skills before they can enjoy the online learning opportunity (Dziuban, Hartman, Cavanagh & Moskal, 2011).

Background to the Study

Studies have shown that there is a growing interest in Blended Learning in Malaysian higher education institutions (Puteh & Hussin, 2007; Azizan, 2010; Siew-Eng, Ariffin & Rahman, 2010; Leila & Tunku Badariah, 2013). One university where the academics are expected to adopt the approach is the International Islamic University Malaysia (IIUM). The university started to use the LMS in 2002, and the first programme that adopted e-Learning was the Executive Bachelor in Business Management (EBBM) programme. The LMS was known as 'E-Learn', and the e-Learning provider was Mahir Net Sdn Bhd which used Lotus Learning Space platform to support e-Learning application for staff and students at that time (Azlan, Ahmad Marzuki and Lihanna, 2010). Leila and Tunku Badariah (2013) conducted a survey on education students' perceptions of this service, and found a high level of satisfaction among them. The students felt that the approach increased collaborative activities and interaction among students and with the class instructor. The study also revealed that there was no statistically significant difference among learners of various education programmes where Blended Learning was concerned.

After the e-Learning policy was formulated and endorsed by the University's senate in 2012, a decision was made to migrate to a system that is more robust and innovative. In February 2014, the university migrated to an e-Learning system which was more attractive and innovative. The new platform was known as *i-TaleEM* (which was short for Innovative Teaching and Learning Environment System), and it was powered by Moodle® version 2.4. (Md. Ghalib & Mat Ghali, 2014) (see Figure 8.2 for the snapshot of the *i-TaleEM* site).

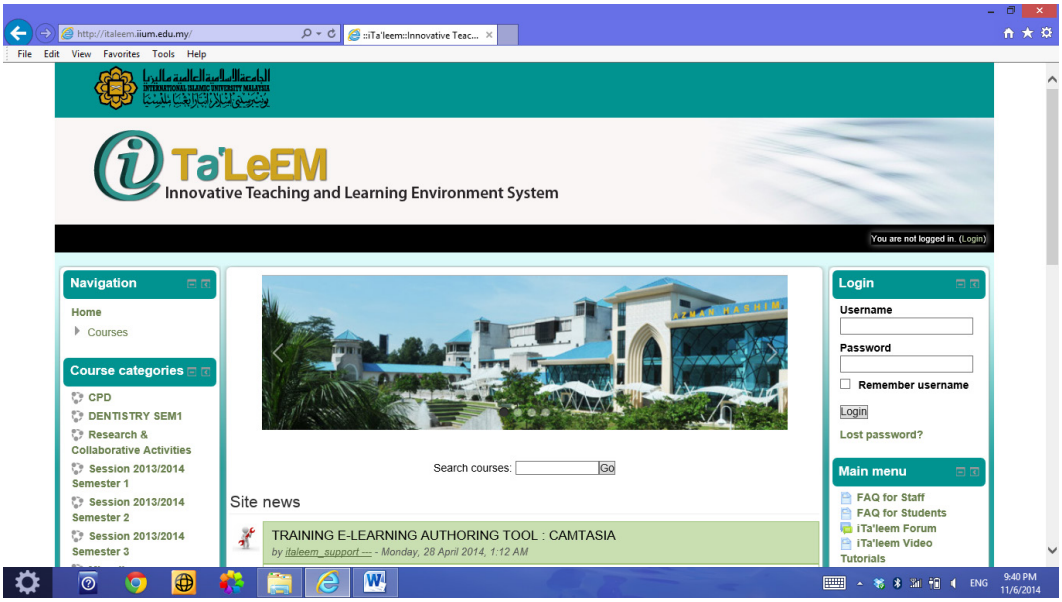


Figure 8.2: *A Snapshot of i-Ta'leEM*

Methodology

In order to determine the statistics of *iTa'leEM* users in the first year of the migration, a Web page was created to extract the needed information from the platform. Information on the number of users according to faculty and the facilities used by the lecturers and students in Semester II, 2013/2014 academic session made up the data for this study. The database revealed that there were a total of 1434 instructors and 18080 students from 15 faculties and one section under Co-Curriculum Activity Centre (CCAC) that semester. In addition, the number of courses offered during that study period was 1656. Out of these, only 493 courses were tracked with uploaded items indicating that those courses were active in that particular semester. The data mining procedures were conducted at the end of the semester during the examination week. Several listings were generated with a combination of suitable sorting for the purpose of this study. These were based on:

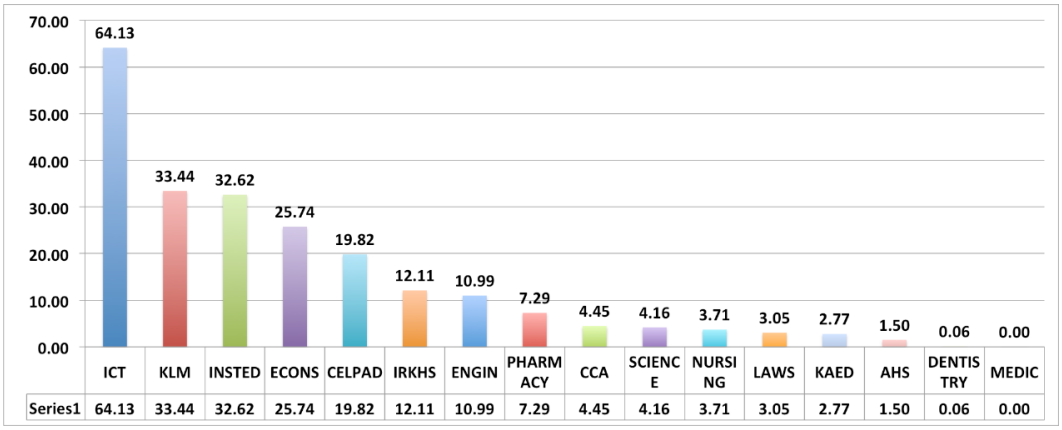
1. faculties;
2. content used (static and interactive);
3. activities performed by the instructors; and
4. activities performed by the students.

Each listing generated in the queries was later calculated for its distribution. Prior to that, the listings were revised and cleaned to remove unneeded information. The descriptive analysis focused mainly on the mean and total value of the variables concerned.

Findings

The list of faculty by items uploaded to the LMS, namely *iTa'leEM* is given in Table 8.1.

Table 8.1 Mean of Items Uploaded to iTa'leEM by Faculty



	ICT	KLM	INSTED	ECONS	CELPAD	IRKHS	ENGIN	PHARMACY	CCA	SCIENCE	NURSING	LAWS	KAED	AHS	DENTISTRY	MEDIC
Series1	64.13	33.44	32.62	25.74	19.82	12.11	10.99	7.29	4.45	4.16	3.71	3.05	2.77	1.50	0.06	0.00

The acronyms given above refer to the following:

ICT - Kulliyyah of Information and Communication Technology

KLM – Kulliyyah of Languages and Management

INSTEAD – Institute of Education

ECONS – Kulliyyah of Economics

CELPAD – Centre for Languages and Pre-University Academic Development

IRKHS – Kulliyyah of Revealed Knowledge and Human Sciences

ENGIN – Kulliyyah of Engineering

CCA- Co-Curricular Activity Unit

KAED – Kulliyyah of Architecture and Environmental Design

AHD – Kulliyyah of Allied Health

MEDIC – Kulliyyah of Medicine

Table 8.1 shows that ICT, KLM, INSTED, ECONS, and CELPAD were among the active faculties in using the platform for managing teaching and learning with an average value of 64.13 (ICT), 33.44 (KLM), 32.62 (INSTEAD), 25.74 (ECONS), and 19.82 (CELPAD) respectively. Other than the KICT, the Arts/ social Science Faculties seemed to be more active than others. Health related faculties were the least active where the use of *iTa'leEM* was concerned.

The number of times the services on LMS were used was also analyzed, and this is displayed in Table 8.2

Table 8.2 Services Added to iTa'leEM by Faculty

	Average value for all items													
	Static	Folder & Label	Resources	Assign	Forum	Discussion	Post	Chat	Quiz	Event	Workshop	SCORM	BBB	TOTAL
ICT	2.06	1.35	27.54	2.79	4.16	10.71	12.22	0.02	0.54	2.73	0.00	0.00	0.00	**64.13**
KLM	1.39	4.67	11.78	1.61	1.89	0.89	9.44	0.22	0.28	1.06	0.00	0.00	0.22	**33.44**
INSTEAD	0.68	0.42	5.56	0.24	2.20	7.51	15.54	0.03	0.08	0.34	0.00	0.00	0.02	**32.62**
ECONS	0.69	0.94	10.35	0.11	3.10	4.81	5.31	0.10	0.03	0.29	0.00	0.00	0.01	**25.74**
CELPAD	0.39	1.15	7.48	0.19	6.21	1.93	2.01	0.04	0.07	0.34	0.00	0.00	0.00	**19.82**
IRKHS	0.53	0.28	5.89	0.18	2.39	0.97	1.64	0.03	0.02	0.18	0.00	0.00	0.00	**12.11**
ENGIN	0.67	0.40	4.33	0.18	1.66	1.54	1.98	0.00	0.03	0.20	0.00	0.00	0.00	**10.99**
PHARMACY	0.21	0.41	2.91	0.06	1.15	1.15	1.21	0.00	0.03	0.18	0.00	0.00	0.00	**7.29**
CCA	0.03	0.04	0.39	0.05	3.78	0.06	0.06	0.00	0.00	0.05	0.00	0.00	0.00	**4.45**
SCIENCE	0.15	0.06	1.13	0.00	1.87	0.47	0.48	0.00	0.00	0.00	0.00	0.00	0.00	**4.16**
NURSING	0.06	0.00	0.82	0.06	1.00	0.59	1.12	0.00	0.00	0.06	0.00	0.00	0.00	**3.71**
LAWS	0.00	0.01	0.59	0.00	2.42	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	**3.05**
KAED	0.01	0.12	0.64	0.09	1.46	0.15	0.17	0.00	0.02	0.11	0.00	0.00	0.01	**2.77**
AHS	0.27	0.24	0.13	0.01	0.51	0.06	0.18	0.00	0.05	0.06	0.00	0.00	0.00	**1.50**
DENTISTRY	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
MEDIC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**

The *static* content contains page, URL link, and wiki items. *Resources* consist of files of any type that were uploaded by the instructors. Table 8.2 shows that static content was mostly used by ICT (2.06) followed by KLM (1.39), ECONS (0.69) and INSTED staff (0.68). KLM staff used the folder and label more than the others (4.67). Where assignments were concerned, ICT (2.79) and KLM (1.61) recorded the highest among the users. As for asynchronous communication, that is, forums and discussions, ICT (forum= 4.16, discussion= 10.71) and INSTED (forum= 2.20, discussion= 7.51) were the most frequent users. On the other hand, KLM was the most active where synchronous communications i.e. chat and BBB were concerned. The value (0.22) was, however, low indicating a need to increase its usage in the future.

Findings on activities performed by the instructors are recorded and presented in Table 8.3.

Table 8.3 Mean of Activities Performed by Instructors in iTa'leEM by Faculty

	Parti.	View	New	Add	Update	Upload	Forum Posts	TOTAL
KICT	1.54	392.81	0.00	77.54	38.02	0.06	9.89	**519.86**
INSTED	0.98	212.67	0.00	46.63	15.82	0.00	6.50	**282.61**
KLM	0.50	163.28	0.00	39.33	14.17	0.00	2.28	**219.56**
ECONS	0.99	127.12	0.00	33.17	3.64	0.01	4.76	**169.69**
CELPAD	1.16	69.33	0.00	21.94	3.69	0.00	0.33	**96.44**
PHARMACY	0.32	63.32	0.00	9.65	18.41	0.00	1.00	**92.71**
ENGIN	0.57	48.20	0.00	12.83	2.59	0.00	1.62	**65.81**
IRKHS	0.50	44.58	0.00	14.41	2.03	0.00	0.75	**62.27**
NURSING	0.76	39.24	0.00	3.47	2.94	0.00	0.71	**47.12**
SCIENCE	0.23	17.14	0.00	3.41	0.30	0.00	0.47	**21.54**
AHS	0.12	11.02	0.00	1.73	1.14	0.00	0.12	**14.13**
KAED	0.21	10.51	0.00	1.92	1.07	0.00	0.15	**13.86**
CCA	0.15	5.37	0.00	1.05	0.36	0.00	0.01	**6.94**
LAWS	0.13	4.45	0.00	1.24	0.01	0.00	0.01	**5.85**
DENTISTRY	0.00	0.06	0.00	0.00	0.00	0.00	0.00	**0.06**
MEDICINE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**

As shown by Table 8.3, KICT staff were the most active in all activities. This was followed by INSTED, KLM, and ECONS. There was a big gap with members of other faculties in terms of the activities conducted. The statistics also reflect that the most frequent activity was viewing.

Students' activities were also analyzed and the results are given in Table 8.4:

Table 8.4 Mean of Activities Performed by Students in iTa'leEM by Faculty

	Parti.	View	New	Add	Update	Upload	Forum Posts	TOTAL
KICT	61.56	5556.7	0.00	1.30	3.02	36.49	1.22	**5660.3**
INSTED	43.80	3329.8	0.00	71.03	2.44	3.26	70.82	**3521.2**
ECONS	120.39	2586.8	0.00	0.50	1.76	0.16	0.44	**2710**
ENGIN	40.19	1090.5	0.00	0.30	0.94	0.86	0.30	**1133.1**
IRKHS	44.18	1037.1	0.00	0.95	1.16	0.76	0.89	**1085.0**
CELPAD	46.00	801.72	0.00	1.71	0.79	0.09	1.69	**851.9**
KLM	17.78	735.67	0.00	7.17	0.50	13.89	7.17	**782.1**
CCA	39.80	472.43	0.00	0.00	1.04	0.01	0.00	**513.2**
PHARMACY	16.56	453.26	0.00	0.09	0.15	0.00	0.09	**470.1**
SCIENCE	10.37	145.76	0.00	0.03	0.77	0.00	0.01	**156.9**
LAWS	14.96	138.09	0.00	0.00	0.15	0.00	0.00	**153.2**

	Parti.	View	New	Add	Update	Upload	Forum Posts	TOTAL
KAED	9.12	131.78	0.00	0.02	0.25	1.47	0.02	**142.6**
NURSING	6.71	65.88	0.00	0.35	0.35	0.00	0.35	**73.6**
AHS	2.17	49.21	0.00	0.06	0.02	0.00	0.06	**51.5**
DENTISTRY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.0**
MEDICINE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.0**

Table 8.4 displays an almost similar trend with the faculty members. Viewing was the highest. Unlike the KICT instructors who were the most active in all activities, students in the same faculty were the most active in viewing, updating and uploading only. Where adding and postings on forum were concerned, a higher number of INSTED students used this service. This may suggest that INSTED students discuss and exchange ideas more than students of other faculties. However, based on personal observation, some of the staff and students preferred to discuss on *Facebook* rather than using the 'forum' services on *iTale'EM*. This activity cannot be captured by the study since it was not linked to the latter.

Conclusion

The study serves to show that staff and students of a certain Faculties used the LMS more than others. The frequency of students' usage seemed to be influenced by staff's willingness to adopt the technology. Since the migration to the new LMS platform was fairly recent at this university, some of the staff were yet to be trained to use the new system. Many others were still using the old system for teaching. Added to that, there were also those who preferred to use the other Web 2.0 technologies. Dziuban *et al.*, (2006) and Lubin and Zhang (2010) pointed out that technical and pedagogical support are vital when migrating to a new system. With more support a more positive trend towards the adoption of blended approach particularly the integration of the new LMS into teaching may be observed.

References

Akkoyunlu, B. & Soylu, M. Y. (2006). A study on students' views about blended learning environment. *Turkish Online Journal of Distance Education-TOJDE*, 7 (3).

Azizan, F.Z. (2010). Blended Learning in Higher Education Institution in Malaysia. *In Proceedings of Regional Conference on Knowledge Integration in ICT* (pp. 454-466).

Azlan Mohamed Zain, Ahmad Marzuki Hj. Zainuddin & Lihanna Borhan (2010). E-pembelajaran@UIAM. In Mohamed Amin Embi & Mohd Najib Adun (Eds.), e-*Pembelajaran di IPTA Malaysia, Pusat Pembangunan Akademik,* Universiti Kebangsaan Malaysia & Jabatan Pengajian Tinggi Kementerian Pengajian Tinggi Malaysia.

Delialioglu, O., & Yildirim, Z. (2007). Students' perceptions on effective dimensions of interactive learning in a blended learning environment. *Educational Technology & Society*, 10 (2), 133- 146.

Dziuban, C., Hartman, J., Juge, F., Moskal, P. & Sorg, S. (2006). Blended learning enters the mainstream. In C. J. Bonk & C. R. Graham (Eds), T*he handbook of blended learning: Global perspectives, local designs* (pp. 195-208). San Francisco, CA: Pfeiffer Publishing.

Dziuban, C.D., Hartman, J.L. & Moskal, P.D. (2004). Blended learning. *EDUCAUSE Center for Applied Research Bulletin,* 7(1), 12.

Garrison, D.R. & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education*, 7, 95–105.

Ginns, P. & Ellis, R.A. (2009). Evaluating the quality of e-Learning at the degree level in the student experience of blended learning. *British Journal of Educational Technology*, 40(4), 652-663.

Govender, D. (2010). Attitudes of students towards the use of a Learning Management System (LMS) in a face-to-face learning mode of instruction. *Africa Education Review*, 7(2), 2010.

Grace, S. Hussein Suleman & Gary Marsden (2013). Designing mobile LMS interfaces: Learners' expectations and experiences. *Interactive Technology and Smart Education* 10(2),147-167.

Graham, C. (2006). Blended learning systems, definitions, current trends and future directions. *The handbook of blended learning: Global perspectives, local designs. San Francisco:* John Wiley and Sons.

Hussein Hisham Barakat (2011). Attitudes of Saudi universities faculty members towards using learning management system (JUSUR). *TOJET: The Turkish Online Journal of Educational Technology*.10 (2).

Ian, Xun Ge, Lubin, A. & Zhang, Ke (2010). An Investigation of faculty's perceptions and experiences when transitioning to a new Learning Management System. *Knowledge Management & E-Learning: An International Journal,* 2(4), 433-447.

Leila Karimi & Tunku Badariah Tunku Ahmad (2013). Perceived learning and satisfaction in a blended teacher education program: An experience of Malaysian teacher trainees. *Contemporary Educational Technology*, 4(3), 197-211.

Lim, D. H., & Morris, M. L. (2009). Learner and instructional factors influencing learning outcomes within a blended learning environment. *Educational Technology & Society*, 12 (4), 282–293.

Lu, H.P. & Chou, M.J. (2010). The impact of individual differences on e-Learning system satisfaction: A contingency approach. *British Journal of Educational Technology*, 41 (2).

Mafuna, M. & Wadesango, N. (2012). Students' acceptance and experiences of the new Learning Management System (LMS) –Wiseup. *Anthropologist*, 14(4), 311-318.

Mohd Feham Md. Ghalib & Gairuzazmi Mat Ghali (2014). Innovative teaching and learning environment system (iTa'LEem): Implementing a state-of-art platform for managing e-Learning. *Bulletin MEIPTA*, 2.

Oh, E., & Park, S. (2009). How are universities involved in blended instruction? *Educational Technology & Society,* 12 (3).

Picciano, A. G. (2006). Blended Learning Implication for growth and access. *Journal of Asynchronous Learning Networks, 10 (3).*

Rovai, A. P. (2004). A constructivist approach to online college learning. *Internet and Higher Education, 7.*

Rovai, A.P, & Jordan, H.P. (2004). Blended Learning and Sense of Community: A comparative analysis with traditional and fully online graduate courses. *International Review of Research in Open and Distance Learning*, 5 (2).

Stubbs, M., Martin, I., & Endlar, L. (2006). The structuration of blended learning: putting holistic design principles into practice. *British Journal of Educational Technology*, 37 (2).

Chapter

9

This page intentionally left blank



Chapter 9

Experience on Blended Learning: Towards e-Laboratory

Zol Bahri Razali & Latifah Munirah Kamarudin

Universiti Malaysia Perlis

Introduction

Engineering Education in UniMAP: The Need of Blended Learning

Engineering Education in UniMAP is a profession devoted to harnessing and modifying the three fundamental resources that are available for the creation of all technology: energy, materials and information. Therefore, engineers seek to manipulate material and energy for the benefit of humankind. This task will successfully be achieved if the engineers, technicians and others have knowledge and experience related to the specific engineering field (Trevelyan, 2007 & 2008). Although the appropriate use of relevant science and technology is essential in engineering education, and though all engineers insist on the need to teach students the fundamental sciences underlying engineering practice, curriculum designers have so far shown only limited interest in the possible applications of learning science to engineering education (Chisholm, 1990).

Research carried out in the past two decades into trying to understand how students learn does seem, however, to open up new opportunities for a re-appraisal of traditional curriculum structures and delivery methods. More precise specifications for different domains of learning have been established, for example:

- knowledge (remembering, ability to recall),
- skills (ability to perform tasks),
- understanding (familiarity with concepts, sometimes called "deep learning"), and
- the affective domain (attitudes and values).

At the same time, students have been found to differ significantly in the actual way they learn and gain experience. They can be serialist or holist learners, visualisers, verbalisers, or doers (Borrego, 2007). Learning material has to be adapted to the needs of the different kinds of learners. Deep learning, that is, learning for understanding, is aided by providing a rich educational environment to cater for different learning characteristics (Brown & Atkins, 1988) while practice is essential for learning skills (Chisholm, 1990). Therefore, at university or college level, engineering education helps students gain the foundation for acquiring knowledge and experience that will help them in engineering practice.

Changes in Engineering Education for Global Market

Over recent decades there have been periods of rapid change in engineering education. Until the 1950s engineering education was largely based on an empirical and practical education with many hours spent at drawing boards and in workshops. The 1960s marked the ascendancy of scientific analysis which was further strengthened in the 1970s with digital computers that made analytical methods far more accessible. Science, theory and analysis have almost completely displaced practical skills from the engineering curriculum with the possible single exception of hands-on laboratory classes (Crawley, Malmqvist, Ostlund & Brodeur, 2007). Together with these changes, there have been continuing reservations expressed about the practical skills and competencies of engineering graduates. These concerns led to the introduction of generic outcome definitions for engineering education in 2000 in several countries (ABET, 2001, 2003 & 2008). These changes have led to some improvements, but concerns about graduate abilities are still voiced by many practicing engineers (Razali & Trevelyan, 2009; Abdul Razak, 2004).

With the development of ever more complex technologies and demands for educating more students there has been an increasing need for new approaches to engineering education especially for global collaboration in engineering projects (Lucena, 2006). In other words, the modern university seeks to extend learning opportunities to its students anytime and anyplace (for example via online classes and online laboratories) to be successful in the global educational marketplace (Sivakumar, Robertson, Artimy & Aslam, 2005). This scenario is only possible because of the rapid evolution of the personal computer and its integration into the engineering laboratory. These developments have helped to offset some of the costs of installing expensive equipment and have improved the laboratory experience through computer use in data acquisition, data reduction, design assistance, and simulations (Feisel & Rosa, 2005). For instance, distance learning courses have become an important tool to provide access to a college education

for a wide population of place-bound students, particularly those in areas remote to a major university campus. Online courses and laboratories make the university more accessible to mature students returning to school to update their current skills or acquire new ones (Abdel-Salam, Kauffman & Crossman, 2006). In addition, online classes provide greater flexibility to students who benefit from being able to control the time, pace and order in which they study the course materials. Virtual classrooms, televised and online courses, video-help sessions, virtual-collaborative learning environments, e-campus, and e-labs have become part of academic teaching. These emerging learning tools have provided a wide array of opportunities to distance learning students who may have otherwise not pursued higher education (Jimenez-Leube, Almendra, Gonzalez & Sanz-Maudes, 2011).

Previous research indicates that distance learning can be as effective as face-to-face instruction. For example, although many factors influence students' performance including learning style, motivation (Corter, Nickerson, Esche & Chassapis, 2004), previous learning experience and learning strategy, students at remote sites in a well-planned distance education program can achieve a performance comparable to that of students who receive on-campus instructions. This issue of the effectiveness of online courses has received the attention of many other researchers in recent years (Campbell & Stanley, 1966; Madara, Elliott & Glumac, 2003).

From Conventional to e-Laboratory in UniMAP

For UniMAP engineering students, hands-on experience in an engineering laboratory is an important skill. By attending laboratory classes and handling (working with) the equipment, the students are likely to appreciate more details about the appearance and functions of the equipment. However, the need to cater for a global educational marketplace has stimulated changes in UniMAP. The relatively high cost of conventional or hands-on laboratory classes and the increasing use of online learning have led UniMAP towards electronics access laboratories; where the students are separated from the hardware and interact through a technology-mediated interface. It is parallel to the modern university seeks to extend learning opportunities to its students anytime and anyplace, (for example via online or e-laboratories), (Trevelyan, 2014; Sivakumar, Robertson, Artimy & Aslam, 2005). This trend is driven by a demand to provide increased flexibility and opportunities in the delivery of laboratory classes to students (Taylor & Trevelyan, 2005), but it may have the unintended consequences of affecting the learning outcomes of the laboratory class (Lindsay, 2005).

Our current research on engineering practice has revealed that there are few detailed reports on engineering practice and little if any discussion about the after-effects of changing laboratory environments in engineering education (Trevelyan, 2012). However, it is not easy to decide which laboratory experiences contribute to a foundation for engineering practice. The literature provides little guidance on what students will miss or gain when moved from hands-on laboratories to

e-laboratories or simulations. E-laboratory classes in UniMAP have been made possible by advancements in software and communication technologies. Before that, computer based simulations have been used to assist the teaching of engineering students for many years. In typical hands-on laboratory classes which the researcher has observed, students are usually divided into groups of four or five people and each group performs a single exercise together. Sometimes, not every student has contact with or handles the equipment. In contrast, an electronics laboratory normally provides opportunities for every individual student to run the experiments for themselves (Trevelyan, 2014).

Measuring the hands-on components of laboratory classes might be valuable for engineering educators. Measurements, when validated, may enable engineering educators to justify the expense of providing certain experiences that students might otherwise miss when moved from hands-on to e-laboratories. Furthermore, if we can distinguish between the different learning components that can be measured and assessed, the educator could be more confident in predicting what students will gain in a given laboratory class. These measuring instruments would then provide a powerful new means to assess the effectiveness of engineering laboratory classes and also to measure differences between hands-on and e-laboratories.

Towards e-Laboratory via UniMAP Blended Learning and Concerns

Recently, there has been a trend towards providing Blended Learning classes through online access. This trend is driven by a demand for increased flexibility and opportunities in the delivery of classes to students. A Blended Learning classes is made possible by advancements in network infrastructure and development of multimedia protocols for seamless transport of information. However, in running the Blended Learning approach, it has the possibly unintended consequences of affecting the learning outcomes. Hence in designing a Blended Learning approach, the developer must ensure good pedagogy and learning practices given to the users.

Although an e-laboratory cannot completely replace first-hand experience, it provides more time for students to interact with the equipment; typically a conventional laboratory class allows each student only a few minutes. By allowing students to operate the equipment online for an hour or more at a time, it is expected that students are able to significantly enhance their learning. It is clear that the choice of laboratory technologies, i.e. e-laboratory, could change the learning environment and the effectiveness of learning. Hence, to measure the effectiveness and enhancement of student's learning while they running the e-laboratory, the Telelabs project (Trevelyan, 2012; 2014) combined automated assessment and performance monitoring techniques with laboratory equipment available via the Internet. The developed assessment techniques are to measure the effectiveness and provide incentives for students to improve their learning.

One serious concern that has been raised is that valuable practical experience would be lost by using an electronics laboratory (e-Labs). They use real data, but the data is acquired through the mediation of a computer interface. As an example, proficiency in the use of basic equipment such as oscilloscopes and signal generators is an important skill for engineers. Handling real components and taking the necessary precautions when circuit-building are important abilities. For instance, the need to connect a power supply correctly reinforces the differences between active and passive components in a way which is lost in a simulator. Finally, there has been a concern that students would place a large premium on the use of real equipment, and that the place of practical work in helping to bridge the gap between theory and reality may be lost. Work in a real laboratory imposes time and physical boundaries both for students and academic staff. It requires significant scheduling effort and financial investments. Therefore, e-laboratories are hopefully becoming increasingly common in the teaching of undergraduate engineering courses in UniMAP. With all the focus on hands-on learning, learning by doing and the practical and personal skills a student can learn in the laboratory, it seems strange to remove the student again by implementing an online laboratory. However, a number of motivations are cited for the development of e-laboratory. According to Trevelyan (2012), some incentives for implementing e-laboratories include:

1. Distance learning can make laboratory experiences more widely available outside the universities in which they are developed.
2. It provides worldwide access for students and researchers in poor and developing countries.
3. Flexible delivery, allowing students to work on the laboratory at times, which best suit them.
4. Improving learning effectiveness by allowing better sequencing with lecture material. Often timetabling restrictions mean that a laboratory is run over several weeks, therefore, the completion of a laboratory may not coincide with lectures pertaining to the relevant material. E-laboratories can be completed as a series of short tasks, tied closely to tutorial questions and lecture material. This longer-term learning strategy gives a student time to digest information and has the potential to improve learning effectiveness significantly.

Researchers also have looked at student preferences and educational outcomes related to e-laboratories. Corter and Nickerson (2004) found that most of the student respondents rated the effectiveness and the impact of the remote lab to be comparable or better. The results of the study seem encouraging for advocates of e-laboratories. There was some tendency for students of higher ability to give higher ratings to specific aspect for e-labs, but lower-ability students to give slightly higher ratings to the e-labs when they were compared directly to the hands-on format. Although there is a slow trend to shift from real to electronics laboratory

classes, little attention has been paid to the pedagogical differences caused by this shift. In a recent study by Lindsay (2005), he showed that remote laboratory classes are introducing distance and technology-mediated interfaces into the laboratory environment. Each of these factors has been shown to have an impact upon learning outcomes. He insisted that the learners construct their reality from the situations and scenarios that they encounter; their understanding is based on their experience. Different experiences will lead to different constructions; two learners who encounter different material will learn different things, but for some instance, based on their past experiences two learners who encounter the same material will assimilate it differently.

The First Experience on Blended Learning in UniMAP

In Semester 2 Session 2013-14, UniMAP has an experience conducting the first Blended Learning course. The course is EKT336 – Computer Network, conducted by Dr Latifah Munirah Kamaruddin. In UniMAP, we are using Claroline e-Learning open source platform. Based on our experience of using the Claroline e-Learning platform, the platform is user friendly and easy to operate, manage and maintain the level of powerful of the system. Similar to Moodle e-Learning platform, all the features for effective and efficient learning platform are available in Claroline e-Learning.

Implementation of Blended Learning (e-Learning@UniMAP)

In the course EKT336 – Computer Network, students are learning the theory of computer networking, all the networking procedures and protocols, and is established by doing a few hands-on tasks. As a blended approach, some of the theory (such as lecture notes, manual, tutorial etc.) are inserted into the e-Learning platform. Towards an e-Laboratory, the course intended to run one of the laboratory task electronically or we call e-laboratory. However, for the semester, the facility and infrastructure of e-Laboratory is yet to be ready. For overall, what the lecturer did in this course are combining the traditional face-to-face lectures with online lectures. Students who can access the e-Learning @UniMAP are only the registered students for the course EKT336 – Computer Network.

Implementation of Blended Learning

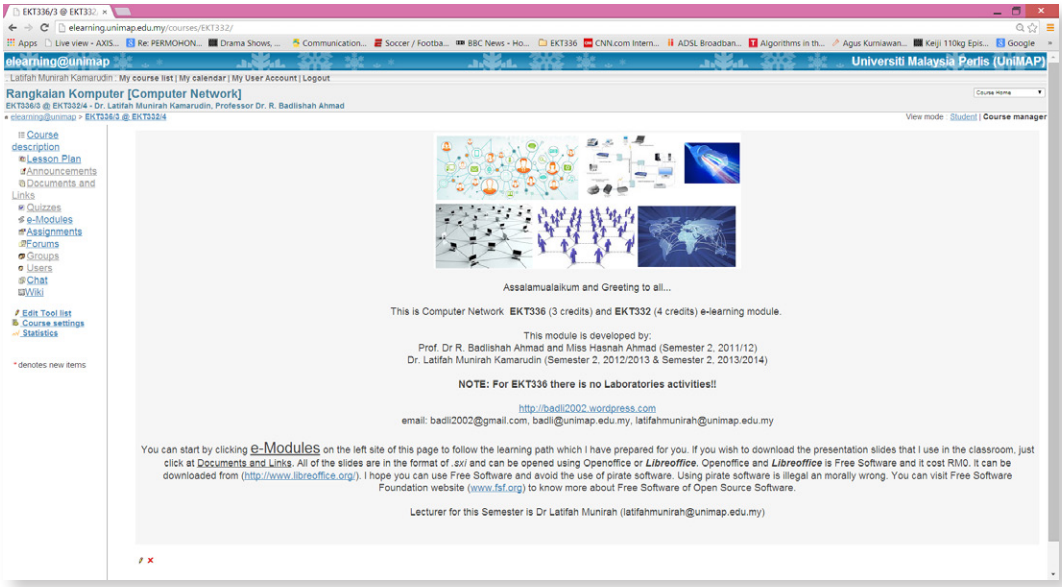


Figure 9.1: *Course Coordinator view*

Similar to other platforms, in the e-Learning@UniMAP, there are two Views: Coordinator and Student View. In the Coordinator View (see Figure 9.1), the lecturers will provide all the necessary information and data. In the Students View (see Figure 9.2), the students can receive or read all the information provided by the lecturers, but unhallowed to edit the contents. The page of the Coordinator View is similar and likely same to the Students View, but some of the buttons or menus are disappeared.

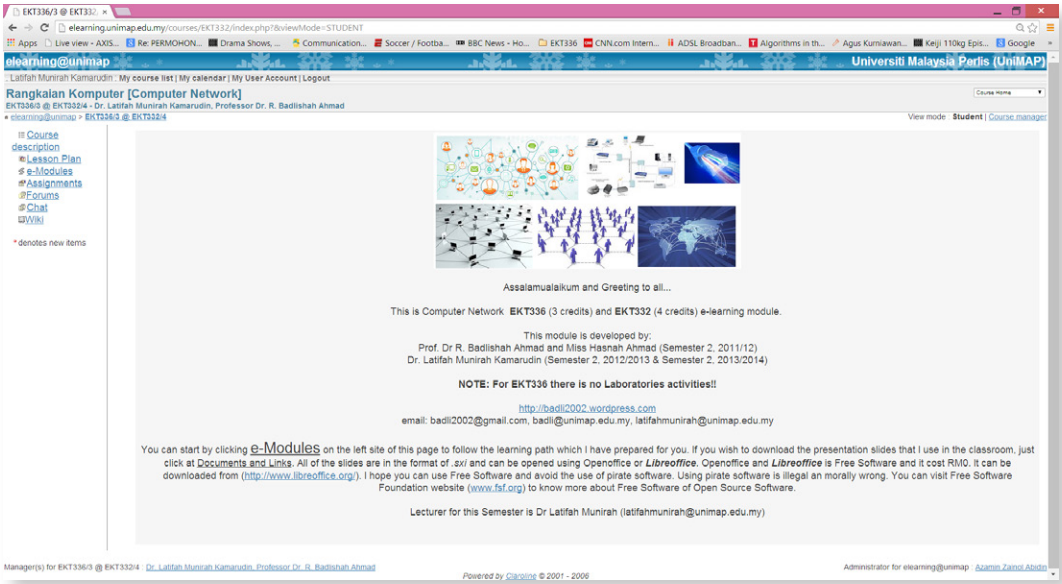


Figure 9.2: *Students View*

All of the necessary information are provided in the early pages of the e-Learning@UniMAP, such as Course Description (Synopsis, Objectives, Expected Outcomes, References, Laboratory Activities-if any, and Teaching Plan) (see Figure 9.3).

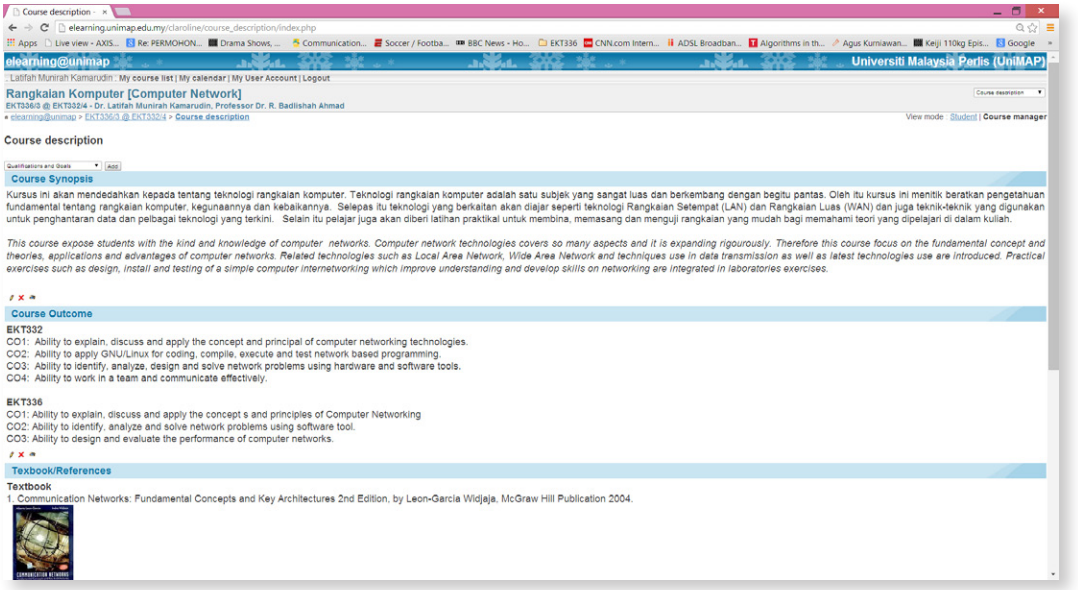


Figure 9.3: *Course Description*

The next page of the e-Learning@UniMAP is a learning path (see Figure 9.4), where all the lectures activities are provided, such as path to lecture notes (presentation, animation, YouTube, video or any multimedia sources), quizzes, survey, etc. In this page, students (in Students View) are guided to the paths.

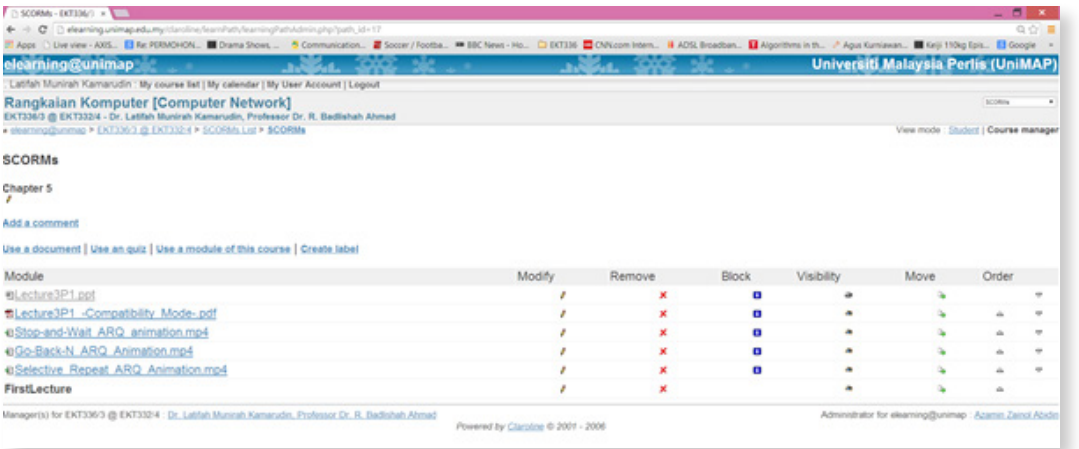


Figure 9.4: *Learning Path*

Figure 9.5 and Figure 9.6 show the Learning Path of Coordinator View and what the students are seeing in the Learning Path of Students View.

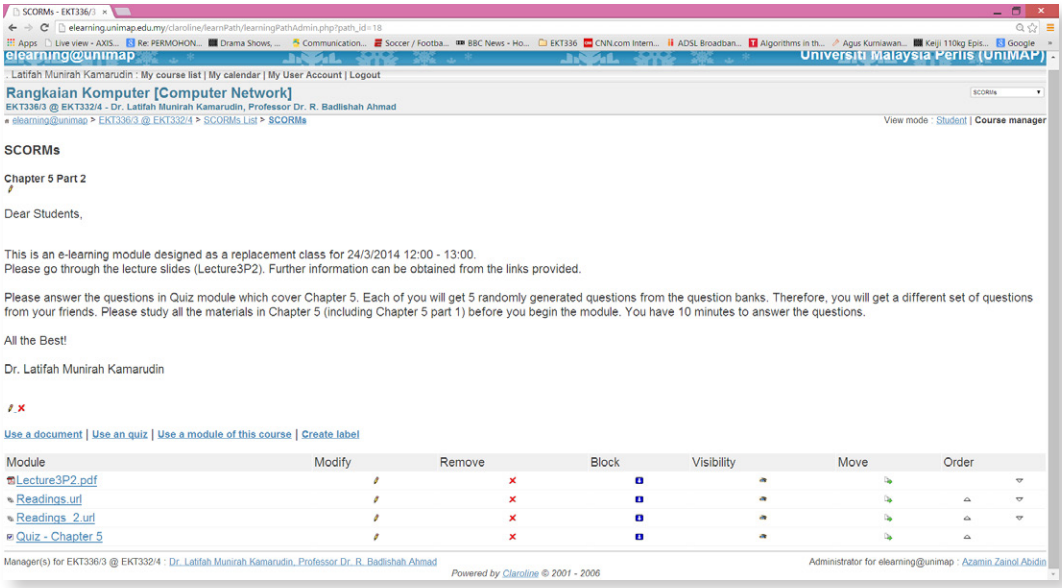


Figure 9.5: *Learning Path Course Coordinator View*

In the Learning Path of Students View, the students are guided to follow the Learning path. There is indicator to show the progress and the element used or opened by the students. However, all the students are compulsory to do the Quizzes and the marks are automatically generated.

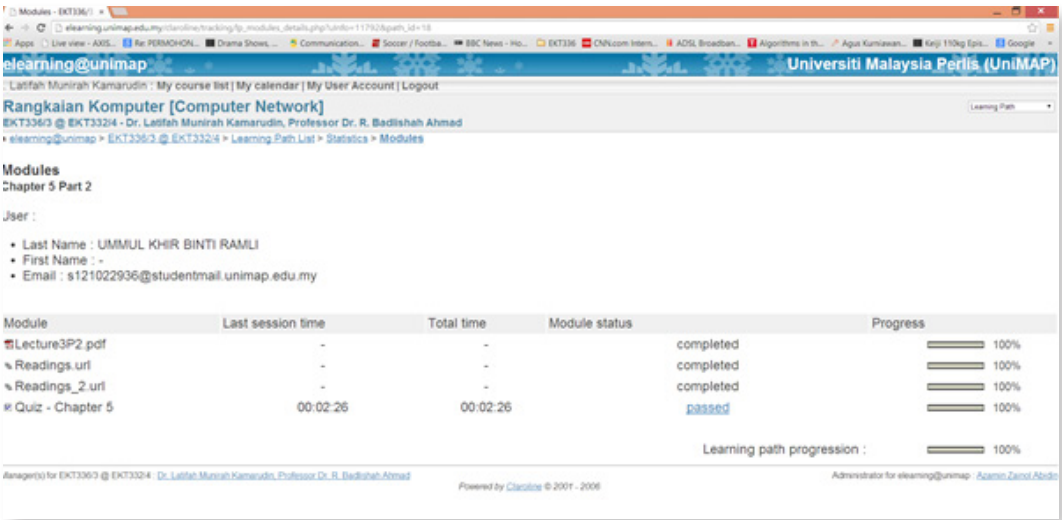


Figure 9.6: *Learning Path Conducted by One of the Students*

Figure 9.7 shows one of the lectures conducted using Blended Learning approach. There are no physical lectures. Students login to the system and go through the materials provided. Materials provided are slides, videos, animation, and additional readings. Upon completion of the module, each student must take an online quiz to assess their understanding.

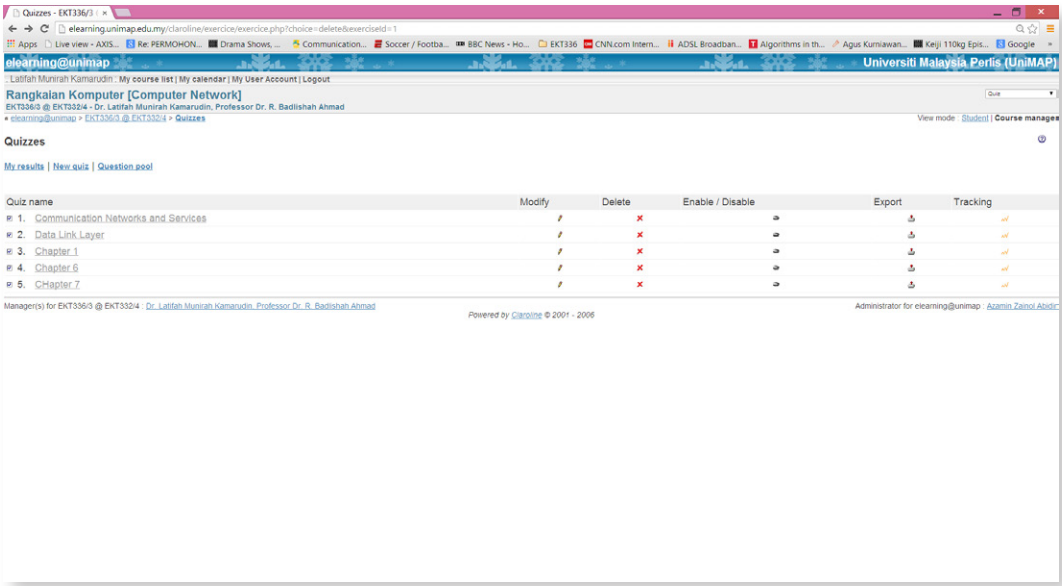


Figure 9.7: *Quiz Created to Assess Students' Performance*

To justify the concern of whether the students access the e-Learning@UniMAP and study by their own is happening or not, is checked by providing the quizzes in the middle of the topics or lecture notes. Only for the students, who do the tasks, will be able to answer the questions. The example of a sample question is in the Figure 9.8.

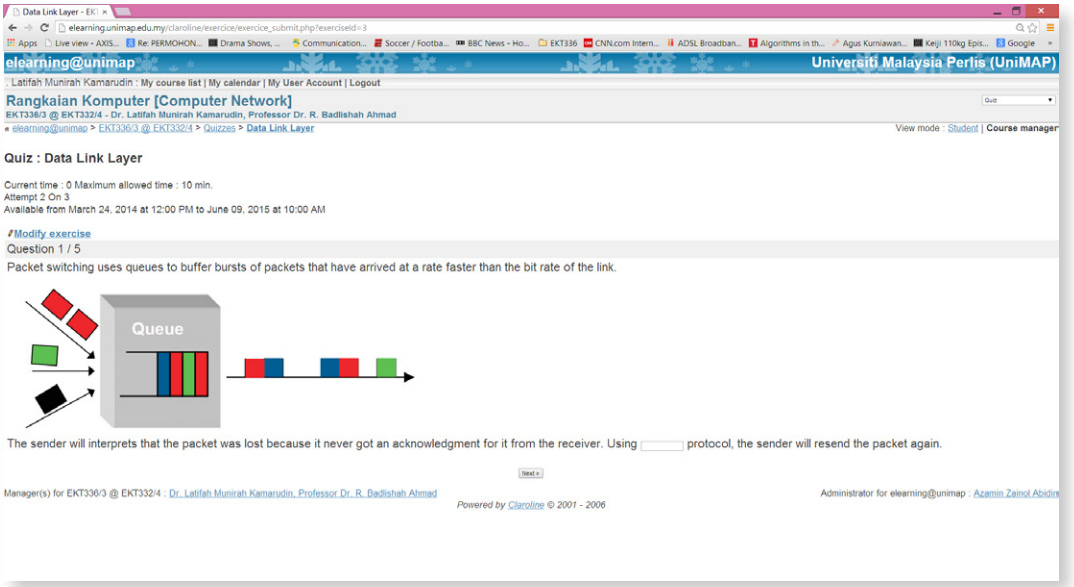
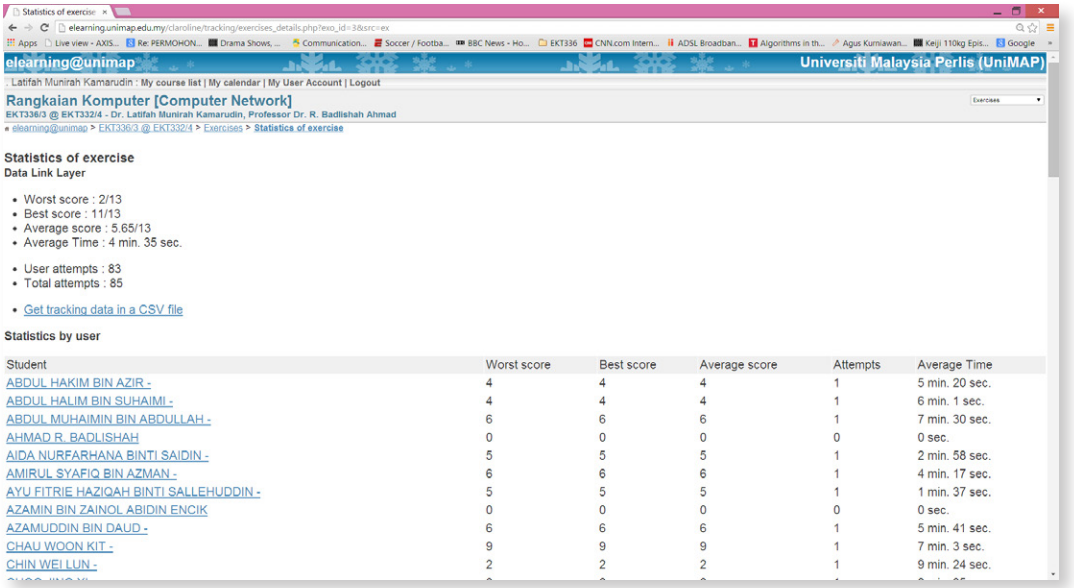


Figure 9.8: *Example Question*

Figure 9.9 shows the statistic of the quiz attended by each student and associated with the marks.



Student	Worst score	Best score	Average score	Attempts	Average Time
ABDUL HAKIM BIN AZIR -	4	4	4	1	5 min. 20 sec.
ABDUL HALIM BIN SUHAIMI -	4	4	4	1	6 min. 1 sec.
ABDUL MUHAIMIN BIN ABDULLAH -	6	6	6	1	7 min. 30 sec.
AHMAD R. BADLISHAH	0	0	0	0	0 sec.
AIDA NURFARHANA BINTI SAIDIN -	5	5	5	1	2 min. 58 sec.
AMIRUL SYAFIQ BIN AZMAN -	6	6	6	1	4 min. 17 sec.
AYU FITRIE HAZIQAH BINTI SALLEHUDDIN -	5	5	5	1	1 min. 37 sec.
AZAMIN BIN ZAINOL ABIDIN ENCIK	0	0	0	0	0 sec.
AZAMUDDIN BIN DAUD -	6	6	6	1	5 min. 41 sec.
CHAU WOON KIT -	9	9	9	1	7 min. 3 sec.
CHIN WEI LUN -	2	2	2	1	9 min. 24 sec.

Figure 9.9: *Statistics of exercise for each students*

Another component of assessment is an assignment. Figure 9.10 and 9.11 show the page of assignment given to the students. The students are required to submit the assignment online to the link (lecturers' dropbox) stated on the page within the time frame. After the due date, the link is closed and disappeared.

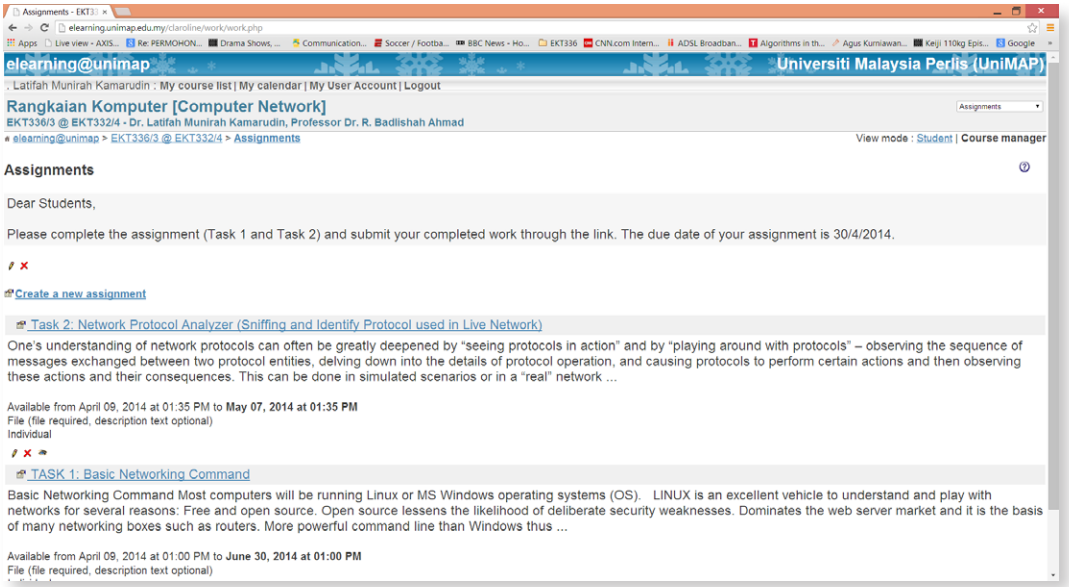


Figure 9.10: *Assignments*

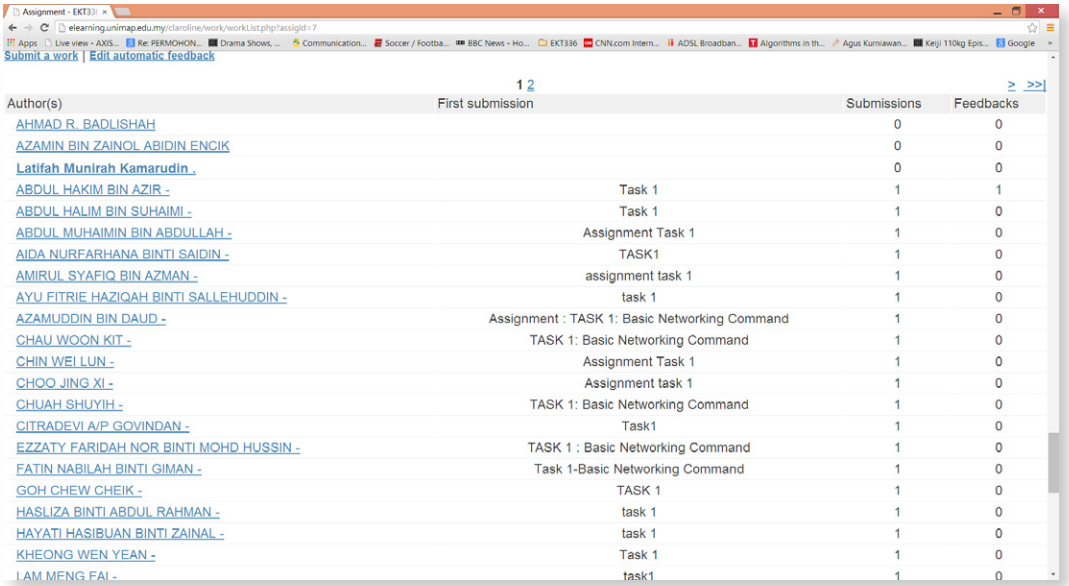


Figure 9.11: *Assignment Submission by the Students*

Issues Faced and Solutions Adopted

In the first experience using Blended Learning approach to teach engineering subject in UniMAP, we are facing a few uncertainty, such as:

- There are many Blended Learning models. However, choosing the right strategy is very difficult because of the lack of experience. Based on subject requirements, the strategy is different. For EKT 336, Computer Network subject, what we did is combining the traditional face-to-face lectures with online lectures.
- Inadequate technical infrastructure and unavailability of facilities such as class recording and low speed internet access. There are a few things that we need to further improve the learning experience using Blended Learning approaches such as class recording and online conferencing that are not being implemented this time.
- Uncertainty with the rule and regulation of the Engineering Accreditation Councel (EAC); the professional body who accredit all the engineering courses in UniMAP especially on the element of Student Learning Time (SLT) and Lecturer Teaching Time.

Conclusion

It was the first experience in e-Learning@UniMAP for the pilot subject. We are confident that the implementation of an e-Learning environment that actually encourages and supports meaningful and successful Blended Learning, represents a significant change of paradigm for e-Learning in UniMAP. Based on the results presented in this chapter, e-Learning@UniMAP seems to engage learners at much more meaningful levels through all the planned tasks or activities. The students learning experience was enriched through this approach. Even though the planning to integrate the e-Laboratory into the Blended Learning approaches, where the students can access and run one of the laboratory remotely, the preparation of infrastructure (hardware and software) yet to be ready. However, we are strongly confident that the planning of e-Laboratory via Blended Learning will be successfully implemented, and this will open another means of implementing engineering laboratory.

References

Abdel-Salam, T., Kauffman, P. J., & Crossman, G. (2006). Does the lack of hands-on experience in a remotely delivered laboratory course affect student learning? *European Journal of Engineering Education,* 31(6), 747-756.

Abdul Razak, S. (2004). Jobless graduates in Malaysia: Issues and critical review. *The New Straits Time, 32*.

ABET. (2001). Criteria for accrediting engineering programs. *2000-2001-Conventional Criteria*.

ABET. (2003). Guidelines and application for provisional status. In the Washington Accord. from http://www.washingtonaccord.org/wash_accord_trans.html, http://www.washingtonaccord.org/

ABET. (2008). *Criteria for accrediting engineering programs 2007-2008.* Baltimore, MD 21202: Engineering Accreditation Commission ABET, Inc.

Borrego, M. (2007). Conceptual difficulties experienced by trained engineers learning educational. *Journal of Engineering Education*, 96(2).

Brown, J., & Atkins, M. (1988). *Effective teaching in higher education*. London: Routledge.

Campbell, D. T., & Stanley, J. C. (1966). *Experimental and quasi-experimental designs for research*. Chicago: Rand McNally.

Chisholm, A. W. J. (1990). An engineering design analogy for engineering education. *Computers in Industry* 14, 197-204.

Corter, J. E., Nickerson, J. V., Esche, S. K., & Chassapis, C. (2004a). Remote versus hands-on labs: a comparative study. *In Frontiers in Education, 2004. FIE 2004. 34th Annual (pp. F1G-17). IEEE.*

Crawley, E. F., Malmqvist, J., Östlund, S., & Brodeur, D. R. (2007). Rethinking engineering education: The CDIO approach. *In Engineering Education* (pp. 216-240). New York: Springer.

Feisel, L. D., & Rosa, J. A. (2005). The Role of the laboratory in undergraduate engineering education. *Journal of Engineering Education*, 94(1), 121.

Jimenez-Leube, F. J., Almendra, A., Gonzalez, C., & Sanz-Maudes, J. (2011). Networked implementation of an electrical measurement laboratory for first course engineering studies. *IEEE Transactions on Education*, 44(4), 377-383.

Lindsay, D. E. (2005). *The Impact of Remote and Virtual Access to Hardware upon the Learning Outcomes of Undergraduate Engineering Laboratory Classes.* The University of Melbourne, Melbourne.

Lucena, J. C. (2006). Globalisation and organizational change: engineers experiences and their implications for engineering education. *European Journal of Engineering Education*, 31(3), 321- 338.

Razali, Z. B., & Trevelyan, J. (2009). An effective way to measure practical intelligence from a laboratory experience. *Paper presented at the Research in Engineering Education Symposium (REES2009),* Cairns. Australia.

Sivakumar, S. C., Robertson, W., Artimy, M., & Aslam, N. (2005). A Web-based remote interactive laboratory for Internetworking education. *IEEE Transactions on Education*, 48(4), 586-598.

Taylor, K., & Trevelyan, J. P. (2005). Australia's telerobot on the Web. *In Proceedings of the International Symposium on Industrial Robots (26, pp. 39-44)*. International Federation of Robotics, & Robotic Industries.

Trevelyan, J. (2007). Technical Coordination in Engineering Practice. *Journal of Engineering Education,* 96(3), 191.

Trevelyan, J. (2008). *A Framework for Understanding Engineering Practice.* In Proceedings of the ASEE (pp. 1-20), Annual Conference and Exposition.

Trevelyan, J. (2012). *Evaluating telelabs: Remotely operated laboratory experiments*. Perth: The University of Western Australia.

Trevelyan, J. (2012). Mind the gaps: Engineering education and practice. *In Proceedings of the 21st Annual Conference for the Australasian Association for Engineering Education* (pp. 383). Engineers Australia.

Trevelyan, J. (2014). Using On-line Laboratories in Mechatronics System Teaching. *In Proceedings of the International Conference on Mechatronics System*, Newcastle.

This page intentionally left blank

Chapter

10

This page intentionally left blank



Chapter 10

Enhancing Student Interaction and Engagement in Blended Learning

Mohd Hafriz Nural Azhan & Md. Yazid Mohd Saman

Universiti Malaysia Terengganu

Introduction

Learning is defined as a process that brings together cognitive, emotional, and environmental influences and experiences for acquiring, enhancing, or making changes in one's knowledge, skills values and world views (Lara, 2007). It involves the acquisition and modification of knowledge, skills, strategies, beliefs, attitudes, and behaviors. It also involves cognitive, linguistic, motor and social skills and can take many forms. In e-Learning (EL), teaching and learning (T&L) is done using computers (Zhang *et al.*, 2004; Beetham & Sharpe, 2007). A learning management system (LMS) manages online T&L (Cavus, 2010). It helps to record and monitor students' progress throughout their learning period. It also provides an asynchronous communication between students and their lecturers. Teaching materials can be delivered at the appropriate configured time using the various communication tools such as emails, SMS and any Web 2.0 tools (Maloney, 2007; Mohamed Amin Embi, 2012). A digital library maintains a repository of T&L materials (Sharifabadi, 2006; Wang, 2003). The role of digital libraries in e-Learning environments has been recognized as a core component in supporting effective T&L.

Learning has its own techniques which include instructional theory known as pedagogy. It is defined as the study of the methods and activities of teaching (Mohamed Amin Embi, 2012). The correct use of those activities makes pedagogy a method for teaching adult human or "critical pedagogy" (Maloney, 2007). This

instructional theories refer to the science of teaching adopted by teachers around the world. Most teaching instructors have their own pedagogy approaches, but each of the approaches has different outcome. Learning can be presented as a complex process to gain knowledge. Active learning (AL) refers to teaching and learning techniques such that the students will be given the responsibility of learning (Thiagarajan, 2006). Some AL activities include class discussions, student debate sessions, class quizzes or class games. AL can be supported by technology while maintaining the pedagogy that used in learning. Table 10.1 shows some activities for AL.

Table 10.1 Activities for Active Learning (Thiagarajan, 2006)

Learning Domain	Domain Definition	Sample Topics	Suggested Format
Informational Domain	Involves technical and factual content	• The information superhighway • The Americans with disabilities act • Chemistry of common household cleaners • A brief history of our organization	• Best summaries • Bingo • Crossword • Essence • Frequently Asked Questions (FAQs) and Fakes • Intelligent Interruptions • Press Conference • Selected Questions • Team Quiz • Thirty-Five • Twos and Threes • Words and Pictures
Procedural Domain	Involves step-by-step activities	• How to deal with senior-citizen customers • Financial planning • Retirement planning • Poster design	• Fishbowl • Item list • Job Aids • Multilevel Coaching • Team Teaching • Thirty-Five
Conceptual Domain	Involves Categories, Definitions and examples	• Types of interview questions • Causes of performance problems • Organizational climate variables • Cultural factors	• Brainstorming • Confusion • Egg Hunt • Idea Map • Questionnaire Analysis • Superlatives
Principle Domain	Involves the use of rules and relationships among different concepts	• Sexual discrimination • Soccer rules • Leadership styles • Basic principles of message design	• Idea Map • Item List • Questionnaire Analysis
Interpersonal Domain	Involves concepts, procedures, and principles related to interpersonal interactions	• Impact of management styles • Cross-cultural communication • Methods for conducting a workshop • Ways of handling sexual harassment	• Fishbowl • Questionnaire Analysis • Role Plays • Shouting Match • Item List • Interactive Story
Affective Domain	Involves attitudes, values, and beliefs	• Affirmative action • Gun Control • Conflict resolution • Cultural values	• Shouting Match • Interactive Story • Debrief

In Blended Learning, part of T&L may be done through the use of a learning management system (LMS) (Garrison & Kanuka, 2004; Eileen *et al.*, 2003). It allows asynchronous out-of-classroom activities. It helps to record and monitor students' progress throughout their learning period. Teaching materials can be delivered at the appropriate configured time using the various communication tools such as emails, SMS and any Web2.0 tools (Maloney, 2007; Mohamed Amin Embi, 2012). With the avilability of a digital library, resources are always available and students are in control of their learning pace and time. A structure for a standard LMS is shown in Figure 1 (Cavus, 2010). A comparative study of several LMSs can be found in Awang, (2012).

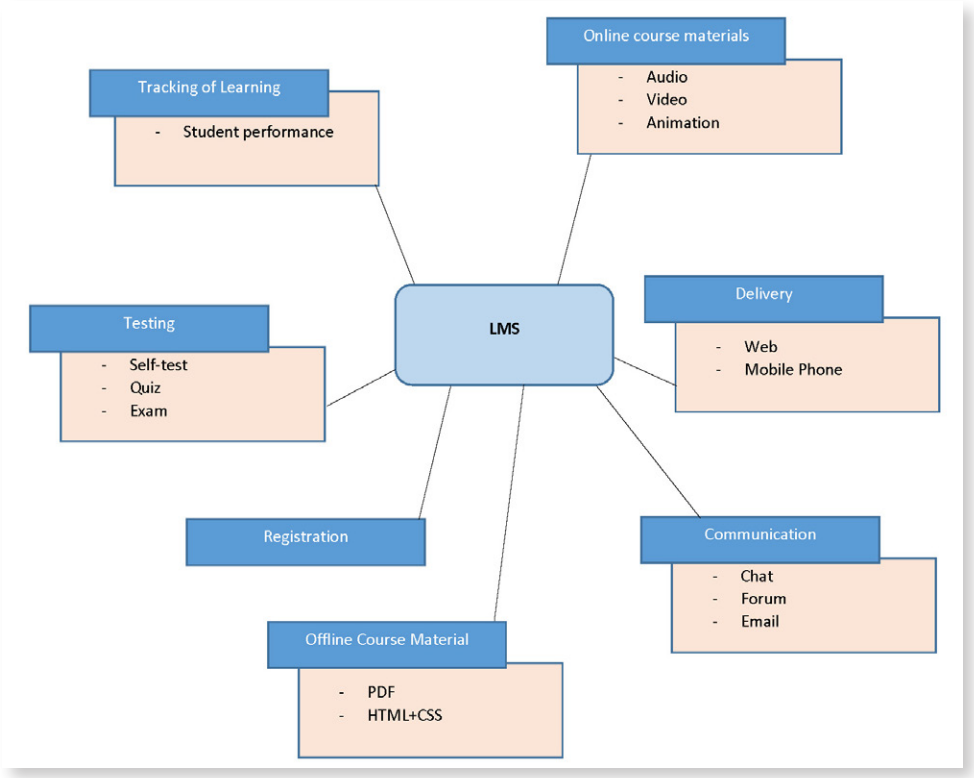


Figure 10.1: *LMS Structure*

This chapter describes the use of LMS with the Push-Pull method to enhance the student interactions in the system to enhance student interaction with LMS in UMT. It also describes the use of the LMS with an approach called Just-in-Time Teaching (JiTT) (Eileen *et al.*, 2003) to enhance engagement of students in the classroom and their interaction with the lecturers. The application of the push-pull mechanism (PP) (Vijay, 2011) to enhance student access to an LMS is outlined in this chapter. This mechanism delivers the appropriate learning materials to the students at the appropriate configured time using the various communication tools.

E-Learning @ UMT

In University Malaysia Terengganu (UMT), e-Learning development has started since 2001. The LMS used was Blackboard (Coopman, 2009). It had most of the features needed for e-Learning and it was also user-friendly. However, with the introduction of open source LMSs such as Moodle, Claroline and Atutor (Awang, 2012), the university made a system migration from Blackboard to Moodle in 2005. This was particularly due to high annual license fees incurred by the proprietary system. In 2013, UMT developed a one-stop center called Bahtera that combines the e-Learning facility called Lentera and a digital library. This system is managed by Pusat Pembelajaran Digital Sultanah Nor Zahirah. Lentera (see Figure 10.2) consists of three main e-Learning platforms for the three levels of degrees. They are Oceania for undergrad students, Oasis for Staff and postgraduate students and Wadi for diploma students. All of these platforms are linked up in Lentera. It is also integrated with a Web-conferencing service called Bicara, video streaming facility called Lentera.tv and an information portal for student-centered learning (SCL).

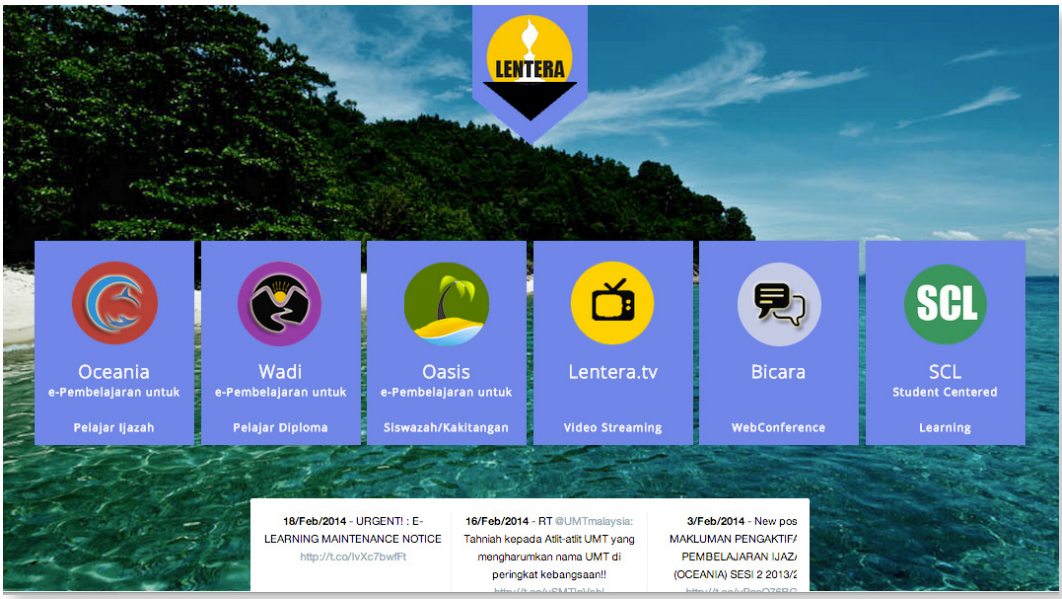


Figure 10.2: *Interface of Lentera @ UMT*

Each e-Learning platform in Lentera consists of more than 13 modules and activities that can be used by lecturers to create learning activities in supporting Blended Learning. In the early stages of the usage of the system, e-Learning has been considered as a platform that allows lecturers to upload teaching materials or course notes. It also provides online quizzes as a course assessment, and room of discussions as a communication platform. Students are allowed to download notes or course materials when needed. This creates a situation termed as the Refrigerator Syndrome. This, however, has changed as the involvement of lecturers in using e-Learning facilities has increased by nearly 90% in UMT.

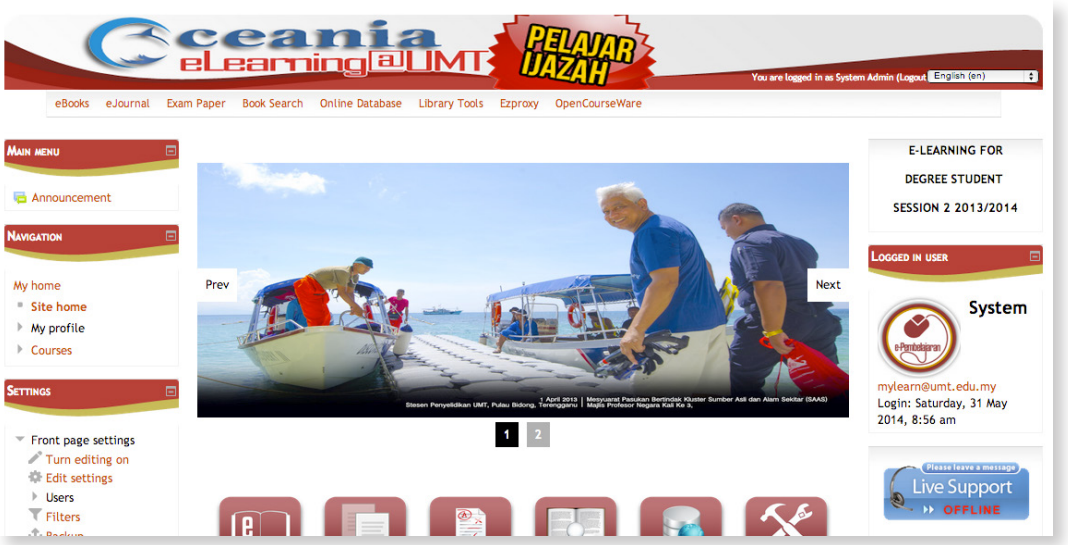


Figure 10.3: *Interface of Oceania Elearning For Undergraduate Students*

Blended Learning

Blended Learning offers an attaractive education program by combining the teaching and learning (T&L) activities through the use of information technology. In this mechanism, a student learns at least in part through online delivery of content and instruction with some elements of student control over time, place, path or pace (Eileen *et al.*, 2003; Garrison & Kanuka, 2004). In Blended Learning, a form of learning called Flipped classroom is perceived to be a suitable technique for T&L (Eileen *et al.*, 2003; Garrison & Kanuka, 2004). This method of T&L may also be described as Just-in-time teaching or JiTT. Students will have to complete certain preparatory tasks before coming to class. The lecturers will discuss those answers and comments in the classroom. With the aid of an LMS, students may perform their learning through the online contents. They may take an online quiz, do an assignment and submit it online or watch video lectures before coming to class. In the face-to-face classroom with the presence of the lecturer, the solutions of the assigned problems may then be discussed. This offers a more personalized guidance and interaction with students, instead of lecturing. Thus, the students come to class more prepared and motivated to learn. The lecturers may spend more time on difficult topics or common misconceptions.

Enhancing Interactions in Blended Learning

In this chapter the use of LMS with the push-pull (PP) method to enhance the student interactions in the system is outlined. It also describes the use of the LMS with an approach called Just-in-Time Teaching (JiTT) to enhance engagement of students in the classroom and their interaction with the lecturers. It blends Web-

based preparatory activities such as quizzes and assignments with classroom learning. It also provides immediate feedback of the learning of students.

Push-Pull Mechanism In LMS

In classrooms, AL activities will engage students in their T&L. They will have time and opportunity to interact with their lecturers during their face-to-face lecture. However, in an EL environment, this normally does not happen as activities in EL are mostly done asynchronously. It has been observed that lecturers will upload their teaching materials onto the LMS at the beginning of the semester. The students on the other hand, will download those materials for their own readings. This is known as *refrigerator syndrome* of the LMS (Mohd Hafriz Nural Azhan *et al.*, 2012). One scenario for this problem, extracted from Universiti Malaysia Terengganu in 2012, is shown in Figure 10.4.

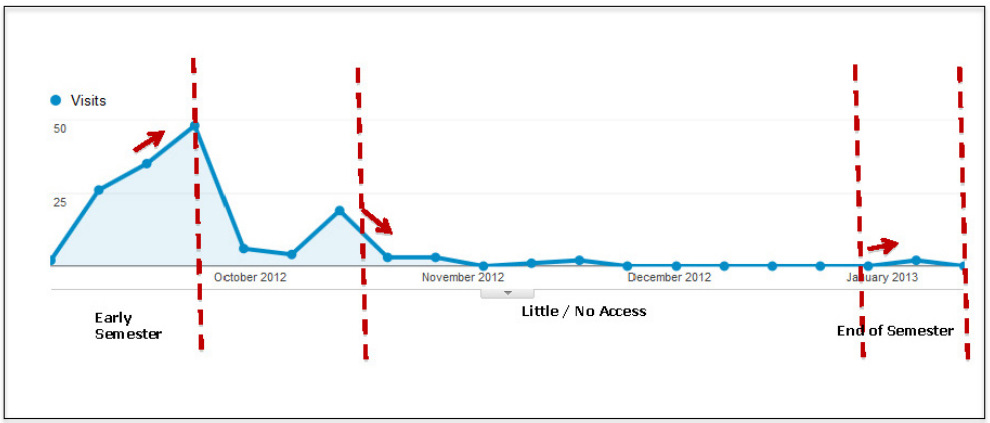


Figure 10.4: *Refrigerator Syndrome in LMS*

To increase the use of the LMS, T&L materials and tasks may be planned to be delivered on certain times automatically (Vijay, 2011). This facilitates the regular access to the LMS. The LMS provides the content repository of T&L. The push function will deliver the appropriate learning materials at the appropriate configured time to various communication devices such as emails, SMS and any Web 2.0 Tools. Once the information is delivered, a student may actively act directly to the tasks received by performing the pull function on the materials. The details of push and pull times of the activities are recorded by the LMS. The system may generate various reports on the student activities for their reflection. With the rapid development of mobile technology and content development, mobile learning has become a new trend to e-Learning. To support mobile learning three types of media mechanisms have been identified (Yu-Feng Lan, 2010). They are Short Message Service (SMS), Email, and Really Simple Syndicate (RSS). RSS has been shown to have a better performance than SMS and email on content accuracy and adaptability.

The use of LMS with the push-pull method has been implemented to enhance student interactions in the T&L. This mechanism is shown in Figure 10.5. In the

push technique, the learning contents are delivered (or pushed) to learners without them having to find and pull the contents. In the pull methodology on the other hand, the contents are delivered when the students make the effort to get them i.e., pulling the contents. The activities of students are tracked and analysed. Temporal analysis is performed on the access times done by the students. The students may then be clustered into groups of active and less active learners. Based on the clustering results, appropriate actions can then be taken to improve the interactions.

Just-in-Time Teaching

As mentioned earlier, to increase the engagement and interaction between the students and the lecturers in the classroom, an approach called just-in-time teaching (JiTT) has been adapted and practised by many academic institutions (Eileen *et al.*, 2003; Garrison & Kanuka, 2004). It blends Web-based preparatory activities such as quizzes and assignments with classroom learning. JiTT provides immediate feedback of the learning of students. This is a critical component of JiTT. This technique has shown to give positive results. Increase in student attendance in class and decreased attrition have been observed.

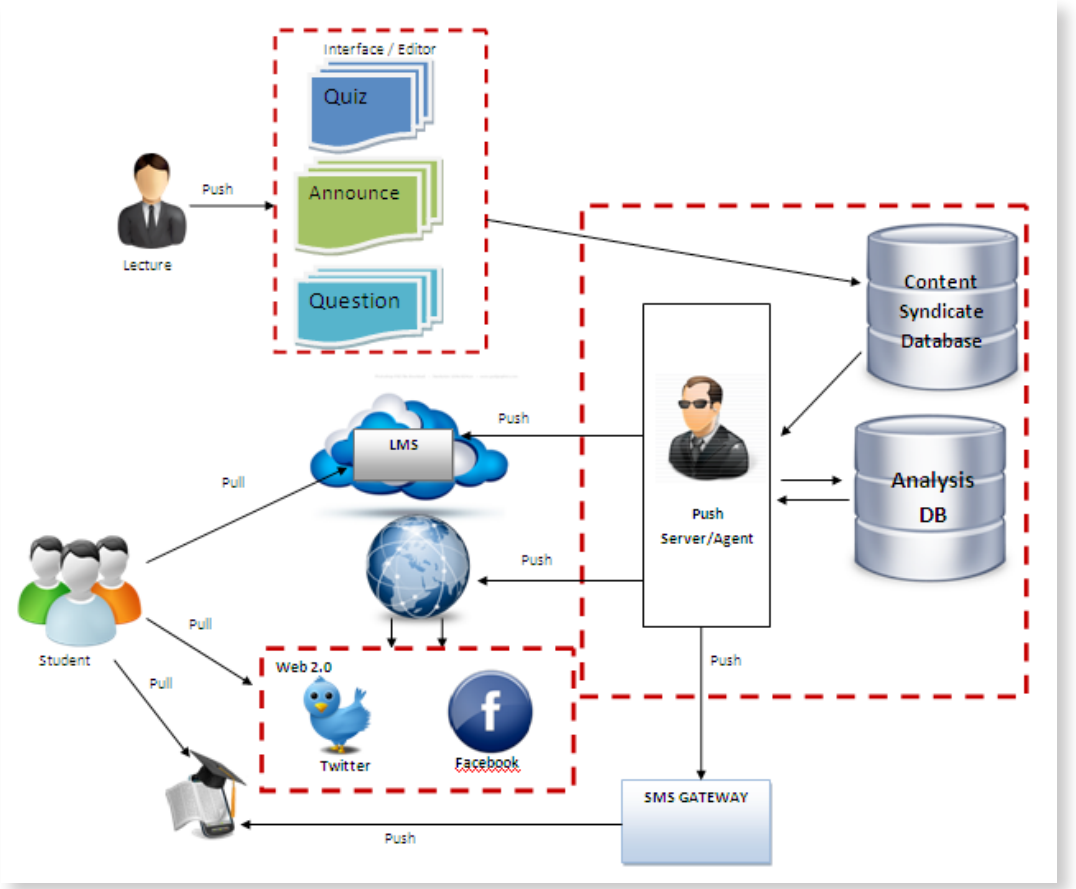


Figure 10.5: *Push-Pull mechanism in T&L system*

To employ JiTT, the lecturers will have to furnish tasks related to the topics of the lectures that students have to complete before coming to the class. In Blended Learning, these preparatory assignments or tasks may be given in an LMS and pushed to the students. The students may encounter problems and difficulties in understanding those preparatory materials. However, they have the time and may ask for help from their peers to search for more answers. Thus, the students will come to class with a well-prepared knowledge and motivation to learn. The lecturers, on the other hand, may spend more time on common problems and misconceptions. They do not spend time on material students have shown they have easily understood.

In an EL environment, an LMS offers several interactive tools for students to participate in learning, some of the tools available include quizzes, forums and video conferencing facilities. They offer an easy method to perform JiTT. For the quizzes, students take them online and submit their solution before class begins (Eileen *et al.*, 2003). Apart from the subjective or essay-type questions, those types of questions such as the multiple-choice questions and the fill-in-the-blank questions provide instant grading. This may enhance their learning motivation. In the classroom, the lecturer reviews the answers and responses just in time for class discussions. Students engagements in discussions can be readily established as some may put arguments of their misconceptions on the topics can be corrected. This can improve active learning strategies in the classroom. The students come to class in a prepared manner and are already engaged in the materials.

JiTT has its own benefits and limitations. This technique demands more preparation time for the lecturers. But, it has been shown that it increases student interaction with their lecturers (Eileen *et al.*, 2003). Their confidence also increases as their answers are discussed in classrooms, especially those that involve misconception. It also increases in-class discussions as feedbacks by students are provided. Allowing students to redo to improve their assignments is also beneficial. However, one of the common problems encountered in this T&L method is the lack of motivation for students to perform the preparatory assignments. The connectivity of computers and the servers presents one problem that can reduce motivation in doing their preparatory tasks. This is particularly true for tasks that involve watching videos with long durations. Some students are more inclined to come and just listen to the lectures without doing any tasks. The challenges here are how to create relatively short and engaging videos (Zhang *et al.*, 2006).

Case Study & Results

A case study on the use of Push-Pull and JiTT techniques has been carried out involving a group of 100 Bachelor of Computer Science students in Universiti Malaysia Terengganu. The study tracks the activities of the students accessing based on the PP technique. In Figure 10.6, the tracking of active students in LMS is shown. The reduction of refrigerator syndrome in LMS is given in Figure 10.7. As mentioned earlier, one simple way to perform JiTT is to perform quizzes. As for the videos, to

ensure the students watch the materials until the end of its duration, quizzes can be embedded in the videos. Some video editing tools such as Camtasia (Clark & Kou, 2008) allow the video developers to easily perform this task. Figure 10.8 shows one example given in the case study.

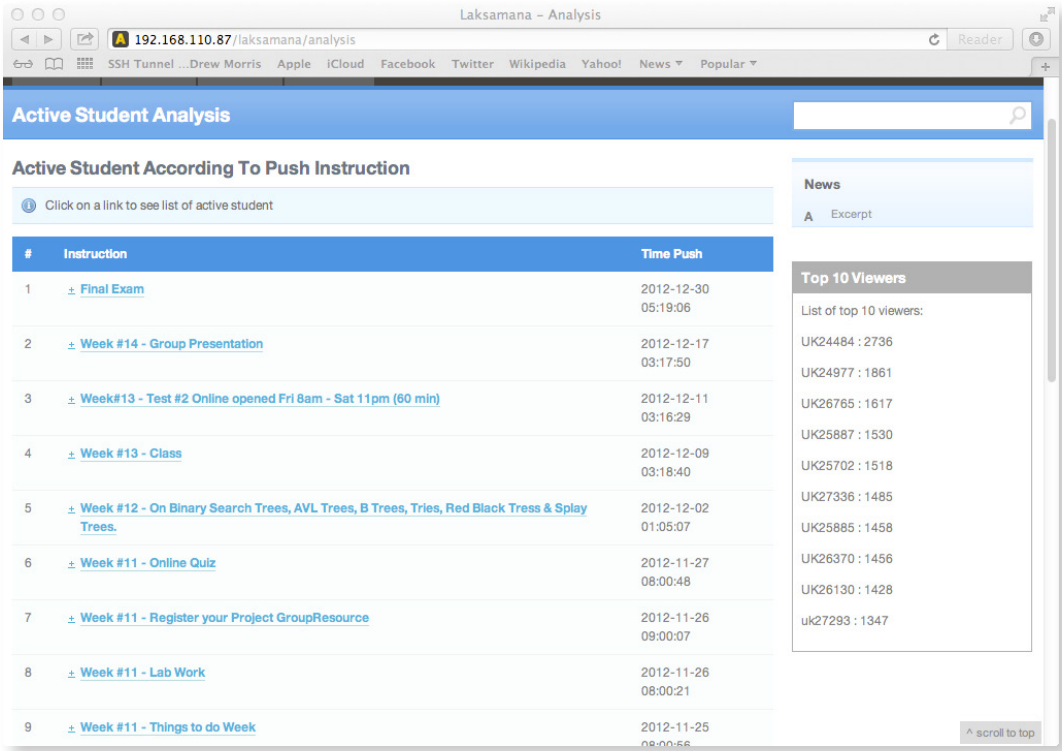


Figure 10.6: *Tracking of Active Students in LMS*

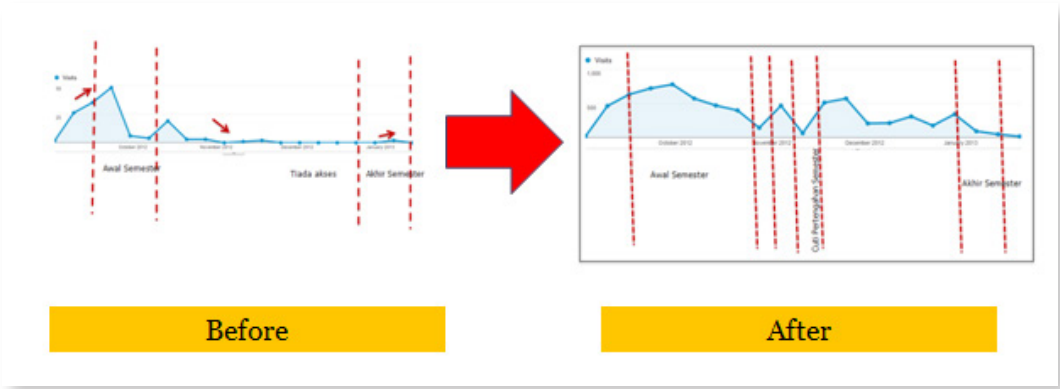
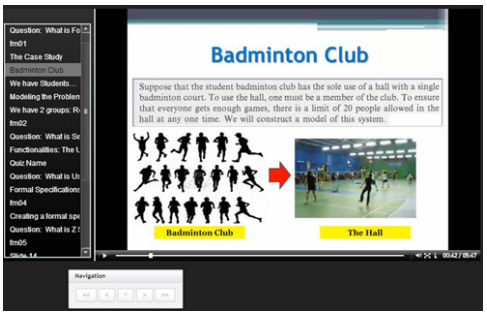
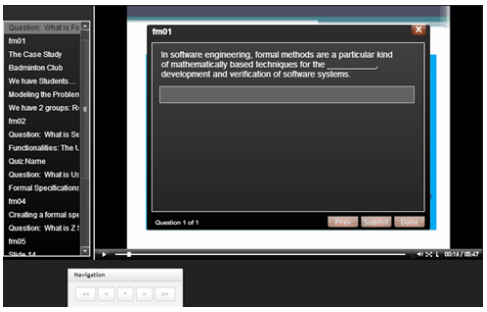


Figure 10.7: *Reduction of Refrigerator Syndrome in LMS*



(a) The Problem in Video



(b) The Quiz in Video

Conclusion

The prospects of e-Learning and Blended Learning is tremendous particularly in a developing country such as Malaysia. The challenge is how to increase the motivation of the students and how to perform active learning. This is particularly important in the usability of e-Learning technologies to maintain a good interaction between students and lecturers. In this study, it is found that, when the push-pull and JiTT are employed, the students become more active in accessing the LMS and responding to the instructions by the lecturers. The students are more engaged in the class and are quite well prepared to discuss the course material. They also perform better in their studies. Favourable feedbacks have also been gathered from the students when Push-Pull and JiTT approaches are applied in their learning.

References

Awang, Norkhushaini et al. (2012). Evaluation of an open source Learning Management System: Claroline. *Procedia - Social and Behavioral Sciences*, 67, 416-426.

Cavus Nadire. (2010). The evaluation of Learning Management Systems using an artificial intelligence fuzzy logic algorithm. *Advance in Engineering Software*, 41, 248-254.

Clark, J. D., & Kou, Q. (2008). Captivate and Camtasia. Journal of the Medical Library Association: *JMLA*, 96(1), 75.

Coopman, S. J. (2009). A critical examination of Blackboard's e–learning environment. Retrieved from: http://firstmonday.org/ojs/index.php/fm/article/view/2434/2202.

Eileen M. Cashman, Elizabeth A. Eschenbach (2003). Using on-line quizzes outside the classroom to increase student engagement inside the classroom. *Proceedings, American Society for Engineering Education.*

Embi, Mohamed Amin. (2012). *Web 2.0 tools in education : A quick guide*. UKM Malaysia

Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The internet and higher education*, 7(2), 95-105.

Helen Beetham and Rhona Sharpe (2007) (Ed) Rethinking Pedagogy for a Digital Age: Designing and Delivering E-Learning, Publisher: Routledge

Lara, V. (2007). Professional development module: Learning theory and the adult learner. Retrieved from: http://www.texascollaborative.org/Learning_Theory.htm.

Maloney, E. (2007). What Web 2.0 can teach us about learning. *Chronicle of Higher Education*, 25(18), B26.

Mohd Hafriz Nural Azhan, Md Yazid Mohd Saman, Mohd Lazim Abdullah (2012). On enhancing active e-learning through content syndication, international conference on active e-learning.

Mukhi, Vijay. (2011). Push and pull technology. Retrieved from http://www.vijaymukhi.com/vmis/pushpull.htm

Saeed Rezaei Sharifabadi. (2006). How digital libraries can support e-learning"? Electronic *Library, Electronic Library*, 24.3, 389-401.

Thiagarajan, S. (2006). *Thiagi's interactive letures:* ASTD press.

Yu-Feng Lan, Y.-S.S. (2010). Using RSS to support mobile learning based on media richness theory. *Computers & Education*, 55, 723-732.

Zhang,D. L.Z., Robert O. Briggs, Jay F. Nunamaker Jr. (2006). Instructional video in e-learning: Assessing the impact of interactive video on learning effectiveness. *Information & Management* 43,15-27.

Zhang,D., J. Leon Zhao, Lina Zhou and Jay F. Nunamaker, Jr. (2004). Can e-learning replace classroom learning? *Communications of the ACM*, 47(5), 75-79.

This page intentionally left blank

Chapter

11

This page intentionally left blank



Chapter 11

Blended Learning in UPSI

Mohd Nazri Md. Saad, Ahmad Wiraputra Selamat & Megat Azrin Ahmad

Universiti Pendidikan Sultan Idris

Introduction

As a leading education university in Malaysia, UPSI is moving towards Blended Learning. It combines times and modes of learning, integrating the best aspects of face-to-face, community based and online interactions for each discipline. Realizing the importance of Blended Learning, UPSI set up an e-Learning policy to cultivate the e-Learning among the faculties. Lecturers are encouraged to use the Learning Management System (LMS) as a platform of communication and interaction in moving towards the Blended Learning approach.

UPSI is designing units and programs of study for optimum learning, taking into account learner needs, discipline accreditation requirements, a mix of directed and self-directed activities, and available resources and infrastructure. Given is an overall ambition to provide increased flexibility in terms of time and place of learning for students, this would imply moving away from putting all, or most of effort, into offering face-to-face lectures and tutorials.

The Blended Learning activities would normally include:

- On campus experiences. When students come on campus, the experience should be designed to be engaging and an experience worth making the effort to attend and in a space and context designed to foster interactive learning.

- On line experiences. This includes structured and self-directed learning activities. In some cases, a whole unit may be delivered on line but it is not expected that whole courses or programs would be delivered on line at undergraduate level.

MyGuru

UPSI embed the latest technology into the business including teaching and learning management. The e-Learning portal is integrated into the University Integrated Management System (UIMS). Teaching and learning processes are carried out via MyGuru, a platform with various functions and features designed to support teaching and learning process. It allows the lecturers to create the teaching resources and upload it into the system. Meanwhile, they can also monitor their students' activities like forum, assignment, etc. MyGuru is a fully open source system in terms of ITS component, operating system, development application and database. MyGuru is compatible to all browsers since one of the main reasons for using the Web is compatibility with all users. MyGuru is emerging as a viable teaching and learning platform for learner-centered instruction at the same time that there is a call for incorporating learner-centered approaches in education.

MyGuru consists of four main features such as subject information and assessment that contains automatic and manual grading system. Collaborative tools includes forum, file sharing and online survey. The other feature is an administrative tool that enables lecturers to manage and revise their subject to meet the changing needs of students.

Innovation of MyGuru

The following is a list of innovations made in MyGuru to become a robust and powerful system:

- Data Integration – As a component of University Integrated Management System (UIMS), MyGuru is fully integrated with other systems in the university and accessible via single sign-on.
- E-portfolio – allows students to manage their portfolio and collect their learning evidences.
- Learning Evaluation – Online evaluation of the academic staff at the end of the semester.
- University Evaluation – Evaluates UPSI's infrastructures and program through student's opinion/ polls.

- Practicum survey – Evaluates industrial training quality via student opinion/ polls.
- Outcome Based Education - Creation of a curriculum framework that outlines specific, measurable outcomes including soft skills, bloom taxonomy and others.
- Video Uploader - Enable students to upload videos to the cloud server and share it with their lecturers or peers.
- E-Practicum - Provides special features for practical courses like practical progress reports, forums, instructional videos uploading and so on.

Moving to Cloud Computing

Based on the analysis done on November 2011, we found that the awareness of the students to use the more stable internet connection is high, 45% of them are using TM™ Streamyx™ compared to other broadband service providers. Streamyx™ proved to be the most stable and fast connection based on the analysis made which proves that 56% of fast connection to MyGuru is by that particular ISP.

Besides TM™ Streamyx™, students also prefer to use Maxis and Celcom Broadband. But, these two ISPs are also proven to be slow in surfing MyGuru where 52% of the slow connection access to MyGuru is from Celcom Broadband and 80.5% of the connection problems in login to MyGuru where 9-10 tries out of 10 failed are from Maxis and Celcom Broadband. Analysis also reveals that the percentage of students took more than 2 minutes to access MyGuru is significant (16%). The percentage of frequent connection problem to MyGuru with 4 out of 10 login tries is also significant with 913 number of students or 19%. Student learning is heavily dependent on MyGuru's performance, it is our responsibility to improve the accessibility on MyGuru, hence, initiate the development of MyGuru3 in the cloud environment.

Through cloud computing, MyGuru will be operated from a cloud computing in on-demand network which can be scaled accordingly. This network can access any form of computer source such as in server form, storage, application or software.



Figure 11.1: *Infrastructure of MyGuru in Cloud Computing*

After the migration, MyGuru receives a significant impact on its stability and speed. Prior to the migration, the majority of students can only reach the page in 30-90 seconds. After the migration, the page can be accessed as quickly as 0.39 seconds. This finding is evidenced by Google Analytics, as shown in Figure 11.2.

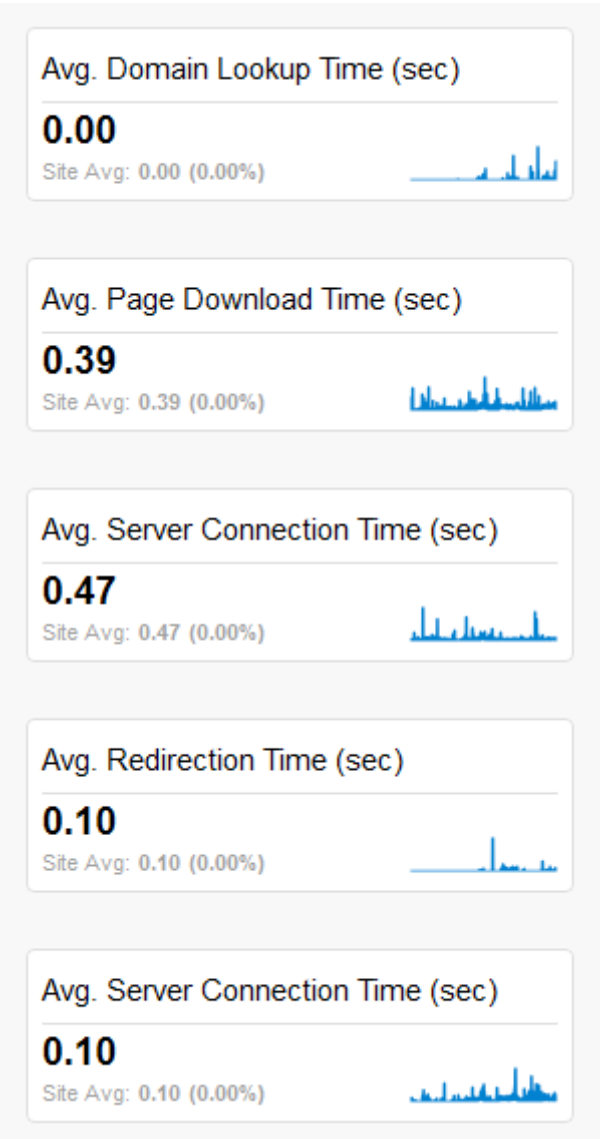


Figure 11.2: *Performance of MyGuru in Cloud Computing*

Benefits of cloud environment

MyGuru system migration to a cloud is influenced by the following factors:

- **Incremental Scalability** - Cloud environments allow users to access additional computer resources on-demand in response to increased application loads.
- **Agility** - As a shared resource, the cloud provides flexible, automated management to distribute the computing resources among the cloud's users.
- **Reliability and Fault-Tolerance** - Cloud environments take advantage of the built-in redundancy of the large numbers of servers that make them up by

enabling high levels of availability and reliability for applications that can take advantage of this.

- **Service-oriented** - The cloud is a natural home for service-oriented applications, which need a way to easily scale as services get incorporated into other applications.
- **Utility-based** - Users only pay for the services they use, either by subscription or transaction-based models.
- **Shared** - By enabling IT resources to be consolidated, multiple users share a common infrastructure, allowing costs to be more effectively managed without sacrificing the security of each user's data.
- **SLA-driven** - Clouds are managed dynamically based on service-level agreements that define policies like delivery parameters, costs, and other factors.
- **APIs** - Because clouds virtualized resources as a service they must have an application programming interface (API).

MobiLearn

Majority of Malaysians possess mobile phones as reported by Malaysian Communication and Multimedia Commission (MCMC) in a survey in 2010. Higher institution students use mobile mainly for communication and entertainment rather than educational purposes. Therefore, Universiti Pendidikan Sultan Idris (UPSI) has taken the initiative to develop mobile learning known as MobiLearn. The users of this application can be divided into three, which are students, lecturers/ staff and guardian. UPSI through ICT Centre has developed a mobile application specifically for online teaching and learning by customizing appropriate modules of the University Integrated Management System (UIMS), including MyGuru, into a simple, user friendly environment. An observation in 2012 on MobiLearn showed that from February to June 2012, 1976 users had used MobiLearn application, registering 5574 hits, where 53.07% of those hits were made by new visitors (Nazri *et al.,* 2013). Based on these figures, ultimately, the implementation of MobiLearn will offer a great innovation and will be beneficial to both lecturers and students.

Benefits of MobiLearn

MobiLearn is the mobile version of MyGuru. Therefore, all the features inside MyGuru can be accessed through MobiLearn. Students and lecturers can share the ideas, knowledge and opinions through forum features. MobiLearn has been developed to provide maximum satisfaction and efficiency for users accessing UIMS through smart gadget (Nazri & Wiraputra, 2012). Besides, students and lecturers can also interact more often as long as the device is connected to wireless or has the pocket data.

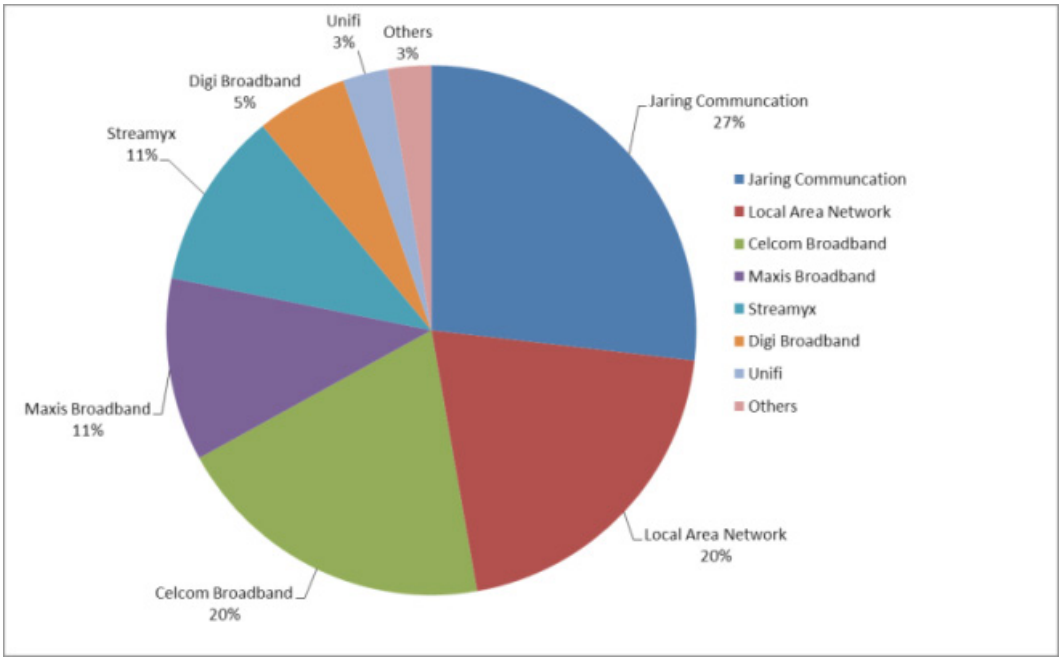


Figure 11.3: *ISP statistic February to July 2012*

Furthermore, lecturer's performance will be increased since students will interact and respond frequently even outside the class. As for students, their performance may improved since they can easily access learning material, collaborate in forums, while interacting with classmates and lecturers.

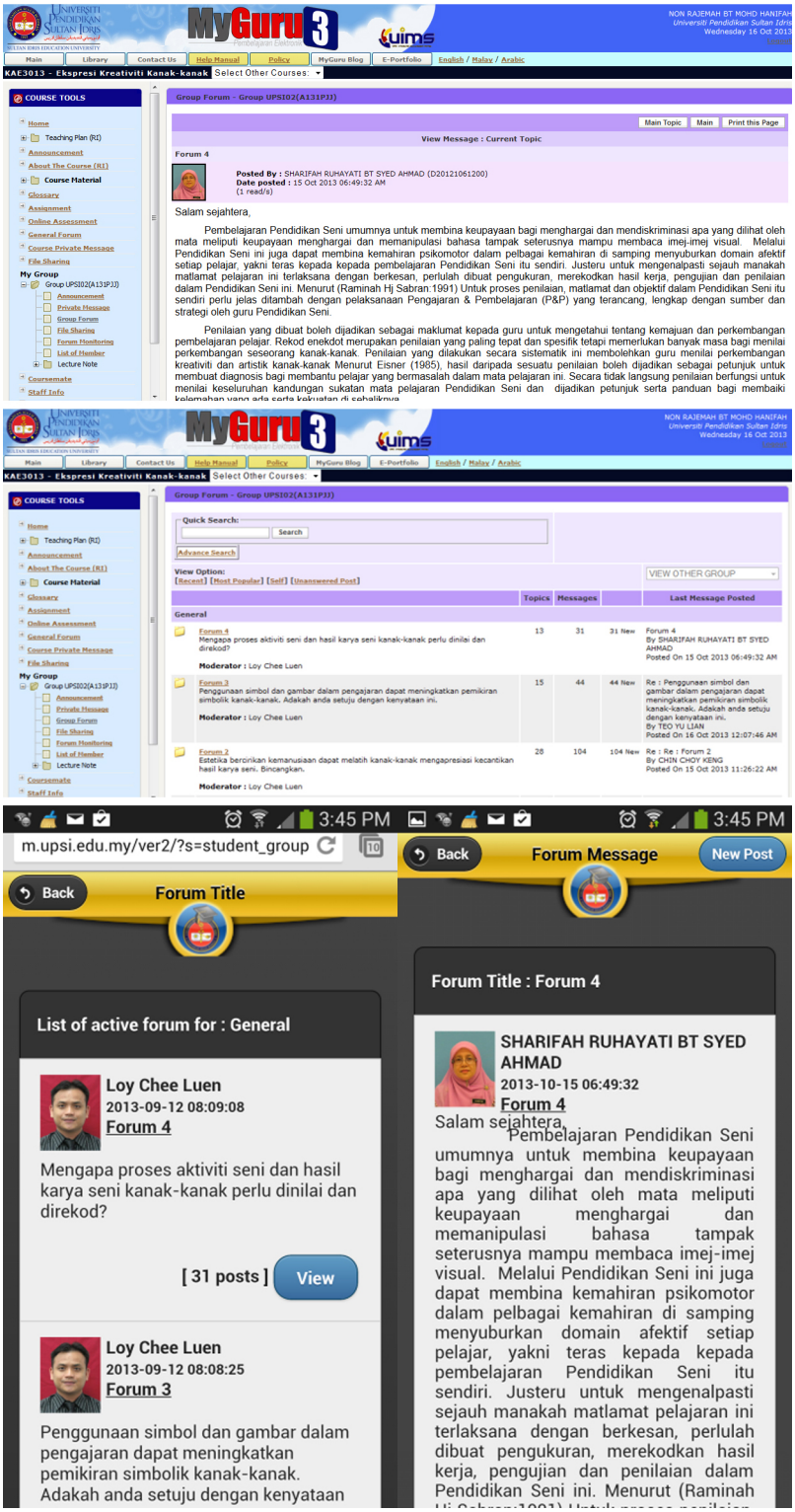


Figure 11.4: *MyGuru & Mobilearn Interface Comparison*

Benchmarking

MyGuru has been through several benchmarking process, like A CODE Benchmarking, International Institutional E-Learning Benchmarking (IILB) and Pilot National Inter-Institutional Benchmarking Project (PNIBP).

The Australasian Council on Open, Distance and e-Learning (ACODE) are the peak Australasian organization for universities engaged or interested in flexible and e-Learning. ACODE's mission is to enhance policy and practice in open, distance, flexible and e-Learning in Australasian higher education. Benchmarking was carried out between a number of universities in Australia, New Zealand and Asia to assess the governance and level of preparedness in e-Learning implementation and educational technologies.

Benchmarking carried out includes the following:

1. Institution policy and governance for technology supported learning and teaching
2. Planning for and quality improvement of the integration of technologies for learning and teaching
3. Information technology infrastructure to support learning and teaching
4. Pedagogical application of information and communication technology
5. Professional/ staff development for the effective use of technologies for learning and teaching
6. Staff support for the use of technologies for learning and teaching
7. Student training for the effective use of technologies for learning
8. Student support for the use of technologies for learning

Survey questions and format for PNIBP and IILB are very similar to ACODE. PNIBP focuses more on higher institution in the country, while IILB focuses at Asian level.

Benchmark 2:

Planning for and quality improvement of the integration of technologies for learning and teaching

Performance Indicator	USQ	CSU	SIEU	Massey	Needs Improvement	Commended	Actions/ Recommendation
PI 1a	3	4	5	3			
PI 1b	3	3	5	3			
PI 2a	4	4	5	4			
PI 2b	3	3	4	3			
PI 3a	4	4	5	4			
PI 3b	3	3	4	3			
PI 4	3	4	5	3			
PI 5	4	4	4	3			
PI 6	2	3	5	3			
PI 7	3	2	4	2			
PI 8	2	3	4	3			
Summary							

Figure 11.5: *Part of ACODE benchmark result. Also listed are UPSI (SIEU)*

Training

The main challenge in implementing Blended Learning in UPSI is a culturization. Therefore, UPSI takes proactive steps to deliver courses and lectures on Blended Learning. As of June 2014, 90% of lecturers have attended courses related to Blended Learning organized with in collaboration of Human Resource Department and ICT Centre.

Among the course are as follows:

1. UPSI Learning Management System - MyGuru
2. Interactive Lecture: Workshop and hand-on of five different applications that help improve the quality of service in teaching and learning which are Padlet, Screencast-O-Matic, Jing, Youtube and Blendspace.
3. Courses related to Google applications: Google Mail, Google Drive and Google Plus.

PERKARA	Bil. Peserta	Isi kandungan	Kesesuaian isi kandungan	Kesesuaian contoh	Cara penyampaian	Ketepatan masa
KEPUASAN (%)	338	95.21	95.62	94.91	93.31	95.56

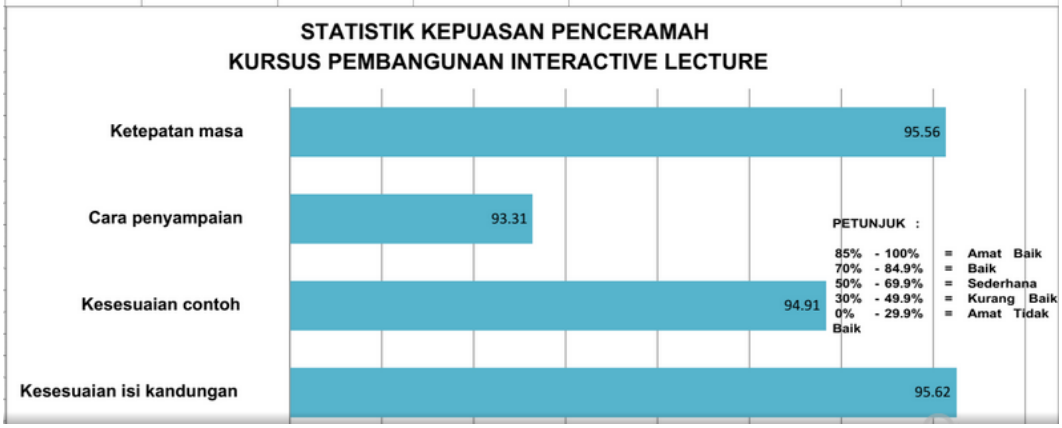


Figure 11.6: *Statistics of Participant Satisfaction with Interactive Lecture Course*

BIL	LAIN-LAIN KOMEN (BORANG PENILAIAN PENCERAMAH)
	POSITIF
1	Excellent delivery. Thanks. On Our part, really need to explore further on our own.
2	New Knowlwdge in ICT.
3	An enjoyable lesson.
4	Thank you for speaking in English. Clear processes explained.
5	Berkaitan dengan tugas sebagai pensyarah.
6	Perlu sedikit masa untuk menjadi mahir.
7	Excellent course. Please extend the course for 2 days.
8	Kursus yang berguna.
9	Memuaskan dalam masa sehari.
10	Boleh dimanfaat pengetahuan kursus kepada pelajar yang mengambil kursus teknologi.
11	A very interesting course.
12	Very clear and helpful course. Will need to think how to adopt for a music course.
13	Kursus yang sangat baik. Pendedahan yang sangat menarik dan berguna.
14	Perlukan masa yang lebih.
15	Penerangan yang jelas.
16	Sangat baik untuk pensyarah & pelajar.
17	Bagus tetapi terlalu laju.
18	Committed Speaker.
19	Penceramah bagus. Mudah faham.
20	Many thanks for introducing the software to us.
21	Sangat jelas dan berguna.
22	Sangat berfaedah untuk kegunaan pensyarah dalam p&p.
23	Menarik, saya perlu lebih masa dan penduan dari pakar ICT untuk muat naik bahan P&P yang sedia ada.
24	Excellent presentation.

Figure 11.7: *Comments on Interactive Lecture Courses.*

Reporting

As part of the mechanisms of the control and upgrading the process of Blended Learning, UPSI creates the comprehensive reporting system for Blended Learning courses in MyGuru. This report includes the number of courses involved, the number of courses activities, the number of uploaded material and so on. These items follow the rubric that is structured by the MOE and MEIPTA after a detailed study was carried out on it.

COURSE MONITORING (CAP)

LEGEND

Information : Course Plan, Teaching Plan, Synopsis
Content/Resource : Course Material, Modules, Video, PPT, DOC etc
Activities : Forum, Private Message, Announcement, Comments on Notes, Wiki, Web Conferencing
Assessment : Online Quiz, Assignment, Portfolio, Journal

List of Courses in MyGuru3

No.	Code	Course Name	Information	Content/Resource	Activities	Assessment	Blended Mode Status
1	SMN3023	Advanced Calculus	Y	139	227	4	Y
2	HIA3023	Akhlak	Y	26	1426	9	Y
3	BCL3083	Aksara Bahasa Cina	Y	26	2441	3	Y
4	HIS3063	Al-Fiqh Al-Islami I	Y	31	1842	26	Y
5	HIS3073	Al-Fiqh Al-Islami II	Y	19	1236	22	Y
6	SMA3033	Algebraic Structures	Y	10	117	2	Y
7	SMU3053	Aljabar Asas	Y	4	321	10	N
8	BML3092	Analisis Wacana	Y	36	361	6	Y
9	BMP3093	Aplikasi Komputer dalam Bahasa Melayu	Y	59	2983	31	Y
10	BTS3053	Aplikasi Komputer dalam Kesusasteraan Tamil	Y	10	8	1	N

Figure 11.8: *Course Monitoring (CAP)*

As of June 2014, UPSI has reached 38% of the full course in Blended Learning mode. The target set by the MOE in 2014 was 50%, and UPSI is progressing to reach that figure.

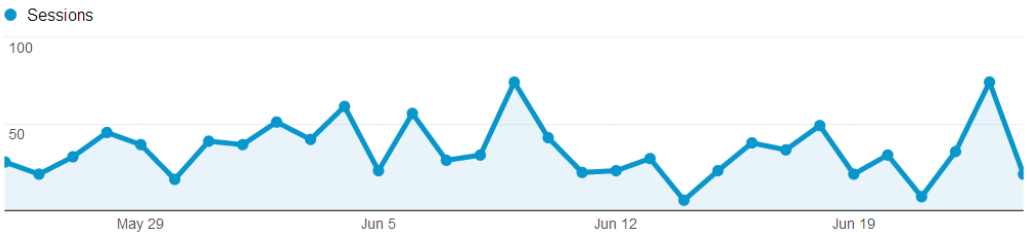


Figure 11.9: *MobiLearn Monitoring Dashboard*

UPSI constantly monitors MobiLearn and MyGuru to ensure the usability of the system is always high. This report was generated by Google Analytics, which indicates the use of MyGuru and MobiLearn are at the acceptable level. MyGuru Dashboard allows the monitoring of lecturers and students activities. This report enables the administrator and faculty to closely monitor the development and progress of Blended Learning activities. These reports are presented to the management through senate meetings or e-university meetings. Moreover, the vice chancellor, dean and director of certain departments themselves monitor the reports via MyGuru2.

PJJ LECTURER ACTIVE STATUS (BY COURSE)

Semester A141PJJ
Fakulti Sains dan Matematik

List of PJJ Lecturers

No.	Lecturer ID	Lecturer Name	Hits	Course	Notes and Course Material	Assignment	Group Forum (Create)	Group Forum (Reply)	Priv Message (Received)	Priv Message (Sent)
1	K00081	[redacted]	31	SMR3996	N	Y	4	0	6	5
				SMU3053	N	Y	16	0	10	7
				KRL3043	N	Y	4	0	12	10
2	K01599	[redacted]	12	SSR3996	N	Y	2	0	0	0
3	K00348	[redacted]	28	SRF3023	N	Y	1	2	49	34
4	K01628	[redacted]	17	SKG3033	N	Y	2	15	0	0
5	K00667	[redacted]	10	SBA3033	Y	N	14	29	51	27
6	K01423	[redacted]	20	SMQ3023	Y	Y	2	0	0	4
				SMU3063	Y	Y	32	1	34	13

Figure 11.10: *Lecturer Active Status Monitoring on MyGuru and Mobilearn*

Conclusion

Blended Learning is the way forward and management of UPSI is fully committed to implement Blended Learning through the development of e-Learning policy since 2008. Through this policy, a lecturer must put his/her teaching and learning material on MyGuru in stages. The implementation of the Blended Learning will save time and cost to the university, open for the flexible learning and improve quality of education.

References

Handphone User Surevey 2012 (2013). Retrieved from Malaysian Communications and Multimedia Commission(MCMC) website: http://www.skmm.gov.my/skmmgovmy/media/General/pdf/130717_HPUS2012.pdf

Mat Doyle (2010). jQuery Mobile: What Can It Do for You?. Retrieved from: http://www.elated.com/articles/jquery-mobile-what-can-it-do-for-you/

Mohammad, N. M. N., Mamat, M. N., & Isa, P. M. (2012). M-learning in Malaysia: Challenges and Strategies. Procedia - Social and Behavioral Sciences, 67(November 2011), 393–401. doi:10.1016/j.sbspro.2012.11.343

Nazri, M., Saad, B., Wiraputra, A., Selamat, B., Yunus, M., Mustafa, B., Faisha & E. (2012). Empowering Learning Through Mobile Technologies. International Conference on Mobile Learning, Application and Services 2012, 1–9.

Nazri, S., & Wiraputra, S. (2012). UPSI Learning Management System (MyGuru2) in the Cloud Computing Environment. *Procedia - Social and Behavioral Sciences,* 67(November 2011), 322–334. doi:10.1016/j.sbspro.2012.11.335

Ozdamli, F., & Cavus, N. (2011). Basic elements and characteristics of mobile learning. *Procedia - Social and Behavioral Sciences,* 28, 937–942. doi:10.1016/j.sbspro.2011.11.173


Flipped Learning

This page intentionally left blank

Chapter

12

This page intentionally left blank



Chapter 12

Overview of Flipped Learning

Mohamed Amin Embi & Ebrahim Panah

Universiti Kebangsaan Malaysia

Introduction

The Flipped Learning model is increasingly becoming popular nowadays as universities are attempting new ways to get students involved in the process of classroom learning activities. Typically, in a flipped classroom setting, students carry out a review of the course lecture online prior to the class session, and also spend some time on problem-solving activities together with exercises in class that are traditionally given as homework assignments (Bishop & Verleger, 2013). The ability to easily and effortlessly produce and use multimedia on PCs, smart phones, tablets and personal media players, and the enhanced accessibility of Web-based tools for the purpose of collaboration and communication are considered as two factors that have a great contribution to the popularity of the flipped classroom setting. Correspondingly, the flipped classroom is increasingly gaining popularity in secondary as well as tertiary education for teaching social science, mathematics, science and other disciplines. In a flipped classroom, normally students watch and/ or listen to class lectures recordings on their PCs, smart phones tablets, or personal media players outside of class, where they will have time to be engaged in classroom learning activities that could otherwise be given as homework assignment (Knewton.com, 2011). In this chapter, the concept of Flipped Learning will be defined. Subsequently, the benefits of Flipped Learning are discussed. Next, variations in implementing the flipped classroom are presented. Then, the issues of

Flipped Learning are deliberated. Finally, the future trends of Flipped Learning are discussed.

Definitions of Flipped Learning

According to Information Technology Services at Penn State (2011), "flipping the classroom" is referred to as a pedagogical concept that replaces the standard lecture-in-class format with an opportunity to find out concepts as well as to review materials from outside of class. Basically, the term flipping is driven from the concept that a usual classroom is historically a place where the delivery of content is done through some types of lecture format. In such classroom, the students are given homework assignments to take and do outside of class on their own. The novel idea "flips" such typical classroom in which most of the content is now gained outside of classroom on their own, as homework assignments, and problems are worked through collaboration during class. There are numerous styles of "flipping the classroom" and there is no one right way to employ this idea. Indeed, most scholars concur that lecture is still appreciated in the classroom if appropriate; however, the focus on lecture will be significantly decreasing during classroom time. Likewise, some are of the opinion that the flipped classroom is regarded as an ideology instead of methodology as well as remarks that deals with making connections with the learners differentiating your instructions (Makice, 2012).

Gerstein (2012) defined the flipped classroom as a place to work out problems, advance concepts, as well as engage in collaborative learning. Similarly, Dan Berrett (2012) presented the idea of Flipped Learning in the higher education classrooms and how it can enhance traditional lecture along with student learning. He emphasized that flipping is related to the inversion of expectations in relation to the traditional college lectures. This newly termed style encompasses interactive engagement, peer instruction, just-in-time teaching, and placement of content of course on the student. Here, students are required to obtain most course information outside of class through listening to the recorded lectures, podcasts, and/ or by reading on their own. This fact contrasts the standard lectures style course in which students normally come to class prepared to absorb information and subsequently to practice that information through completing homework assignments.

Regarding tough economic times, it is challenging to decrease class sizes as well as faculty-student ratios to take into account more personal instruction. Normally, the flipped classroom permits to devote all available class time to such individualized instructions and supports in determining the advocate individualized instruction devoid of increased funding. According to Jonathan Bergmann and Sams (2012), there are numerous reasons to justify why the flipped classrooms are constructive and beneficial:

- Flipping benefits busy students due to its flexibility.
- Flipping assists struggling students since they can pay more individualized attention.
- Flipping supports students of all abilities to excel as students can watch the videos as much as they want and/ or as little as needed.
- Flipping enables students to pause as well as rewind their teacher.
- Flipping boosts student–teacher interaction.
- Flipping alters classroom management since distraction is not regarded as a problem while students are engaged.
- Flipping causes the class to be transparent, so anyone is able see what is happening.
- Flipping can be a great method for absent teachers.

When it comes to student acquisition and learning, the flipped classroom can have a great influence on higher education. Generally, the largest gains are likely to be associated with student engagement, an area that most instructors want to improve. According to Makice (2012), engaged students retain a greater amount of information compared to non-engaged students, with 90% retention of things that we "say and do" in comparison with only 10% retention of what we "read" and also 20% retention of what we "hear".

Why Flipped Learning?

Justifying the implementation of Flipped Learning, Fulton (2012) has listed the followings among the merits of the Flipped Learning: (1) students can move at their own pace; (2) as they do their "homework" in class, teachers can get better insights into students difficulties and learning styles; (3) teachers will be able to more easily and effortlessly customize and update the course curriculum and provide it for students 24/7; (4) the classroom time will be utilized more effectively, efficiently and creatively; (5) teachers who have been using the method reported that student achievement has increased interest, and engagement; (6) this approach is supported by learning theories; (7) technology use is flexible and appropriate for boosting learning in "21st century ;(8) there will be more time available to spend with students on real and authentic research; (9) students can get more time handling and working with scientific gadget and equipment that is only accessible in the classroom; (10) those who miss classes focusing on debate/ sports/ etc. will be able to watch the lectures while riding on the road; (11) this method contributes to the promotion of thinking inside as well as outside of the classrooms; (12) students can be more dynamically involved in the process of learning; and (13) they will also really appreciate it.

Literature evidences that studies conducted on Flipped Learning have highlighted the studies published in the influence of the Flipped Learning on student learning. Correspondingly, Strayer (2012) made a comparison between the learning environments of a flipped introductory statistics class and a traditional introductory statistics class holding at the same university and used the College

and University Classroom Environment Inventory, interviews, field notes and focus groups. The findings show that although students taking part in the flipped classroom appeared to be less satisfied with the way the structure of the classroom oriented them to the course learning tasks, they embraced the cooperative learning as well as innovative teaching methods. Likewise, Zappe *et al.,* (2009) carried out a study on a big undergraduate architectural engineering course in terms of Flipped Learning. Students' evaluations of the course revealed that the flipped classroom had a positive influence on student learning. In fact, student's perspectives of the effectiveness of the method of teaching were more positive than lecturing, and also reported that they have enjoyed the class and highlighted the benefit of watching the lectures videos outside of class.

Ruddick (2012) has described a course redesigning project according to the Flipped Learning concept for a chemistry course for college preparatory. Students in the Flipped Learning course have watched video of lectures at home on their own and devoted class time working on problem-solving activities. Scores of final exam in combination with "percent success" of students in the course were compared between the Flipped Learning and regular lecture sections. Also, students' feedback was collected using a Student Assessment of their Learning Gains survey along with student course evaluations. Study results revealed that the flipped course students performed better than the standard lecture-based students, in terms of higher final exam scores as well as overall success during the course. Comments on the Student Assessment of their Learning Gains survey recommended that the flipped students were more interested in chemistry and found the online PowerPoint materials and video useful.

Flipped Classroom Benefits and Application

Flipped Learning has many impacts on education including higher education. Normally, students in Flipped Learning environment will be more effectively assisting in educating each other, and also initiate to take responsibility and control of their learning. Study in the arena of Flipped Learning reveals that when such techniques are used, the outcome will be more acquisition and learning (Bergmann & Sams, 2012). Besides, student learning outcomes will be better since students are more involved in learning process as well as are engaged with the content. Hence, the Flipped Learning boosts student engagement and promotes higher order thinking as students are required to apply the available information to various scenarios. In order to flip the class, Makice (2012) suggests initiating with the end in mind as well as setting a goal according to what the teacher wants the students to be able to know and do. Following the goal setting, the next step is to collect quality learning resources which are specific to the course requirements that can be accessible outside of classroom at any time. Lastly, one should make the structure of class time via putting the contents to context by learning activities. After taking these steps, a flipping learning class can evolve in which students are more involved, engaged and build up higher order thinking skills.

Variations in Implementing the Flipped Classroom

Several recent studies have focused on the effectiveness of Flipped Learning in the classroom (Day, 2008; Demetry, 2010; Strayer, 2007) on student learning along with the additional opportunities useful for collaboration and problem-solving activities promoted by this approach. The literature evidences several variations in how individual teachers flip their own classes. Many teachers keep a record of their own lectures (or get them recorded), while teachers of history, finance, mathematics, science, and other disciplines frequently use some of the 2600 videos available at Khan Academy as resources for the purpose of their flipped classrooms (Houston & Lin, 2012). Instead of providing video lectures, Demetry (2010) has provided lecture notes for his students to get them to read lecture notes at home before the class session, which helps meet the goals of increasing the concept of "time on task" in order to accomplish course-related activities. Accordingly, student teams will check in through responding to "clicker questions" in order to report their progresses when they work on the given exercises. Likewise, Day and Foley state that Web lectures can purposefully be kept at around 20 minutes in length to assist in maintaining the viewer attention." They comment that the same material could probably take twice as long in order to deliver in the classroom since there will be no interruptions for posing and answering questions or announcements.

Issues of Flipped Learning

There are difficulties and issues with this approach. Students who are new to this learning approach might initially be resistant since it requires them to do work at home instead of being first exposed to the course subject matters in school. As a result, they may attend the class unprepared to take part in the course active learning phase. Usually, faculty addresses this problem by providing a short quiz either online or in class. They may also require the students to do homework related to information that can merely be gained from the outside reading and/ or videos. The homework (such as readings & videos) has to be carefully customized for the students to prepare them for the activities performed in the class. The majority of teachers and students consider videos as the method of choice to deliver the out-of-class part of the instruction. However, some teachers consider finding good quality videos as a difficult task. Faculty uses videos created by sources, for example, the Kahn Academy (http://www. khanacademy.org/) and BozemanScience (http://www.bozemanscience. com/science-videos/) or produce their own by using software programs such as Camtasia, PaperShow, and ShowMe and/ or apps on the iPad including Educreations and Explain Everything. Subsequently, they post the videos to YouTube, Podcasts (Vodcasting), and iTunes U, or/ and on course management systems including Blackboard or Moodle. However, the quality of the videos created by teacher is often poor and producing them requires a considerable amount of time. The flipping learning is like other methods that rely heavily on students' preparation outside of class. Regarding team learning, put forth by Larry Michaelsen (1992), students are provided with reading assignments prior to class,

and subsequently in class encounter group quizzes, individual quizzes, and lastly case studies (Michaelsen *et al.,* 2002). Herreid (2002) has portrayed the successful and effective application of Michaelsen's method in his courses. Normally, Just-in-Time Teaching demands significant student preparation as well. Students need to complete Web-based assignments which are due shortly prior to class. The teacher reads the students' submissions in order to adjust the classroom lessons to be appropriate for the students' needs. Usually, class time is spent on addressing questions and introduction of material based on need-to-know concept (Novak *et al.,* 1999; Simkins *et al.,* 2009). Likewise, "Hybrid courses" as well as "blended courses" get students to learn their subject matters via combining traditional classroom interactions with some form of Web-based learning. These approaches and associated methodologies share some of the same benefits as the flipping learning in addition to the two main challenges recognized previously. As well as the flipped classroom, all such approaches allow teachers to cover facts, principles and terms as portion of out-of-class students' preparation to make use of classroom time to deal with the application side in which students cope with real-world problems and issues and perceive the materials in context.

Research on Flipped Learning

The literature focused on three significant areas for creating attractive and desirable learning environments, namely, pedagogical orientation, the flipping learning, and the roles of immediacy, closeness and interaction in the process of learning. Usually, presenting complete, relevant, accurate and proper content is the main concern when producing online courses (Murray *et al.,* 2012). In a corresponding study, Murray *et al.,* (2012) investigated the perceptions of 100 students who enrolled in online courses. They reported that the students "were not satisfied with online courses that used "flat resources, in the form of static text documents" (p. 126). Likewise, Beard and Harper (2002) have also highlighted the students' concerns according to the restricted human interactions which are accessible in the online environments. This can be a significant concern in reference to graduate courses as they emphasize tasks of practitioner that require students to transfer skills and expertise, and incorporate content knowledge into novel situations. For graduate students, Schwartzman's (2007) findings are important and need to be taken into account. He found that online learners frequently find it difficult to comprehend and apply information; therefore, just making the information accessible does not necessarily bring about a successful and effective educational course. Hence, the students are required to know how to use the information in new-fangled situations.

Students' views of the features of effective college teachers also need to be taken into consideration. Students viewed teachers as effective and helpful when they provided a lot of opportunities in terms of teacher-student interactions. They perceptibly and accurately communicated information, and successfully and effectively employed time in the learning environments (Onweugbuzie *et al.,* 2007). Respondents showed that they felt teachers appeared to be effective

when their classes were student-centered, and they were expert, ethical and enthusiast. Goodwin and Miller (2013) looked at preliminary data in relation to the effectiveness of Flipped Learning instruction in the order that lectures are recorded and subsequently posted online when instructional time is devoted to homework assignments. Such online lectures encompass graphics, videos, visual representations, and photos that could be accessible to the students when they decide to utilize them, instead of spending quality instructional time on the lecture materials. The initial versions of the online graduate courses included lecture materials which were in a written format used as a foundation for the materials necessary for students to know to produce the homework assignments.

Similarly, the researchers were keen on flipping the online instruction in order that students obtain additional scaffolding for the purpose of the homework assignments. To this end, Elluminate, a Synchronous Interactive Online Tool, was integrated to deal with the research-based principles in support of effective instruction where teachers were endeavouring to integrate them into the flipping online classrooms.

Sams and Bergmann (2012) highlighted the significance of the issue of teachers' responses to students' emotional as well as learning needs besides addressing their personal learning styles. Correspondingly, Dean (2012) reported that feedback has an incredibly strong effect size. Likewise, the researchers sought to find out if by adding a synchronous tool, they could provide opportunities for feedback along with correcting misperceptions. They selected a synchronous tool which had recorded sessions to enable students to speed up their own learning in order to meet their individual requirements. Hattie (2008) conducted meta-analysis of 800 studies and reported that helping students to step up their own learning can have a strong effect size of .88. Additionally, providing students with opportunities in order to practice as well as apply skills based on corrective teacher feedback appeared to be four times more efficient and effective than sole homework assignments (Lyster & Saito, 2010). As a result, the researchers found that the addition of a Synchronous Interactive Online Tool could address numerous teaching and learning strategies.

Hirumi (2002) claimed that interactions that augmented content insights, deepened commitment and provoked analysis led to higher academic accomplishment and engagement. He reported that merely sharing personal observations may not impact attainment. Students' performance along with satisfaction was increased as a consequence of more collaboration between students and teachers and students. Ho and Swan (2007) emphasized that manner, frequency, and qualities of contributions and promotions online had a positive correlation with students' grades. Nevertheless, Wanstreet (2006) stated that researches on online communication have mostly focused on the interactions in terms of quantity than the quality. Therefore, simply boosting the frequency of interactions could not positively influence students' accomplishment and engagement.

Future Trends

The flipped classroom proves to be promising and rewarding. Now what? We may wait for a few coming years whilst teachers are plugging along creating their own home-produced videos and observe if the flipped-teaching and learning movement, in fact, has staying powers, or we may set to and get serious regarding testing this idea and concept. Thus, it is suggested that to ensure progress, future researches on Flipped Learning should use controlled studies which objectively look at student performance during the course of a semester, regarding traditional as well as concept inventory style issues and problems. Moreover, it is recommended that researchers who are employing the Flipped Learning leverage the current research and theoretical frameworks in order to guide their application and designs of in-class activities. Additionally, it is suggested that researchers apparently describe the tasks employed for in-class as well as out-of-class activities. The affordable and reasonable state of recording technology in consort with ubiquity Web-based dissemination tools can make researches on the Flipped Learning timely, appropriate and cost-effective.

Conclusion

Flipped Learning can have numerous advantages for the higher education. Normally, students learning in such environment may initiate to more effectively and efficiently educate each other, and embark on taking the responsibility for their learning. Studies in the area of Flipped Learning reveal that when this approach is used, the result will be more learning (Bergmann & Sams, 2012). Moreover, student-learning outcomes will be better since students are more involved with the content. The Flipped Learning increases students' engagement and enhances higher order thinking as students are required to apply the given information to various scenarios. In order to flip a classroom, Makice (2012) suggests launching with the end in mind as well as setting a goal according to what the teacher/ lecturer expects the student to acquire and do. After setting the goal, the next step is to collect quality learning resources which are specific to the course requirements that can be accessible outside of class anywhere anytime. Lastly, class time should be structured by putting the contents to context via learning activities. Following these steps, a flipped class can be evolved in which students are more involved, engaged and develop sophisticated thinking skills.

References

Beard, L., & Harper, C. (2002). Student perceptions of online versus on campus instruction. *Education,* 122, 658-663.

Berrett, D. (2012). How 'Flipping' the Classroom Can Improve the Traditional Lecture. *Chronicle of Higher Education, 58(25), A 16-A 18.*

Bishop, J. L., & Verleger, M. A. (2013). The flipped classroom: A survey of the research. *In ASEE National Conference Proceedings, Atlanta, GA*.

Day, J. (2008). *Investigating Learning with Web Lectures.* Georgia Institute of Technology.

Dean, C. B. (2012). *Classroom instruction that works: Research-based strategies for increasing student achievement*. Ascd.

Demetry, C. (2010). Work in progress - an innovation merging "classroom flip" and team-based learning. *Proceedings of the 40th ASEE/IEEE Frontiers in Education Conference* (pp. TIE-1). Washington, DC: ASEE/IEEE.

Fulton, K. (2012). Upside down and inside out: Flip your classroom to improve student learning. *Learnin & Leading with Technology*, 39(8), 12–17.

Gerstein, J. (2012). *Flipped classroom: The full picture for higher education. education Blog. R*etrieved from http://usergeneratededucation.wordpress.com/2012/05/15/flipped-classroom-the-full-picture-for-higher-education/

Goodwin, B. & Miller, K. (2013). Research Says/ Evidence on flipped classrooms is still coming in. *Educational Leadership.*

Hattie, J. (2008). *Visible learning: A synthesis of over 800 meta- analyses related to achievement*. New York: Routledge.

Herreid, C. F. (2002). Using case studies in science, and still covering content. In L. Michaelsen, A. Knight, & L.Fink (Eds.), *Team based learning: A transformative use of small groups* (pp. 109–118). Westport, CT: Prager

Hirumi, A. (2002). The design and sequencing of E-learning interactions: A grounded approach. *International Journal on E-learning*, 1, 19-27.

Ho, C., & Swan, K. (2007). Evaluating online conversation in an asynchronous learning environment: An application of Grice's cooperative principle. *The Internet and Higher Education,* 10, 3-14.

Houston, M., & Lin, L. (2012). Humanizing the classroom by flipping the homework versus. *In Society for Information Technology & Teacher Education International Conference (Vol. 2012, No. 1, pp. 1177-1182).*

Knewton.com. (2011, August 29). *The Flipped Classroom Infographic*. Retrieved from Knewton: http://www.knewton.com/flipped-classroom/

Lyster, R., & Saito, K. (2010). Oral feedback in classroom SLA. *Studies in Second Language Acquisition*, 32(02), 265-302.

Makice, K. (April 2012). *Flipping the classroom requires more than video*. Retrieved from http://www.wired.com/geekdad/2012/04/flipping-the-classroom/

Michaelsen, L. K. (1992). Team learning: A comprehensive approach for harnessing the power of small groups in higher education. *To Improve the Academy*, 11, 107–122.

Michaelsen, L. K., Knight, A., & Fink, L. D. (2002). *Team-based learning: A transformative use of small groups*. Greenwood Publishing Group.

Murray, M., Perez, J., Geist, D., & Hedrick, A. (2012). Student interaction with online course content: Build it and they might come. *Journal of Information Technology Education*, 11, 125-140.

Novak, G. M., Patterson, E. T., Gavrin, A. D., & Christian, W. (1999). *Justin- time teaching: Blending active learning with web technology.* New York, NY: Prentice Hall.

Onweugbuzie, A., Witcher, A., Collins, K., Filer, J. Wiednaier, C., & Moore, C. (2007). Students' perceptions of characteristics of effective college teachers: A validity study of a teaching evaluation form using a mixed-method analysis. *American Educational Research Journal*, 44, 113-160.

Penn State Information Technology Services. (2011*). 7 things you need to know about flipping the classroom. [White Paper]*. Retrieved from http://tlt.its.psu.edu/hot-team/2011/files/2011-Flipping-the-Classroom.pdf

Ruddick, K. W. (2012*). Improving chemical education from high school to college using a more hands-on approach.* Doctoral dissertation, University of Memphis.

Sams, A., & Bergmann, J. (2012). Flip your classroom: Reach every student in every class every day. *International Society for Technology in Education (ISTE).*

Schwartzman, R. (2007). Electronifying oral communication: Refining the conceptual framework for online instruction. *College Student Journal*, 41, 37-49.

Simkins, S., Maier, M., & Rhem, J. (2009). *Just-in-time teaching: Across the disciplines, and across* the academy. Sterling, VA: Stylus Publishing.

*Strayer, J. (*2007). *The Effects of the Classroom Flip on the Learning Environment: A Comparison of Learning Activity in a Traditional Classroom and a Flip Classroom that Used an Intelligent. Tutoring System. Educational Theory and Practice.* Columbus, Ohio: Ohio State University.

Strayer, J. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learning Environments Research,* 15, 171–193.

Wanstreet, C. (2006). Interaction in online learning environments: A re- view of the literature. *The Quarterly Review of Distance Education,* 7, 399-411.

Zappe, S., Leicht, R., Messner, J., Litzinger, T., & Lee, H. (2009). "Flipping" the classroom to explore active learning in a large undergraduate course. *Proceedings of the 2009 American Society for Engineering Education Annual Conference and Exhibition*.

Chapter

13

This page intentionally left blank



Chapter 13

Flipped Learning Readiness among Graduate and Postgraduate Students in UKM

Mohammed Amin Embi, Supyan Hussin & Ebrahim Panah

Universiti Kebangsaan Malaysia

Introduction

Flipping the classroom changes the place of content delivery. When a teacher/ lecturer assigns lecture-type instructions in the form of video, slidecasts, simulations, podcasts or readings as homework, subsequently class time would be used more interactively. Also, when the class is turned into creation space, conversation space and a space where teachers dynamically facilitate learning. Likewise, the home converts into the lecture space. Consequently, the over hundred year-old teaching model flips.

Flipping lets the students enjoy face-to-face classroom time for interactive learning, and also appreciate activities that inspire critical thinking, collaboration, exploration, discussion, inquiry, and problem solving. Thus, the classrooms as well as the library become more learner-centered. Literature evidences that most studies carried out to date have explored learners' perceptions and used single-group study designs. However, reports of learners' perceptions of the Flipped Learning are rather mixed. Learners prefer in-person lectures over video lectures; however, they prefer interactive classroom activities to lectures. Anecdotal evidences show that student learning is enhanced in the flipped classroom in comparison with traditional classroom (Bishop, *et al.,* 2013).

Although, past studies show mixed results, overall are still positive. However, very little research has been conducted on Flipped Learning to assess Malaysian readiness in adopting Flipped Learning and researches yet to be done. Hence, the objective of the current study is to identify the factors affecting the use of Flipped Learning and also to assess Malaysian graduate and post-graduate students' reediness in Flipped Learning.

Literature Review

While the Flipped Learning is presently being introduced as a novel teaching and learning innovation, it has been used for well over a decade. Some educators have flipped their classes as far back as the late 1990s (Baker, 2000). Nevertheless, the amount of literature and researches that are pertinent to the Flipped Learning are limited. Since educators had no access to the technology required to produce video content until recently, this may account for the absence of information available. Over the last few years, some anecdotal data as well as research has been carried out by teachers and scholars. Greg Green, Michigan Clintondale High School Principal, has flipped the instruction of his whole high school. His school was situated in a low socio-economic district with an alarming rate of course failures. Prior to using the Flipped Learning, over 50% of the school students failed English course, 44% failed Math, and also there were approximately 736 discipline cases that happened in a single year. After he implemented Flipped Learning, Green observed a dramatic and noticeable improvement. The English and math failures declined from 50% to 19% and from 44% to 13% respectively, and discipline cases reduced to 249. Likewise, Crystal Kirch, a teacher from California, has reported dramatic and significant increases in the performances of students because of the Flipped Learning (Kirch, 2012). He has noticed that the number of students who got A's and B's increased significantly. Overall class averages increased and fewer course failures were reported.

Correspondingly, Musal (2010) has investigated the application of screencasts, a computer screen video recording with or without narration. It was used as a pre-training strategy for teaching high school students. The purpose of his study was to determine the influences of screencasting in handling intrinsic cognitive loads, the natural complexity and difficulty that a particular knowledge domain presents, and students' performances. Upon examination of pre and post-test results, he concluded that screencasting considerably decreased the intrinsic loads and increased performances on assessments.

Another example of Flipped Learning is a study by Strayer (2008) who conducted a survey on university students on learning activity and learning environment. The study focused on a class that has received traditional instruction along with a class that was provided with Flipped Learning. The study results demonstrated that students in the Flipped Learning have experienced a much more innovation together with cooperation. Strayer claimed that although students appreciated the innovation and cooperation offered by using Flipped Learning,

the structure of the class was not satisfactory for them. Strayer offered a number of recommendations to educators who tend to consider the Flipped Learning. He suggested that students need to have choices in terms of their interaction with the course content, the class activities ought to more step-by-step and less open-ended, and finally, students be provided with significant opportunity to have reflection on their own learning. In a related study by Day and Foley (2006), two introductory human-computer interaction undergraduate classes have been studied. One class has received traditional in-class lecture, while the other class has received Web-based out of class lecture. The objective of their study was to determine effect of Flipped Learning on student achievement as well as student enjoyment. They reported that the Flipped Learning increased student achievement. The students who were in the experimental Flipped Learning outperformed the students of traditional class on every assignment as well as every exam. Furthermore, students stressed that they have learned more using this format compared to the traditional lecture format. Accordingly, students also showed positive attitudes towards the implementation of Web-based lectures besides the new format of learning. The authors found that the application of the Web-based lecture was effortless, easy and inexpensive.

Toto and Nguyen (2009) investigated outcomes and feedback of the Flipped Learning in an engineering course. The objective of the study was to examine student perceptions of the Flipped Learning. The researcher aimed to find out if students find that Flipped Learning supports their understanding and comprehension of the course content and whether it should be continued. The result of survey revealed that students perceived 30 minute videos as the optimal amount of time allocated to a video lecture. Furthermore, students reported that watching the video lecture be distracting. Overall, the study results designated that students usually value traditional approach of face-to-face lectures; however, they appreciate the benefits the Flipped Learning offers by dedicating additional classroom time to problem solving as well as hands-on activities. Toto and Nguyen concluded that students perceived the Flipped Learning as an effective teaching and learning strategy that may be effectively and efficiently applied at least 25% of the course time.

Therefore, as literature evidences, many researchers have carried out studies on Flipped Learning, and have come up with mixed results, but overall, positive. This study tries to assess Flipped Learning readiness among Malaysian graduate and post graduate students from different disciplines.

Methodology

This research employed a survey approach using a five-scale questionnaire (from completely disagree to completely agree). The original questionnaire contained some constructs such as Technology Access, Online Skills, Motivation, Ability to Use Online Audio/ Video, Internet Discussions, Importance to Your Success developed by Watkins, Leigh and Triner (2004). In this research some other factors extracted

from literature such as flipped Learning Awareness, respondents' suggestion of f2f vs. Online and Content Format were added. To determine the reliability of the study construct, a pilot study was conducted and the result showed that the study construct has high level of reliability.i.e. 0.89. The study sample involved 352 Malaysian graduate and post graduate students from different disciplines studying at Universiti Kebangsaan Malaysia in the second semester 2014. The obtained data were analyzed using descriptive statistics namely percentage and frequency distribution.

Results and Discussion

Section One: Respondent Demographics

Among the 352 respondents, 315 (89%) undergraduate and 37 (10.5%) post-graduate students answered the questionnaire. The result also show that 100 (28.4%) respondents were male, while 252 (71.6%) were female students**.** The respondents were from different disciplines: Research Methodology 9(2.6%), Adult Clinical Psychology 13(3.7%), General Chemistry 49(13.9%), Transport Engineering (5.7%), Production Planning and Control (2.6), Physiology 1 (0.3%), Endodontic 25 (7.1%), Learner Strategies 47 (13.4%), Cosmetology 36 (10.2%), Advanced Pharmacy Practice 10 (2.8%), and Fiqh of Worship & Munakahat 133 (37.%). Fiqh of Worship & Munakahat had the most number of respondents 133 (37 %), while Physiology with one respondent (0.3%) has the least number of respondents.

Section Two: Data Analysis

A: *Technology Access*

In term of technology access as illustrated in Table 13.1, 160 respondents strongly agree that they have access to a computer with an Internet connection and 129 completely agree with this fact, while only 39 students are not sure. Regarding the access to a fairly new computer with required accessories, 131 respondents strongly agree and 72 persons completely agree, while 115 are not sure. Only 22 strongly disagree. Concerning access to a computer with adequate software, 166 respondents strongly agree and 110 completely agree, while 55 respondents are not sure.

Over all, data shows that the majority of the respondents have access to technology (computer, software, accessories & internet). This finding is consistent with the findings of past studies (Changize *et al.,* 2013; Plata, 2013; Toto & Nguyen, 2009).

Table 13.1 Technology Access

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
I have access to a computer with an Internet connection.	7	7	39	160	129	342
I have access to a fairly new computer (e.g., enough RAM, speakers, CD-ROM).	4	22	115	131	72	344
I have access to a computer with adequate software (e.g., Microsoft Word, Adobe Acrobat).	2	8	55	166	110	341
				answered question		**344**
				skipped question		**12**

B: Online Skills

The study looks into one of the important aspects in Flipped Learning and that is online skills. Based on the data collected, three categories are indentified.

As shown in Table 13.2, category one includes the basic skills to operate a computer (e.g., saving files & creating folders) with 157 respondents strongly agree and 149 persons completely agree; the basic skills for finding the way around the Internet (e.g., using search engines) with 171 respondents strongly agree and 118 persons completely agree; and sending an email with a file attached where 132 respondents strongly agree and 166 persons completely agree. This means that almost all respondents have the required computer and online skills.

Category two comprises being comfortable using a computer several times a week to participate in a course with143 respondents strongly agree and101 respondents completely agree; being able to communicate effectively with others using online technologies (e.g., chat) with 155 respondents strongly agree and 93 persons completely agree, while 69 respondents were not sure; and being able to express oneself clearly through writing (e.g., emotions & humor) with 143 respondents strongly agree and 62 respondents completely agree, while 112 students were not sure. On the whole, this category is satisfactory.

Category three encompasses being able to use online tools to work on assignments with students in different places with 164 respondents strongly agree and 69 respondents completely agree, while 84 respondents were not sure; being able to schedule time to provide timely responses to other students and/ or the instructor with 173 respondents strongly agree and 43 respondents completely agree, while 109 respondents were not sure; and being able to ask questions and make comments in clear writing with 185 respondents strongly agree and 52 students completely agree, while 88 respondents were not sure.

Overall, the results show that regarding online skills the respondents have acceptable level of readiness for Flipped Learning. The finding of the current study is in line with a study by Changiz *et al.,* (2013) and Plata (2013) who found that their respondents had sufficient knowledge and ability in term of online skills.

Table 13.2 Online Skills

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
I have the basic skills to operate a computer (e.g., saving files, creating folders).	2	8	19	157	149	335
I have the basic skills for finding my way around the Internet (e.g., using search engines).	4	5	38	171	118	336
I can send an email with a file attached.	3	2	32	132	166	335
I think that I would be comfortable using a computer several times a week to participate in a course.	6	11	75	143	101	336
I think that I would be able to communicate effectively with others using online technologies (e.g., chat).	4	15	69	155	93	336
I think that I would be able to express myself clearly through my writing (e.g., emotions, humor).	3	15	112	143	62	335
I think that I would be able to use online tools to work on assignments with students in different places.	5	12	84	164	69	334
I think that I would be able to schedule time to provide timely responses to other students and/ or the instructor.	2	8	109	173	43	335
I think that I would be able to ask questions and make comments in clear writing.	4	7	88	185	52	336
					answered question	**336**
					skipped question	**20**

C: Motivation

In terms of motivation, 123 respondents strongly agree that they would be able to remain motivated even though the instructor is not online at all times and 37 persons completely agree that they have this motivation, while 145 persons are not sure and 22 persons strongly disagree, as illustrated in Table 13.2.

In relation to being able to complete their work even when there are online distractions, 135 strongly agree and 44 persons completely agree, whereas 104 persons are not sure and 44 persons strongly disagree, as given in table 13.2.

Regarding being able to complete work even when there are distractions at home, 128 respondents strongly agree and 47 persons completely agree. Nevertheless, 106 respondents are not sure and 45 respondents strongly disagree. On the whole, data shows that the respondents have sufficient motivation to adopt Flipped Learning. The finding is consistent with past studies (Changiz *et al.,* 2013; Plata, 2013). Similarly, Bliuc *et al.,* (2011) reported "A primary motivation underlying the teacher's use of a blend of face-to-face and online discussion was the observation that some of the students taking the course were more reluctant to engage in the face-to-face discussion. One of the central aims of adding the online dimension to the face-to-face discussion was to provide the best context for a broader range of students to participate in discussion"(p.856). Similarly, Aragon *et al.,* (2002) reported that motivation was the only variable which appeared to affect course performance. However, although some respondents were not sure or disagreed with some aspects of motivation, overall the result is positive.

Table 13.3 Motivation

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
I think that I would be able to remain motivated even though the instructor is not online at all times.	4	22	145	123	37	331
I think that I would be able to complete my work even when there are online distractions (e.g., friends sending emails or Websites to surf).	5	44	104	135	44	332
I think that I would be able to complete my work even when there are distractions in my home (e.g., television, children, and such).	7	45	106	128	47	333
					answered question	**333**
					skipped question	**23**

D: Online Audio/ Video

Online audio/ video materials are crucial in Flipped Learning as students need to access lecturers video used in the teaching. As Table 13.4 demonstrates, data shows that 174 respondents strongly agree that they would be able to relate the content of short video clips, 30 respondents completely agree that they have this ability. However, 109 respondents are not sure that they have this ability. Concerning the ability to take notes while watching a video on the computer, 171 respondents strongly agree and 46 persons completely agree, while 89 respondents are not sure. In terms of the ability to understand course related information when it is presented in video formats, 169 respondents strongly agree and 54 persons completely agree,

while 99 respondents are not sure. This finding is also in line with the studies by Changiz *et al.,* (2013) and Plata (2013). Although some respondents are hesitant about their ability to use online audio/ video, the overall data shows that students are able to use online audio/ video for the purpose of education. This means that they are ready to adopt Flipped Learning.

Table 13.4 Online Audio/ Video

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
I think that I would be able to relate the content of short video clips (1-3 minutes typically) to the information I have read online or in books.	4	14	109	174	30	331
I think that I would be able to take notes while watching a video on the computer.	5	22	89	171	46	333
I think that I would be able to understand course related information when it's presented in video formats.	4	7	99	169	54	333
					answered question	**333**
					skipped question	**23**

E: Internet Discussions

Discussion in Flipped Learning is necessary as Table 13.5 shows that 184 respondents strongly agree that they would be able to carry on a conversation with others using the Internet. Accordingly, 81 persons completely agree that they have this ability, while 50 respondents are not sure. Concerning the ability to have several discussions taking place in the same online chat, 157 respondents strongly agree and 46 respondents completely agree, while 103 respondents are not sure. In terms of ability to follow along with an online conversation, 150 respondents strongly agree and 56 persons completely agree, while 99 persons are not sure. In reference to preference to have more time to prepare responses to a question, 185 respondents agree and 78 persons completely agree, whereas 58 persons are not sure. The result is also consistent with past studies (Changiz *et al.,* 2013; Plata, 2013).

As mentioned, some respondents are not sure about their ability in internet discussion. This can be associated with their lack of familiarity or lack of self-confidence. However, overall, their ability in internet discussion is acceptable. This indicates their readiness for Flipped Learning.

Table 13.5 Internet Discussions

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
I think that I would be able to carry on a conversation with others using the Internet (e.g., Internet chat, instant messenger).	4	12	50	184	81	331
I think that I would be comfortable having several discussions taking place in the same online chat even though I may not be participating in all of them.	4	22	103	157	46	332
I think that I would be able to follow along with an online conversation (e.g., Internet chat, instant messenger) while typing.	5	20	99	150	56	330
I sometimes prefer to have more time to prepare responses to a question.	2	8	58	185	78	331
					answered question	**332**
					skipped question	**24**

F: Importance to Success

Importance to success is a variable that shows the level of contributing factors for the success of Flipped Learning. As Table 13.6 demonstrates, regular contact with the instructor, quick technical and administrative support, and frequent participation throughout the learning process, prior experiences with online technologies and the ability to immediately apply course materials are regarded as important factors to students' success. Data shows that 161 respondents strongly agree that regular contact with the instructor is important to success and also 102 persons completely agree, while 60 respondents are not sure. Regarding quick technical and administrative support, 167 respondents strongly agree and 111 persons completely agree, while 48 respondents are not sure. In terms of frequent participation throughout the learning process, 177 persons strongly agree and 89 respondents completely agree, whereas 58 respondents are not sure. In reference to prior experiences with online technologies, 199 respondents strongly agree and 87 persons completely agree, while 35 respondents are not sure. Concerning the ability to immediately apply course materials, 191 students strongly agree and 81 completely agree, whereas 51 respondents are not sure. Overall, data demonstrates that these four factors are almost equally significant to students' success.

In a related study, Changiz *et al.,* (2013) reported that the students' readiness scores in total and all subscales were above 3. Plata (2013) found that "Importance to Your Success" was the factor with the highest weight of mean. This means that this scale with its subscales is of great importance for Flipped Learning readiness. On

the whole, students' responses show that they have an acceptable level of Flipped Learning readiness.

Table 13.6 Importance to your success

Please respond to the following statements: 1 = Completely Disagree 2 = Strongly Disagree 3 = Not Sure 4 = Strongly Agree 5 = Completely Agree						
Answer Options	**1**	**2**	**3**	**4**	**5**	**Response Count**
Regular contact with the instructor is important to my success in online coursework.	4	2	60	161	102	329
Quick technical and administrative support is important to my success in online coursework.	2	2	48	167	111	330
Frequent participation throughout the learning process is important to my success in online coursework.	3	3	58	177	89	330
I feel that prior experiences with online technologies (e.g., email, Internet chat, online readings) are important to my success with online course.	3	6	35	199	87	330
The ability to immediately apply course materials is important to my success with online courses.	4	2	51	191	81	329
					answered question	**330**
					skipped question	**26**

G: Flipped Learning Awareness

An awareness of Flipped Learning among the students is a pre-requisite for Flipped Learning to be successful. Data as displayed in Table 13.7 shows that from 326 respondents, 166 (35.6%) are aware of Flipped Learning, while 210 (64.4%) respondents are not aware of Flipped Learning. This means that a great number of graduate and post-graduate students are not aware of Flipped Learning approach. Thus, the teachers and stakeholders are required to introduce students to this new approach of teaching and learning and encourage them to benefit from it. The results imply that there is a need for institutions to inform and educate the students on Flipped Learning.

Table 13.7 Flipped Learning awareness

Flipped Learning Readiness Questionnaire		
Are you aware of Flipped Learning?		
Answer Options	**Response Percent**	**Response Count**
Yes	35.6%	116
No	64.4%	210
answered question		**326**
skipped question		**30**

H. Face-to-face (f2f) vs online

Table 13.8 shows respondents suggestion for f2f vs. online. Data shows that 88 (27%) respondents are of the opinion that face-to-face and online learning should comprise 50% of course delivery equally. Around 16 (4.9%) believe that f2f should be 60% and online should make up for 40% of learning, whereas 44 (13. %) state that it should be the other way round. About 83 (25.5%) hold the view that f2f should be 70% and online should be 30%, while 12 (3.7%) are of the view that it should be vice versa. Around 43 (13.2%) view that the proportion should be f2f 80 % vs. Online 20 %, while 6 (1.8) believe the other way round. Finally, about 27 (8.3%) are of the view that the proportion should be f2f 90 %: Online 10 %, while 7 (2.1%) have an opposing view.

Table 13.8 Face-to-face (f2f) vs online

If the university plans to implement Flipped Learning, how much of face-to-face (f2f) vs online do you prefer?		
Answer Options	**Response Percent**	**Response Count**
f2f 90 %: Online 10 %	8.3%	27
f2f 80 %: Online 20 %	13.2%	43
f2f 70 %: Online 30 %	25.5%	83
f2f 60 %: Online 40 %	13.5%	44
f2f 50 %: Online 50 %	27.0%	88
f2f 40 %: Online 60 %	4.9%	16
f2f 30 %: Online 70 %	3.7%	12
f2f 20 %: Online 80 %	1.8%	6
f2f 10 %: Online 90 %	2.1%	7
answered question		**326**
skipped question		**30**

In general, data shows that respondents perceive on line and Flipped Learning positively. In this regard, Aragon *et al.,* (2002) stated:

> *"It is interesting to note that, while there was a significant difference between the online and face-to-face students in terms of cognitive control functions, it seemed to have little impact on course performance. The significant results from the correlation analyses for the face-to-face students also serves to reaffirm what we know contributes to positive learning outcomes for students. As student participation increased and avoidance decreased, performance was shown to increase. Finding suggests that learners can be equally as successful in the online environment regardless of learning style."*

This shows that learners with different learning styles can take advantage of Flipped Learning. Correspondingly, Khoo *et al.,* (2012, p.127) reported "the use of different online tools was effective for engaging students and helped them develop critical insights into key course concepts. However, careful planning and reflection on different pedagogical approaches were needed so that student learning could be supported in meaningful and relevant ways". On the whole, an appropriate proportion of flipping of online and traditional face-to-face learning can be productive for learning. The teachers/ lectures may adopt this approach and use it in proportion to class requirements as well as students' needs and interests.

I: Content Format

Table 13.9 demonstrates the format of online materials based on respondents' suggestions. It shows that 66.6% of respondents believe that the material should be in the form of PowerPoint with video explanation, while 38.7% suggest PowerPoint with audio explanation. About 49.2% believe that text should be with video explanation. A total of 48.5% suggest PowerPoint presentation only. Around 43.9% recommend that it should be Animated PowerPoint (e.g. Flipped PowerPoint). A total of 39.9% are of the opinion that text should be with Video (Notes with video explanation, while 18.7% hold the view that Text should be with Audio (Notes with audio explanation). Around 31.3% are of the opinion that reading text be in PDF format. 31.0% are of the view that there should be Video Only (Video recording of teaching content). About 19.9% believe that it should be Animated Text (e.g. Flipped Notes/ Articles). Finally, 8.0% opine that Audio Only (Audio recording of teaching content) is preferred.

Table 13.9 Content Format

If the university plans to implement Flipped Learning, what format do you prefer the teaching content to be made available online? (you may chose more than 1 answer)		
Answer Options	**Response Percent**	**Response Count**
Reading Text Only (e.g. PDF)	31.3%	102
PowerPoint Presentation Only	33.7%	110
Audio Only (Audio recording of teaching content)	8.0%	26
Video Only (Video recording of teaching content)	31.0%	101
PowerPoint with Audio (PowerPoint with audio explanation)	38.7%	126
PowerPoint with Video (PowerPoint with video explanation)	66.6%	217
Animated PowerPoint (e.g. Flipped PowerPoint)	43.9%	143
Animated Text (e.g. Flipped Notes/ Articles)	19.9%	65
Text with Audio (Notes with audio explanation)	18.7%	61
Text with Video (Notes with video explanation)	39.9%	130
Other (please specify)	0.0%	0
answered question		**326**
skipped question		**30**

Therefore, as data shows, most of them (66.6 %) suggest that the material should be in the form of PowerPoint with video explanation, while only 8% opine that the material be only in audio format. This means that learners are mostly interested in various material formats. Thus, a teacher/ lecturer should take advantage of various material formats to motivate the students in Flipped Learning classes.

Implications of the Study

The data analysis shows that UKM graduate and post-graduate students have acceptable level of readiness in Flipped Learning. Not only the equipment required for online and Flipped Learning is available and learners exhibit that they are ready to adopt this approach, the practice of online and Flipped Learning in UKM is satisfactory. Nonetheless, appropriate training on the usefulness and effectiveness of the technology can play an important role to concretize the adoption of Flipped Learning among the lecturers/ teachers and students. This means that user training in Flipped Learning could solidify the adoption of this approach in UKM. In other words, to marry research findings and real classroom practice, lecturers should be trained in the use of Flipped Learning; while, students need to be familiarized with this new approach and be encouraged to embrace it.

Conclusion

This study focused on the Flipped Learning readiness of the graduate and post-graduate students studying at Universiti Kebangsaan Malaysia. To this end, a survey approach using questionnaire was employed. The study identified different Flipped Learning readiness factors such as Technology Access, Online Skills and Relationships, Motivation, Ability to use online audios/ videos, Internet Discussions, Importance to Success, etc. The results show that Malaysian graduate and post-graduate students have the acceptable readiness to adopt the Flipped Learning approach. Future experimental study is recommended to measure the real impact of Flipped Learning on Malaysian students.

References

Aragon, S. R., Johnson, S. D., & Shaik, N. (2002). The influence of learning style preferences on student success in online versus face-to-face environments. *The American Journal of Distance Education*, 16(4), 227-243.

Baker, J. W. (2000). The classroom flip: Using web course management tools to become the guide by the side. *Paper presented at the 11th International Conference on College Teaching and Learning, Jacksonville, Florida, USA.*

Bishop, J. L., & Verleger, M. A. (2013, June). The flipped classroom: A survey of the research. *In ASEE National Conference Proceedings, Atlanta, GA.*

Bliuc, A. M., Ellis, R. A., Goodyear, P., & Piggott, L. (2011). A blended learning Approach to teaching foreign policy: Student experiences of learning through face-to-face and online discussion and their relationship to academic performance. *Computers & Education*, 56(3), 856-864.

Changiz, T., Haghani, F., & Nowroozi, N. (2013). Are postgraduate students in distance medical education program ready for e-learning? A survey in Iran. *Journal of education and health promotion,* 2.

Day, J. A., & Foley, J. D. (2006). Evaluating a web lecture intervention in a human– computer interaction course. *IEEE Transactions on Education, 49(4), 420-431.*

Green, G. (2012, January 18). *My view: flipped classrooms give every student a chance to succeed*. *CNN*. Retrieved from http://schoolsofthought.blogs.cnn.com/2012/01/18/my-view-flipped-classrooms-give-every-student-a-chance-tosucceed/

Khoo, E., Johnson, E., & Zahra, A. (2012). I learnt a whole lot more than churning out an essay: Using online tools to support critical collaborative inquiry in a blended learning environment.

Kirch, C. (2012). *Flipping with kirch*. Retrieved from http://flippingwithkirch.blogspot.ca/p/2011-2012-test-score-data.html

Musallam, R. (2010). *The effects of using screencasting as a multimedia pre-training tool to manage the intrinsic cognitive load of chemical equilibrium instruction for advanced high school chemistry students.* Doctoral dissertation, The University of San Francisco.

Plata, I. (2013). A Proposed Virtual Learning Environment (Vle) For Isabela State University (Isu). In *The Second International Conference on e-Technologies and Networks for Development (ICeND2013) (*pp. 28-41). The Society of Digital Information and Wireless Communication.

Strayer, J. F. (2008). *The effects of the classroom flip on the learning environment: A comparison of learning activity in a traditional classroom and a flip classroom that used an intelligent tutoring system*. Doctoral dissertation, The Ohio State University.

Toto, R., & Nguyen, H. (2009, October) Flipping the Work Design in an Industrial Engineering Course. *Proceedings, 39th ASEE/IEEE Frontiers in Education Conference, San Antonio, Texas, USA*

Watkins, R., Leigh, D., & Triner, D. (2004). Assessing readiness for e-learning. *Performance Improvement Quarterly*, 17(4), 66-79.

This page intentionally left blank

Chapter

14

This page intentionally left blank



Chapter 14

To Flip or Not to Flip the Classroom? Findings form a Malaysian Undergraduate Course in UMS

Lee Kean Wah, Ng Shi Ing, Tan Choon Keong & Yoon Sook Jhee

Universiti Malaysia Sabah

Introduction

The current learning culture in Higher Education Institutions (HEI) advocates a blended approach. According to Singh and Reed (2001), Blended Learning combines a multitude of learning modes with the aim of maximizing learning outcomes and the cost of program delivery. The various learning modes take advantages of affordances found in the present technology compared to technology of 5 years ago i.e. from using the computer to type up an assignment to using Web-based software to create and publish lecture video. Different Blended Learning modes and advantages of this approach have been duly noted and expounded (see Singh & Reed, 2001). Literature have noted a positive view of implementing Blended Learning as researches have noted an improvement in learning experience (Khine & Lourdusamy, 2003, Motteram, 2006, Aspden & Helm, 2004). However, research has also noted for this approach to be successful, the right blend needs to be concocted as Aspden and Helm (2004: 251) noted "active participation of all involved and the environment is only going to be effective if the relevant parties engage with the process". This is supported by Parkinson *et al.*(2003) that learners expressed positive feelings in traditional face-to-face setting compared to learners expressing dissent using Blended Learning mode. Johnson *et al*., (2000) findings pointed out that learners were satisfied with the amount of interaction level with their instructors and course mates in the traditional face-to-face format compared to digital discussion.

Instead of tweaking to find the "right" formula to Blended Learning, an approach that has recently surfaced seems to possess the ability to provide optimal discussion or interaction time yet allowing learners to dictate their learning pace – flipped or inverted learning. This study seeks to investigate the views of a group of student teachers concerning the flipped classroom and traditional classroom approaches to instructional delivery of content in an undergraduate TESL 'Materials Development' course in a Malaysian university. Two instructors collaborated in a semester-long study to find out just what the student teachers' think about the approaches.

Objectives of Study

This study seeks to: -

1. Evaluate the success of each instructional and technical element, using the ARCS (Attention, Relevance, Confidence and Satisfaction) framework, in the flipping learning approach to help develop learners' understanding of the course content.
2. Identify the affordances and challenges faced during teaching and learning using (i) Flipped Learning approach and (ii) lecture based approach.
3. Interpret the tension arising during teaching and learning during (i) Flipped Learning approach and (ii) lecture based approach using the Activity Theory framework.

Research Questions

To operationalize the objectives, this study seeks to answer the following research questions;

1. What elements (based on the ARCS framework) in the flipping learning approach help develop learners' understanding of the course content?
2. What are the affordances and challenges faced during the teaching and learning using (i) Flipped Learning approach and (ii) lecture based approach?
3. What are the likely causes for the tensions in Research Question 2 and how might they be ameliorated (based on Activity Theory framework)?

Literature Review

Flipped Learning

The notion of flipped or inverted learning (henceforth will be referred to as Flipped Learning) was made popular by two chemistry teachers from Colorado, Jonathan Bergmann and Aaron Sams (Hamdan *et al*, 2013). The basic concept of Flipped Learning is to replace classroom time dedicated to teaching or lecturing to homework time and "make lessons available…to be accessed whenever and wherever it is convenient…at home, in class, during study hall, on the bus to a

game or even from a hospital bed" (Hamdan *et at*, 2013,p. 4). Nevertheless, this approach is not revolutionary rather in its archaic form is simply lecturer/ teacher/ instructor assigning reading/ lecture notes to prepare learners for the following lessons. The difference between these two approaches is the evolved pedagogical process whereby learners are actively and consciously involved and the currency of technological tools.

The essence of Flipped Learning revolves around a shift in the teaching and learning paradigm. Academicians from the Flipped Learning Network together with Pearson's School Achievement Services (2013) established four key premises regarding this approach (Hamdan *et al*, 2013, p. 5 -6):

F – Flexible environment

L – Learning culture

I – Intentional content

P – Professional educators

These four key premises ensure that every flipped classroom is unique and requires thorough planning to ensure learners gained the maximum learning benefit through this approach.

The clear benefit of Flipped Learning is that learners can control their learning pace and learn according to their preferred style as the pivot for Flipped Learning lies at the effective video/ audio lecture before discussion takes place within the classroom and virtually. The advantages of using video to support learning and teaching experience have been documented by Cisco (2011). However, technology on its own does not sustain efficacious learning. Rather it is the planning process for supporting and guiding Flipped Learning which is interspersed appropriately with technology that ensures learners are able to maximize learning opportunities. Gerstein (2011) proposes a flipped classroom model engaging the educator/ lecturer/ instructor, learner and technology. The suggested flipped classroom model is as displayed in Table 14.1.

Table 14.1 Description of Flipped Classroom Model (taken and adapted from Gerstein, 2011: The Flipped Classroom Model: A Full Picture)

	Level	**Activity**
Educator-suggested	***Experiential engagement*** Opportunities should be created for learners to have an invested interest in the topic as "they become hooked through personal connection to the experience and desire to create meaning for and about that experience" (Gerstein, 2011).	- games - simulations - interactives - experiments - community project - arts activities
Educator-suggested	***Concept exploration*** At this level, learners examine and explore key concepts about the topic which should be made accessible. Learners obtain information from media and content-rich Websites which would allow them to explore, expand and curate new knowledge into their current schemata.	- video lectures - audio lectures - content-rich Websites - online chats
Learner-generated	***Meaning making*** Learners reflect and analyze on the information learnt in the previous level and reconstruct the information into nouveau knowledge specifically for that learner using different technology fronted media.	- blogging - reflective videos - audio-visual reflections - tests
Learner-generated	***Demonstration and application*** Learners have to synthesize the information, create and produce product or output which is applicable to the learners' (current or future) role in the community	- creative personalized projects/ presentations

The activities proposed in this model can be carried out using conventional methods, i.e., blogging replacing journal writing, but with the ease, mobility and potency of using technology. Learning becomes organic for these learners as information are collected, discarded and reworked from various sources in different forms and represented from that particular learner's perspective.

ARCS Framework

The ARCS Framework or motivational model is used as a structure "to promote and sustain motivation throughout the learning process" through the instructional and technical elements in the flipped classroom model (The Flipped Classroom, 2012). ARCS stands for Attention, Relevance, Confidence and Satisfaction. The following table describes each factor in greater details:

Table 14.2 Definition of ARCS Motivational Model (taken from Keller, 2010, p. 45)

Factor	**Definition**
Attention	Captures the interest of learners; stimulating the curiosity to learn.
Relevance	Meeting the personal needs/ goals of the learner to effect a positive attitude.
Confidence	Helping the learners believe/ feel that they will succeed and control their success
Satisfaction	Reinforcing accomplishment with rewards (internal and external)

Motivation is an important factor in determining partial or complete learning success as the amount of effort combined with learners' knowledge and skills affects their learning performance. Keller (2010: 6) highlights different aspects influencing motivation besides learners' effort such as the instructor and the instructional materials as a source of "stimuli…with challenge levels that encourage feelings of confidence…will influence performance". There are strategies for each level or factor in ARCS motivational model to reinforce and sustain learners' motivation. These strategies can be applied to either the pedagogical process or behave as instructional materials characteristics. Incorporating these strategies into both the process and product mitigate learners' lack of interest in learning as the framework ensures "actual successful and exciting experiences with the outcomes of a goal-oriented set of behaviours will influence the value one attaches to that goal on the future" (Keller, 2010, p. 7).

Activity Theory

Activity Theory (hereafter AT) which was first developed by Leont'ev (1981) and realised as Cultural-Historical Activity Theory (Cole, 1996), helps in providing a tool for theoretical understanding of conflict, friction, contradictions and inconsistencies both between and within components of an activity system (Engeström, 1987; Blin & Munro, 2008). When it comes to Blended Learning, we are aware of studies which have focused on the tensions arising from Blended Learning implementations without explicit reference to AT (e.g. Duffy & Kirkley, 2004). There has also been some speculation about the use of AT as a theoretical framework for e-Learning (Oliver *et al.*, 2007; Dyke *et al.*, 2007; Wold, 2011) as well as attempts to embed it in e-Learning tools (Joyes, 2006) but AT has not yet been systematically applied to the study of Flipped Learning. In this study, AT is used as an investigative tool to analyse the Blended Learning environment in the form of tensions, frustrations, misunderstandings and miscommunication experienced by the pre-teachers in undertaking the course.

To better understand the in-service teachers' experiences of the flipped approach, we adopted Engeström's (1987, 1990) cultural-historical activity theory that introduces six important dimensions, along with the dynamics among them: Subject, Object (the goal of the activity system), Norms, Division of Labour, Community and Instruments. Applying this framework to a university classroom in its day to day operations, we could assign the in-service teachers to the dimension 'Subject', the learning goals for the in-service teachers to the dimension 'Object', the implicit and explicit rules that structure social interaction to the dimension 'Norms', the prescribed roles of the lecturers and the in-service teachers to the dimension 'Division of Labour', the group of in-service teachers and their lecturers to the dimension 'Community' and different educational tools to the dimension 'Instruments'.

These contradictions may create conflicts, interruptions and misunderstandings. However, if they are resolved they can also be sources of change or development. Kuutti (1996) was attributed for coining the term, and he defines contradiction as a misfit within elements, between them, between different activities, or between different developmental phases of a single activity. Engeström (1987) proposed four levels of contradictions (1) primary, (2) secondary, (3) tertiary and (4) quaternary. Primary contradictions can occur within the elements of activity systems (e.g., within the community), while secondary contradictions may arise between the elements of an activity system (e.g. between the community & subject). Tertiary contradictions, on the other hand, arise when activity participants face situations where they have to use an advanced method to achieve an objective (e.g., when they are introduced a new technology). Finally quaternary contradictions occur between the central activity system and outside activity systems. In the context of our research, the contradictions that emerged within and between (primary & secondary) the elements of the activity system are illustrated in Figure 14.1.

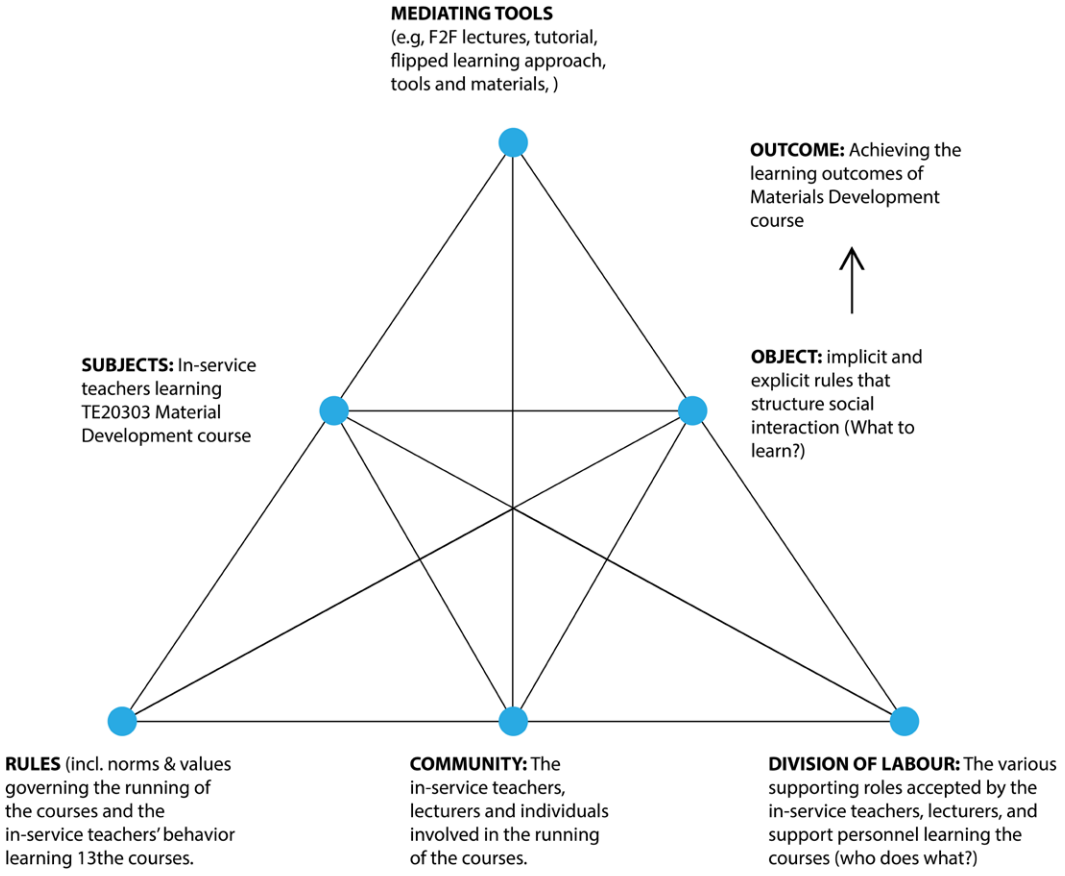


Figure 14.1: *The Main Components of an Activity System*

In other words, AT provides the researchers with a tool to analyse the opportunities afforded and the challenges faced in the introduction of the Blended Learning environment which combines both the traditional lecture and Flipped Learning approach.

Methodology

Participants

A total of 37 pre-service English teachers participated in the study. These pre-service teachers were the second year pre-service teachers currently studying for their degree course in TESL in the School of Education and Social Development, Universiti Malaysia Sabah, Sabah, Malaysia. Their age ranges from early-20s to mid-20s. For the majority of the pre-service teachers, this was their first experience in learning using the Blended Learning approach.

Course design and modules

This study took place over one semester in an undergraduate TESL 'Materials Development' course in Universiti Malaysia Sabah to a group of 37 student teachers. The first section of the course was conducted using the flipping learning approach, while the second section of the course reverted back to the traditional lecture-based format. For the first section, the following learning sequence was implemented:

Table 14.3 Learning Sequence (Taken and adapted from Gerstein, 2011)

Sequence/ Level	**Activity**
Experiential Engagement	***Lecture video – embedded task*** The first task embedded in the video acts to stimulate learners' interest or background knowledge on the current topic.
Concept Exploration	***Lecture video – embedded task*** Prezi was used as the canvas to capture and present the lecture content. A desktop screen capture software, Camtasia, was used to video the lecture. The average length of the video ranges from 10 to 30 minutes. Throughout the video, checkpoints or tasks were embedded to help the learners to regroup and focus on the content of the lecture. Learners were given the choice to work individually or in groups for these particular tasks. These tasks will be discussed in the classroom together with any unclear key concepts the learners may have. Initially the video was supposed to be uploaded to Schoology but due to the size of the video, learners faced difficulties in downloading the video. Alternatively, the instructor passed the video to the class representative to be distributed to the class. The video was given right after the current class to ensure learners have ample viewing time. ***Selected journal articles*** Certain tasks in each video are based on selected journal articles given to the learners. A maximum of two articles will be referred to in the video. These articles are uploaded in advance to Schoology.
Meaning Making	***Discussion on issues and concepts – online: Schoology*** This will take place in class. Before attempting the tasks embedded in the video, the instructor will start off with inviting the learners to voice or raise any unclear key concepts they might have encountered while watching the video and reading the journal articles. This exercise usually takes about 15 to 30 minutes. Next, learners will sit in groups to discuss the tasks in the videos and elect a representative to present their findings and discussions. For certain topic, learners will have to post their findings and discussions on Schoology and comment on their coursemates findings and discussions. This exercise usually takes up to one hour.

Sequence/ Level	Activity
Demonstration and Application	***Tutorial tasks*** At the end of each video, a tutorial task will be given. Learners work in groups to complete the task. Learners will have about fifteen minutes in the class to go through the tutorial task and ask the lecturer if they have any inquiries. Tutorial tasks will be done outside of classroom time and will be presented during the following tutorial session.

For the second section, the traditional lecture-based format, follows the normal procedure of instructor enters the classroom and presents the topic and assigns the task to the learners to be presented in the following tutorial lesson.

Instruments

At the end of the course, an online questionnaire was created to seek which technical or instructional element captures the learners' motivation to help learners develop understanding of the course content. A semi-structured interview was conducted to discover tension arising during the Flipped Learning and traditional based lecture approach against the elements in Activity Theory. Students also kept a reflective journal to chart their own learning in the material development course via a blog.

Quantitative Data – Questionnaire

A post-Likert scale online questionnaire was designed and used to gather teachers' opinions and views of the flipped approach to learning. The questionnaire consists of 23 questions related to their overall impressions of the learning environment, flipped approach, learning materials, and demographic data of the respondents. A Likert-type scale from 1 to 5 (1 = *Unsuitable (UD),* 2 = *Least suitable (D), 3 = Not sure (NS)*, 4 = *Suitable (S), 5 = Very suitable (VS*) was used (the scale is in reverse for negative items). In total, 31 questionnaires were returned and analysed. The data obtained from the questionnaires was analysed based on the mean score of the items.

Qualitative Data – Reflective Journal and Focus Group Interviews

For qualitative data, two data sources were elicited – reflective journals and semi-structured interviews. The reflective journals (captured in blogs) helped chart the pre-service teachers' reflections in learning the Material Development course, while focus-group interviews were conducted as follow-up to the reflective journals in order to probe deeper into the reflections made. As discussed in the earlier section, the main heuristic for the qualitative data was Activity Theory. Thus, in writing their reflections, participants were specifically asked to focus on the following dimensions, abstracted from theoretical lens of Activity theory, namely (a) Subject, i.e., pre-service teachers learning the course; (b) Rules (When & where to learn?), i.e., the

implicit and explicit rules that structure social interaction; (c) Object/ Outcome (What to learn?), i.e., learning of the course content, particularly the Learning outcomes (d) Division of Labor (Who does what to learn?), i.e., the prescribed roles of the lecturers and the in-service teachers; (e) Community, i.e., the pre-service teachers, lecturers, and other stakeholders in the learning system; and (f) Mediation tools (How to learn?), i.e., the learning tools (e.g. the flipped & traditional learning environment).

In total, 37 reflective journals were returned and analyzed. In the case of focus-group interviews, two voluntary groups of teachers participated, one group consisting of ten teachers and the other eleven teachers. The semi-structured interviews were audiotaped and transcribed. Both the reflective journals and interview transcripts were then analysed by comparing data with data to find similarities and differences of common ideas and beliefs and coded into themes.

Data Analysis

Quantitative data were analysed descriptively using SPSS Version 18 to examine teachers' perceptions of the Blended Learning environment. Qualitative data were thematically analysed and coded iteratively using Nvivo based on criteria of saliency and saturation (Lincoln & Guba, 1985). Credibility was addressed based on the techniques of prolonged engagement, triangulation, and referential adequacy (Lincoln & Guba, 1985). To ensure referential adequacy, attempts were made to capture and document the data in their original form. Verbatim quotes were used in some instances to give a flavor of the teachers' experiences in the Blended Learning environment.

Findings and Discussion

Findings are presented based on the order of the research questions posited:

RQ1: What elements (based on the ARCS framework) in the flipping learning approach help develop learners' understanding of the course content?

Based on the 23-item questionnaire that focuses on eliciting perceptions about their overall impressions of the Flipped Learning environment and what helped them to learn the course better, findings revealed that a vast majority of the pre-service teachers had positive perceptions of the flipped approach for learning.

The efficacy of the Flipped Learning approach can be seen in the positive endorsements from the students, particularly the video elements incorporated in the flipped approach (see Table. 13.4). For example, Items 14, 15, 9 and 11 (with an average score of 4.3) indicate that the students strongly endorsed the usefulness of video in helping them to learn.

Table 14.4 Frequency and Average Score of Questionnaire Items Concerning Students' Perception of Flipped Learning and what helped them in their learning (N=31)

	Items	Frequency of response					
		SD(1)	D(2)	NS(3)	A(4)	SA(5)	Ave
1	The activities embedded in the videos stimulated my interest for the topic.	0	0	1	22	8	4.23
2	The journal articles given by the lecturer before the topic stimulated my interest for the topic.	0	3	14	11	3	3.45
3	The discussion with the lecturer in the classroom stimulated my interest for the topic.	0	0	3	23	5	4.06
4	The group discussion with my course mates in the classroom stimulated my interest for the topic.	1	2	9	13	6	3.68
5	The activities embedded in the videos sustained my interest for the topic.	1	0	3	19	8	4.06
6	The journal articles given by the lecturer before the topic sustained my interest for the topic.	1	1	11	14	4	3.61
7	The discussion with the lecturer in the classroom sustained my interest for the topic.	1	0	3	18	9	4.10
8	The group discussion with my course mates in the classroom sustained my interest for the topic.	2	1	10	15	3	3.52
9	The activities embedded in the videos helped develop my background knowledge of the topic.	0	0	3	15	13	4.32
10	Reading and analyzing journal articles before entering the classroom helped me build my knowledge of the topic.	0	1	1	20	9	4.19
11	The discussion with the lecturer in the classroom helped me strengthen my knowledge of the topic after watching the video.	0	0	2	17	12	4.32
12	The group discussion with my course mates in the classroom helped me consolidate my knowledge of the topic.	0	1	4	22	4	3.94

	Items	Frequency of response					
		SD(1)	D(2)	NS(3)	A(4)	SA(5)	Ave
13	The objectives highlighted at the beginning of the video helped me to track my learning.	0	0	1	21	9	4.26
14	The ability to pause while watching the video allowed me to check on my level of understanding of the topic.	0	0	2	10	19	4.55
15	The activities embedded in the videos guided me to develop a fundamental understanding of the topic.	0	0	1	19	11	4.32
16	The analysis of the journal articles guided me to further develop my understanding of the topic.	0	2	3	17	9	4.06
17	The discussion with the lecturer in the classroom enhanced my understanding of the topic.	0	0	2	21	8	4.19
18	The group discussion with my course mates in the classroom consolidated my understanding of the topic.	0	2	8	17	4	3.74
19	I received positive feedback from my lecturer during classroom discussion regarding activities embedded in the video.	0	0	11	11	9	3.94
20	I received positive feedback from my lecturer during classroom discussion regarding the analysis of journal articles.	0	1	8	14	8	3.94
21	I can use the knowledge from these activities to complete my tutorial tasks.	1	1	2	14	13	4.19
22	I can use the knowledge from these activities to complete my assignments.	1	0	3	16	11	4.16
23	I can share my knowledge from these activities with my course mates.	1	0	6	16	8	3.97

To get a better idea of which elements in the Flipped Learning approach helped develop the learners' understanding of the course content, we peruse the findings based on a number of main elements under investigation:

(i) *use of video*

Table 14.5 The Video Element In The Flipped Approach

	US 1	**LS 2**	**NS 3**	**S 4**	**VS 5**	**Mean**
length of video	0	1	3	20	6	4.03
interaction within the video e.g. embedding video within a video	0	1	9	13	7	3.87
checkpoints in the video e.g. activities for learners to complete	0	0	0	18	12	4.40
the movement effect in the video e.g. panning, zooming in and out (using Prezi)	0	0	2	19	9	4.23
clarity of voice	0	0	0	14	16	4.53
format of the video e.g. *avi, *mp4, *mpg	0	0	3	15	12	4.30

Keys: 1 = *Unsuitable (UD),* 2 = *Least suitable (D), 3 = Not sure (NS)*, 4 = *Suitable (S), 5 = Very suitable (VS*)

Based on Table 14.5, the main characteristics of video which appear to help (mean of > 4.0) are the brevity of length of the video, the checkpoints in the video, the movement effect of the prezi software; the clarity of voice and the format of the video.

(ii) *the articles selected for learning*

Table 14.6 The Article Element In The Flipped Approach

	US 1	**LS 2**	**NS 3**	**S 4**	**VS 5**	**Mean**
length of article	0	2	7	19	2	3.70
amount of article to read per week	0	8	14	8	0	3.00

In terms of the articles selected for learning as seen in Table 14.6, students do not think the articles used strongly supported their learning (mean of < 4.0).

(iii) *the activity of discussion built into the Flipped Learning approach*

Table 14.7 The activity element in the flipped classroom

	US 1	**LS 2**	**NS 3**	**S 4**	**VS 5**	**Mean**
2 hour length of discussion with lecturer	1	0	5	19	5	3.90
1 hour group discussion with course mates	0	2	9	15	4	3.70
discussing activities embedded in the video during lecture and tutorial time	0	0	1	23	6	4.17
able to ask for clarifications from the lecturer during discussion	0	0	2	16	12	4.33

Based on Table 14.7, the elements of discussion built into the Flipped Learning approach strongly helped in two aspects (mean of > 4.0); firstly, in discussing activities embedded in the video during lecture and tutorial time, and secondly, in providing the opportunities to seek clarifications from the lecturer during the discussion.

(iv) *the tutorial task element*

Table 14.8 The tutorial element in the flipped classroom

	US 1	**LS 2**	**NS 3**	**S 4**	**VS 5**	**Mean**
Appropriate time duration given to complete tutorial tasks	0	1	3	19	7	4.07
Discussion among group members	0	1	1	18	10	4.23

As shown in Table 14.8, two elements of tutorial tasks seemed to help the students' learning process, the appropriate amount of time provided to complete the tutorial tasks, and the availability of group members to scaffold the discussion of the tutorial tasks.

(v) *the feedback element in the flipped approach*

Table 14.9 The feedback element in the flipped classroom

	US 1	LS 2	NS 3	S 4	VS 5	Mean
Constructive feedback from lecturer	0	0	5	16	9	4.13
Constructive feedback from course mates	0	1	11	15	3	3.67
Positive feedback from lecturer	0	0	3	19	8	4.17
Positive feedback from course mates	1	0	8	17	4	3.77
Immediate feedback from lecturer	0	0	3	16	11	4.27
Immediate feedback from course mates	0	0	11	15	4	3.77

Based on Table 14.9, the elements of feedback built into the Flipped Learning approach strongly helped in three aspects (mean of > 4.0); firstly, in the form of constructive feedback provided by the course lecturer, secondly, in the form of positive formative feedback provided by the lecturer, and thirdly, in form of immediate feedback from the lecturer. Thus, it appears the pre-service teachers appreciated feedback from their lecturer, especially if the feedbacks provided are constructive, positive and immediate.

vi) *the online learning platform element (Schoology)*

Table 14.10 The Online Learning Platform Element In The Flipped Classroom

	US 1	LS 2	NS 3	S 4	VS 5	Mean
facility to download journal articles	0	2	2	12	14	4.27
facility to convey problems in specified discussion area	0	0	3	13	14	4.37
facility to acquire immediate feedback from lecturer and course mates.	0	2	0	20	8	4.13
facility to upload documents	0	1	3	15	11	4.20
ease of navigation around learning platform	0	2	5	13	10	4.03

In terms of the online learning platform provided as shown in Table 14.10, five facilities seemed to have helped(mean of >4.0, the facility to download journal articles; the facility in providing a forum for discussion; the facility to acquire feedback from both their lecturer and fellow course mates; the facility to upload useful documents; and the ease in connecting and navigating around the learning platform.

vii) *the learning sequence of the flipped approach*

Table 14.11 The Overall Learning Sequence of The Flipped Approach

	US 1	LS 2	NS 3	S 4	VS 5	Mean
Watch video -> checkpoints in video (i.e. activities) -> read journal article -> discussion in classroom with lecturer and course mates -> tutorial tasks -> presentation of tutorial tasks -> wrap up	0	0	2	16	12	4.33

The last element of the flipped approach concerns the learning sequence of the approach. Findings show that the students strongly felt that the instructional sequence adopted to be suitable (mean of 4.33).

Despite the generally positive feel derived from the closed-ended items of the questionnaire survey, further analysis of data from the open-ended items on issues faced while learning using the flipped approach yielded contradictory findings. Three main issues stood out – two of the issues are related to learners and the other is related to structural shortcoming. The two learner's related issues concern the learners' (1) uncertainties due to the novelty of the flipped approach; and (2) readiness for flipping the classroom. The structural issue concerns the weak e-Learning infrastructure where learners faced teething accessibility problems.

In what follows, verbatim quotes of some the issues faced are provided to give a flavour of the state of "uneasiness" of the learners:

Learners-related issues

(1) Uncertainty due to the novelty of the flipped approach

The feeling of uncertainty is one of the main issues highlighted, in particular in adjusting to the new learning routine and the discomfort that goes with them learning outside their comfort zone.

> *This is the first time I'm using the Flipped approach, so I guess I still needed some time to adjust myself in using it. But, I think I will have no problem if this approached is used in another course(s) in this upcoming semester (S03).*

> *This is the first time I experienced the flipped approach classroom so I'm a bit uncomfortable at first but as time passes by I'm beginning to like this approach (S23).*

> *The issue that I faced would be adapting myself to the approach. This approach is something new to us and it takes time for us to get use to the approach (S11).*

> *I quite like this approach. Perhaps my classmates and I need to get used to it more, and be better prepared (armed with questions etc.). I'm only worried we might miss our chance to ask for clarification, if we didn't prepare in advance and asked the necessary/ right questions (S36).*

Flipped classroom helps me to be prepared of what I need to learn on the next class and it enables me to understand more on what I need to know in MD class by asking more questions which I'm unsure (S01).

(*2) Readiness for Flipped Learning*

Another learner issue concerns the pre-service teachers' readiness to embrace the flipped approach, in particular the greater amount of investment demanded, i.e. more effort needed to come prepared for class, and more time spent on reading academic articles.

> *Not able to cope with learning because came to class unprepared. so, most of the time, I will be blur on the topic discussed and at the same time, I am scared to be called up to answer questions as I don't want to disappoint myself and the lecturer. this creates a feeling inside me that I want to leave the class earlier as I am not comfortable in it (S05).*
>
> *I need to always be prepared before class which I need to start reviewing notes before going in to class or else I cant follow up with the lesson (S09)*
>
> *It's a great approach, however some students like me :) might need a little time to ease into it. First few weeks needs getting used to but after that it was okay, But I have to admit the reading was quite heavy (S14).*
>
> *It is hard to focus between the video and the articles that I need to read. The video content is a combination from all the articles. But, when I cannot understand the articles, it is hard to understand the video also. However, it is easier to understand the topic when we read the article and followed by watching the videos (S17).*

(3) Teething infrastructural problems that militate accessibility

Insofar as the structural encumbrances are concerned, the main problems faced included slow internet connectivity and difficulty of access.

> *The issue that I faced is just the internet - internet connection is too slow and sometimes I cannot access (S15).*
>
> *I sometimes cannot download the articles. Thus, I cannot read before going to the class (S22).*
>
> *The only issue is downloading the video. The lousy internet connection doesn't help much (S30).*
>
> *I just having problem acquiring the materials (downloading) (S13).*

The mixed positive and negative findings revealed the state of "uneasiness" amongst the pre-service teachers on flipping the classroom. To further understand the state of "uneasiness" of the pre-service teachers, further analysis viewed through the theoretical lens of Activity Theory yielded a number of tensions within the activity

systems. The next section thus presents the findings based on the second research questions:

RQ2: What tensions might arise during the teaching and learning using (i) Flipped Learning approach and (ii) lecture based approach?

The semi-structured interviews were thematically analysed in an attempt to understand both the flipped approach and the traditional approach, viewed in terms of affordances and challenges faced. Analysis yielded seven categories, grouped under two dominant themes which are affordances and challenges, as shown in Table 13.12 below:

Table 14.12 Qualitative Data: Coded Themes and Categories

	Themes	Frequency	Categories	Frequency
1	Affordances	23	New and useful approach	12
			Working together	6
			Increased participation & interaction	5
2	Challenges	31	Increased workload	13
			Uncertainties	8
			Internet connectivity	6
			Time constraint	4
	Total	54		54

Affordances

The first theme concerned the factor associated with affordances. An *affordance* is a quality of an object, or an environment, which allows an individual to perform an action (Wikipedia, free encyclopedia). In this study affordances are attributed to the unplanned outcomes that emerged from blending the flipped and traditional learning environments. Grouped under the theme of affordances are the categories of (1) *New and useful approach*, which essentially concerns with the creative use of the novel approach to learning, (2) *Working together*, which relates to the pre-service teachers working collaboratively in learning and supporting one another, and (3) *Increased participation and interaction* which arises as a result of the demands of the new approach. This theme recorded a frequency of 23 counts in total.

Under this theme, the pre-teachers were coerced into using a variety of synchronous and asynchronous tools to get in touch with one another and to get access to the study materials, and to work together. It appears that Flipped Learning approach facilitated them to share knowledge or information, and to discuss and complete their assignments.

No argument on the creativity side but if I were to understand the topic of discussion in the class better, then this approach is certainly useful to the me.

No doubt, it is time consuming but at least we read and by doing this, we can have a better understanding on the topic of discussion. Class participation and interaction between students and lecturer can occur because there are a lot of questions in their brain, seeking for clarification. (S29).

Challenges

The second theme inductively generated is related to the factor of challenges. Challenges in this study are deemed as factors that impeded or were perceived as problems affecting the pre-service teachers' learning experiences. In terms of frequency count, this theme recorded 31 instances. The four main categories making up this theme are (1) increased workload, (2) Uncertainties; 3) Internet connectivity; and (4) Time constraint. The increased workload and uncertainties categories arose as a result of adopting the Flipped Learning approach. The traditional lecture approach, which is the dominant approach adopted university wide remains a status quo to the learners. The state of uncertainty and unease mentioned is a result of the new approach used. A classic challenge was the Internet connectivity which seemed to have disrupted their collaboration, and gaining access to the resources provided in the learning environment, in particular gaining access to Schoology and downloading the video.

Using flipped approach, sometimes I'm lost because I haven't read journals/ watched the video before class and I don't really participate in discussion (S6).

It is hard to focus between the video and the articles that I need to read. The video content is a combination from all the articles. But, when I cannot understand the articles, it is hard to understand the video also (S14).

The issue that I faced is just the internet - internet connection is too slow and sometimes I cannot access (S15).

I sometimes cannot download the articles. Thus, I cannot read before going to the class (S22).

RQ3: What are the likely causes for the tensions in Research Question 2 and how might they be ameliorated?

Understanding contradictions and tensions using Activity Theory

Based on the qualitative data analysed and presented, there are a number of contradictions and tensions exhibited. The findings revealed these contradictions occurred within and between the elements of activity systems in this context. These contradictions include issues related to willingness and attitudes towards learning through the flipped and traditional learning approaches, the learning materials and tools, opinions related to 'teacher's presence' and collaboration (working together). This analysis revealed four main contradictions, mostly within the following components of the activity system.

Contradictions within the Object of activity (What to learn?)

A first tension concerned the 'object' of the Blended Learning system, i.e., acquiring the knowledge, skills, and attitudes of the Materials Development course via the Flipped Learning and traditional learning approaches. Analysis of reflective journals yielded two views regarding willingness and attitudes towards learning. The first concerned a group of learners who seem to be eager to embrace the Flipped Learning approach. To them the flipped approach offers them a new and creative way to learn.

> *Flipped classroom helps me to be prepared for what I need to learn in the next class and it enables me to understand more on what I need to know in MD class by asking more questions which I'm unsure (S01).*

Another student (Student 23) commented that

> *This is the first time I'm using the Flipped approach, so I guess I still needed some time to adjust myself in using it. But, I think I will have no problem if this approached is used in another course(s) in this upcoming semester (S23).*

However, there was also another pertinent group of learners who seemed not too happy to embrace the flipped approach, giving reasons of time and effort constraints faced. Student 17 says

> *I find it hard to understand the journals because they are too long, I feel threaten with classroom's situation since we have to give immediate feedback regarding the questions (S17).*

Student 29 also echoes his reluctance:

> *The only issue that I faced was not enough time to read the journals as I had others tasks to do and the amount of journals was a bit too much for me (S29).*

From these contradictions, it appears that there are two different attitudes towards adopting the new learning approach - one that favours new learning despite the challenges posed and as another that favours status quo.

Tension within the Mediational tools (How to learn?)

A second tension which emerged from the data set pertained to mediational means, in particular those relating to issues of using the new instructional approach and learning materials. The MD course used a mixed of flipped and traditional approaches and videos and information and communication resources (Schoology – uploaded lecture notes, tutorial tasks, videos, and online forum) for the teaching and learning process. When the pre-service teachers were asked about the efficacy of flipped approach and the videos prepared to support learning, a mixed response was received. Some seem to like the new and novel flipped approach and the videos used while a few were quite reluctant.

Time constraints to read all the journals - lack of experience in following the flipped approach, so do not really have ideas on how to understand the materials.

Using flipped approach, sometimes I'm lost because I haven't read journals/ watched the video before class and I don't really participate in discussion.

Not enough videos to cover all the materials for the course

So, it appears that while the pre-service teachers did not object to flipped approach and the video materials used, they were overwhelmed by the number of articles and videos they need to read and watch in order to understand the content of the course.

Tension within the Rules (When and where to learn?)

The third tension which emerged refers to the rules for the Flipped Learning approach. Firstly, the pre-service teachers were encouraged (a) to study the printed materials provided in Schoology (learning management system) and (b) watch the videos in order to pose questions to the course instructor as well as discuss any issues which they deemed relevant. There were mixed-reactions to this new approach:

Not able to cope with learning because came to class unprepared. so, most of the time, I will be blur on the topic discussed and at the same time, I am scared to be called up to answer questions as I don't want to disappoint myself and the lecturer. This creates a feeling inside me that wants to leave the class earlier as I am not comfortable in it.

There were too many journals to read before entering the classroom. This is the first time I experienced the flipped approach classroom so I'm a bit uncomfortable at first but as time passes by I'm beginning to like this approach.

As can be seen, the new approach brought four different levels of reactions amongst the learners – some felt overwhelmed, while some others felt they would eventually grow to like the flipped approach.

Tension within the Division of Labour (Who does what to learn?)

The final tension which emerged in the activity system was within the division of labour. Although the students were clearly advised to follow a certain instructional sequence in their participation in the flipped approach (i.e., watch video -> checkpoints in video (i.e. activities) -> read journal article -> discussion in classroom with lecturer and course mates -> tutorial tasks -> presentation of tutorial tasks -> wrap up), the students were not specifically required to work in any fixed group. As can be seen in the following excerpt, the pre-service teachers work out amongst themselves to best deal with the changes:

There were lots of readings that need to be done and sometimes it was quite hard for me to understand the content of the articles that were given. I knew that I can ask the lecturers for clarity, however I think it is much better to try to understand on my own first or get help from my other course mates.

I quite like this approach. Perhaps my classmates and I need to get used to it more, and be better prepared (armed with questions, etc.).

Conclusion

This study sets out to investigate two main issues: (1) to evaluate the success of the instructional and technical elements in the Flipped Learning approach; and (2) to identify the affordances and challenges faced during teaching and learning using (i) Flipped Learning approach and (ii) lecture based approach in learning the Materials Development course. In the case of issue (1), the findings to a large extent seemed to corroborate the positives posited by Singh (2010) that Blended Learning resource provides greater opportunities to comprehend and extend the knowledge presented to a large extent, and Abraham's (2007) study about Blended Learning benefiting pre-service teachers with more control over learning and fostering critical thinking. Nevertheless, there were enough evidence to suggest that the pre-service teachers also had mixed-reactions towards "flipping" the instructional delivery, particularly in how the structure of the classroom oriented them to the learning tasks in the course. The variety of learning activities in the flipped classroom appear to have contributed to unsettledness among students compared to the traditional classroom. Such mixed reaction is not unexpected as research has also noted that for this approach to be successful the right blend needs to be concocted as Aspden and Helm (2004: 251) noted "active participation of all involved and the environment is only going to be effective if the relevant parties engage with the process". This is supported by Parkinson *et al.,* (2003) that learners expressed positive feelings in traditional face-to-face (f2f) setting compared to learners expressing dissent using flipped approach mode. Johnson *et al*., (2000) findings pointed out that learners were satisfied with the amount of interaction level with their instructors and course mates in the traditional f2f format compared to flipped approach even though flipped or inverted learning possesses the ability to provide optimal discussion or interaction time allowing learners to dictate their learning pace.

As for issue (2) - to identify the affordances and challenges faced during teaching and learning using the Flipped Learning approach and the lecture based approach in learning the Materials Development course, there are a number of areas of concern that needed further attention and fine-tuning if these positive experiences are to be further enhanced, particularly the contradictions and tensions that were highlighted, particularly with regard to the 'object' of the study (what to learn?); the 'mediational' means (how to learn?); the 'rules' of learning (the when and where to learn?) and the division of labour (who does what to learn?). The use of Activity Theory helps us to understand that the Blended Learning environment is not a static system. Instead it is dynamic and is always in a state of flux. To

ensure effective learning, course convenors, education service providers and all stakeholders involved in the initiative have to continuously carry out monitoring and evaluation of the programme they are offering. Based on the findings presented, it appears that to optimise successful blending, efforts need to be expanded to understand the pedagogical attributes and affordances of the Flipped Learning approach and the most desirable aspects of face-to-face teaching, including the ways in which these aspects can be appropriately integrated.

In conclusion, this study, although limited in its scope and coverage, has answered Ginns & Ellis (2009) call to practitioners to evaluate the contribution of Flipped Learning approach to learning in higher education, especially when used as a complement to the more conventional f2f methods. Thus, for an optimal mix to work, more needs to be done. A good platform to begin is to start understanding the affordances and the challenges faced in order to come up with solutions that work for all stakeholders involved.

References

Ginns, P., & Ellis, R. A. (2009). Evaluating the quality of e-learning at the degree level in the student experience of blended learning. *British Journal of Educational Technology*, 40(4), 652–663.

Abraham, A. (2007). Student centred teaching of accounting to engineering in-service teachers: Comparing blended learning with traditional approaches. *Proceedings of ASCILITE*.1-9.

Aspden, L. & Helm, P. (2004). Making the connection in a blended learning environment. *Educational Media International*, 41 (3), 245 – 252.

Blin, F. & Munro, M. (2008). Why hasn't technology disrupted academics' teaching practices? Understanding resistance to change through the lens of activity theory. *Computers & Education* 50, 475–490.

Cisco. (2011). White paper video: How interactivity and rich media change teaching and learning. *Retrived from https://www.cisco.com/Web/strategy/docs/education/K12_Video_WP_final.pdf.*

Cole, M. (1996). *Cultural Psychology: A once and future discipline*. Cambridge, Massachusetts: The Belknap Press of Harvard University Press.

Duffy, T. M. & Kirkley, J. R. (2004). Learning theory and pedagogy applied in distance learning: the case of Cardean University. In T. M. Duffy & J. R. Kirkley (Eds.). *Learner-centered theory and practice in distance educatio*n: *Cases from higher education(pp.107–141).* Mahwah, New Jersey: LEA.

Dyke, M., Conole, G., Ravenscroft, A. & de Freitas, S. (2007). Learning theory and its application to e- learning. In G. Conole & M. Oliver (Eds). *Contemporary perspectives in e-learning research: themes, methods and impact on practice*(82-97). London: Routledge.

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research. Helsinki: Orienta-Konsultit.*

Engeström, Y. (1990). Activity theory and individual and social transformation. In Y. Engeström, R. Miettinen, & R. Punamaki, (Eds.). Perspectives on activity theory(pp.19-38). Cambridge, MA: Cambridge University Press.

Gerstein, J. (2011). The flipped classroom model: A full picture. Retrieved from http://usergeneratededucation.wordpress.com/2011/06/13/the-flipped-classroom-model-a-full-picture/

Hamdan, N., McKnight, P. E., McKnight, C. & Arfstrom, K. M. (2013). The Flipped Learning Model: A White Paper Based on the Literature Review Titled A Review of Flipped Learning. *Arlington, VA: Flipped Learning Network*

Johnson, S. D., Aragon, S. R., Shaik, N. & Palma-Rivas, N. (2000). Comparative analysis of learner satisfaction and learning outcomes in on-line and face-to-face learning environments. *Journal of Interactive Learning Research*, 11 (1), 29 – 49.

Joyes, G. (2006). an activity theory approach to the exploration of tutors' perceptions of effective online pedagogy. In L. Markauskaite, P. Goodyear, & P. Reimann (Eds), *Who's learning*? *Whose Technology*? *Proceedings of the 23rd Annual Conference of the Australiasian Society for Computers in Learning in Tertiary Education.* Sydney: Sydney University.

Keller, J. M. (2010). *Motivational Design for learning and performance*. America: Springer Science+Business Media.

Khine, M. S. & Lourdusamy, A. (2003). Blended Learning approach in teacher education: combining face-to-face instruction, multimedia viewing and on-line discussion. *British Journal of Educational Technology*, 34 (5), 671 – 675.

Kuutti, K. (1996). Activity theory as a potential framework for human computer interaction research. In B. A. Nardi (Ed.). *Context and consciousness: Activity theory and human computer Interaction(pp. 17-44)*. Cambridge: MIT press.

Leont'ev, A. (1981). *Problems of the development of mind*. Moscow: Progress.

Lincoln, Y. S. & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, California: Sage Publications.

Motteram, G. (2006). Blended education and the transformation of teachers: A long-term case study in postgraduate UK higher education. *British Journal of Educational Technology*, 37 (1), 17 – 30.

Oliver, M., Roberts, C., Beetham, H., Ingraham, B., Dyke, M. & Levy, P. (2007). Knowledge, Society and Perspectives on learning technology. In G. Conole & M. Oliver (Eds). *Contemporary perspectives in e-learning research: themes, methods and impact on practice* (pp.21–37). London: Routledge.

Parkinson, D., Greene, W., Kim, Y. & Marioni, J. (2003). Emerging themes of student satisfaction in a traditional course and a blended distance course. *TechTrends*, 47 (4), 22 – 28.

Pearson & The Flipped Learning Network (2013). Flipped Learning Professional Development. Retrieved from http://www.pearsonschool.com/flippedlearning.

Singh, H. & Reed, C. (2001). A White paper: Achieving success with blended learning. *Centra Software*.

Singh, T. (2010). Creating opportunities for students in large cohorts to reflect in and on practice: lessons learnt from a formative evaluation of students' experiences of a technology-enhanced blended learning design. *British Journal of Educational Technology*, 41(2), 271–286.

The Flipped Classroom – Instructional Module (2013). Retrived from http://www.kokuamai.com/test/flipped/

Wold, K. A. (2011). Blending Theories for instructional design: creating and implementing the structure, environment, experience, and people (SEEP) Model. *Computer Assisted Language Learning*, 24(4), 371–382.

Chapter

15

This page intentionally left blank



Chapter 15

Flipping Large Lectures @ IMU

Zaid Alsagoff, Hasnain Baloch & Norhasliza Hashim

International Medical University

Introduction

Over the last few years, the International Medical University (IMU) has been active in encouraging its lecturers to transform their traditional lectures (plenaries) into more engaging and interactive face-to-face (f2f) learning experiences. IMU lecturers have been encouraged to use various e-Learning tools, social media and develop i-Lectures (Interactive voice-narrated PowerPoint presentations developed using Articulate Studio) for students to explore online (before, during and after) f2f sessions, so that they can spend more quality learning time during them to interact, discuss and explore the subject deeper with students.

Since 2012, IMU lecturers have been increasingly encouraged and trained to use various interactive Web tools in their f2f learning sessions, such as Poll Everywhere, Socrative, Infuse Learning, Padlet and recently Kahoot to engage students via their mobile devices with open and closed ended questions in meaningful and creative ways.

During this period, IMU has embraced what is known today as the 'Flipped Classroom' approach, but with its own flavour, whereby schools and programs are required to infuse more e-Learning content and activities, and transform their didactic lectures to become more interactive, engaging and relevant to student learning experiences.

Flipped Classroom

"Flip teaching or a flipped classroom is a form of Blended Learning in which students learn new content online by watching video lectures, usually at home, and what used to be homework (assigned problems) is now done in class with teachers offering more personalized guidance and interaction with students, instead of lecturing." – Wikipedia



Figure 15. 1: *Flipped Classroom Sessions at IMU*

Today, the 'Flipped classroom' method is being implemented increasingly around the world in various dynamic and creative ways from primary, secondary to tertiary education (Faculty Focus Report, 2014). There is no singular silver bullet approach to make it work, but what they all have in common is the drive to design Blended Learning environments that empower students to engage deeper in what they are learning, and be able to apply what they have learnt. Knowing something today is not enough, students must also be able to apply and use what they have learnt.

With the advancement of authoring and Web-based learning engagement tools, academics are increasingly being equipped with easy-to-use tools to design and develop interactive multimedia content, and to easily engage students through their mobile devices (smartphones, tablets & notebooks), and then share immediate feedback. Next, we will explore how IMU is empowering more interactive and engaging student learning experiences using the 'Flipped Classroom' method.

i-Lectures

Since 2009, more than 1700 i-Lectures have been produced by IMU lecturers themselves with the support from the e-Learning team. Since 2012, the focus has been on improving the quality, and infusing more interactive and engaging learning activities into the new i-Lectures being developed. To assist in this process, IMU faculty and e-Learning team have worked together to create q*uality checklists (refer to 'Case Study' section), templates based on instructional design principles, quality audits, and conducted numerous related workshops* to boost the lecturers skills in designing PowerPoint presentations, and using Articulate's interactive tools such as Quiz Maker and Engage.

At IMU, most programmes have used e-Learning to *enhance the students learning experience without reducing f2f sessions*. In this context, students are required to view i-Lectures before attending f2f sessions, and then f2f sessions are transformed to become more interactive through various types of learning activities, including discussing case studies, doing group work, solving problems together, exploring the application of knowledge, discussing more complex aspects of the topic and addressing critical thinking skills.



Figure 15.2: *Designing Engaging Presentations*

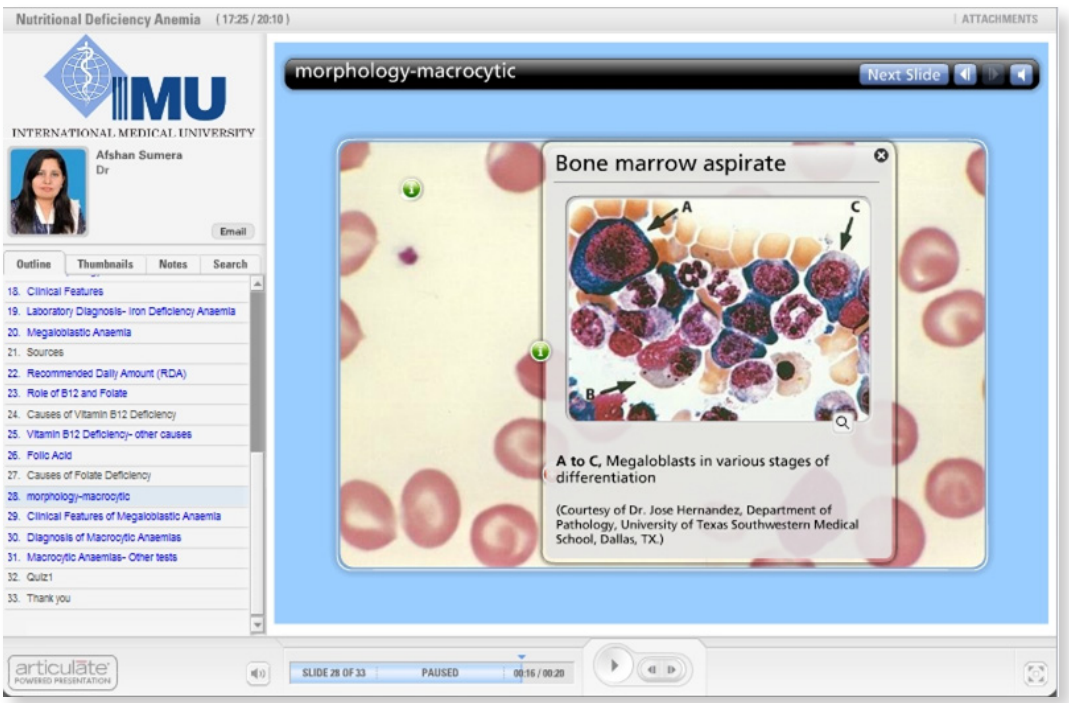


Figure 15.3: *Screenshot of an i-Lecture*

Large Lectures

How do you engage every student to think and learn during a large lecture (e.g. 350 participants)? Implementing the 'Flipped Classroom' approach or engaging students effectively in a large lecture (41 - 400 students), compared to a typical classroom learning environment (below 40 students), requires you rethink how to interact with students, and how you might use technology to empower this.

In a small group or lecture (below 40 participants), one could still facilitate an interactive and engaging session with students without using any form of digital tools (case-study discussions, group work, role-play, etc.). However, as the size of the group grows, it becomes more challenging in getting the students' attention and participation.

IMU did explore the idea of purchasing 'Clickers' or electronic response systems, and empowering all students with clickers to participate in lectures (small or large) by answering closed-ended questions provided by the lecturers. However, that was quickly rejected due to the availability of other cheaper and more powerful Web-based alternatives (Kappers & Wendi, 2014) empowering both open and closed-ended questions/ feedback.



Figure 15.4: *Large Lecture using Poll Everywhere*

To empower 'Flipped Classroom' learning environments and facilitate more interactive and engaging f2f learning sessions, various interactive Web tools have been introduced to IMU lecturers since 2012, including:

1. Poll Everywhere (http://www.polleverywhere.com/)
2. Infuse Learning (http://www.infuselearning.com/)
3. Socrative (http://socrative.com/)
4. Kahoot (https://getkahoot.com/)
5. Padlet (https://padlet.com/)
6. Coloured/ Number Cards (hard copy)



Figure 15.5: *Interactive Web Tools*

Tools 1-4 empower students to answer both open and closed-ended questions (3-4 includes quiz empowered gaming features) using their mobile devices during f2f sessions. The assessment results can then be projected live to the students, so that they can get immediate feedback, and empower the lecturer to adapt and pace their learning sessions according to the students' needs, and more importantly encourage more participation and deeper learning.

Padlet (tool 5) does not enable multiple-choice questions, but is a very easy-to-use and useful tool that gives you a blank online wall, which you can invite anyone (no login required) to basically put anything they want on it, anywhere. Padlet could be used with students in many creative ways, including (Alsagoff, 2013):

- Ice breaker to get to know one another (e.g. upload a photo and then write something about themselves);
- Brainstorming ideas, problem-solving, decision-making, or solutions;
- Q&A sessions before/during/ after a lecture or class;

- Open-ended (formative) question or reflection sessions, where students all share their answers on the Padlet wall;
- Noticeboards or making course announcements;
- Bookmarking and curating resources or video playlists;
- Group/ Class/ Community Discussions;
- Adventure and travel maps (field trips; and
- Developing a website.



Figure 15.6: *Padlet used as an 'Ice Breaker' to get to know one another*

Besides Web-based tools, IMU's 'Teaching & Learning' department has also introduced 'Coloured/ Number Cards' (Orange, Blue, Red, Yellow and Green/ A, B, C, D and E), which are used with multiple choice or with true/ false questions. The cards are distributed to students prior to the f2f learning session. When a question is posed to the class, the students use these cards to voice out their opinion. It engages them physically while thinking upon the answer to the questions.

This low-tech tool provides a great alternative to engage all students to think, especially if the lecture hall/ classroom Wi-Fi access is weak (or non-existent), or when students do not have mobile devices with Internet capability or access. As you can see, lecturers today have a lot of exciting options to engage and interact with students and get immediate feedback, even during large lectures.



Figure 15.7: *Coloured/ Number Cards*

Case Study

In this case study, we will examine closer how IMU's 'School of Pharmacy' has approached the 'Flipped Classroom' method. Even before embracing the 'Flipped Classroom' method, IMU's 'School of Pharmacy' has been active in developing i-Lectures (since 2009), and requiring students to view them before coming to lectures, so that lecturers will have more time to provide:

- Student with feedback;
- Opportunities for discussion;
- Activities that involve extensive decision making on the students part; and
- Case studies for explanatory purposes.

i-Lectures

Based on survey feedback (2012 & 2013) from 'School of Pharmacy' students (113 respondents; 84% of them semester 3 students), 45% view the i-Lecture for the first time after the scheduled f2f session, and another 32% view close to the exam day. In other words, only 23% of respondents viewed the i-Lecture before the scheduled f2f session.

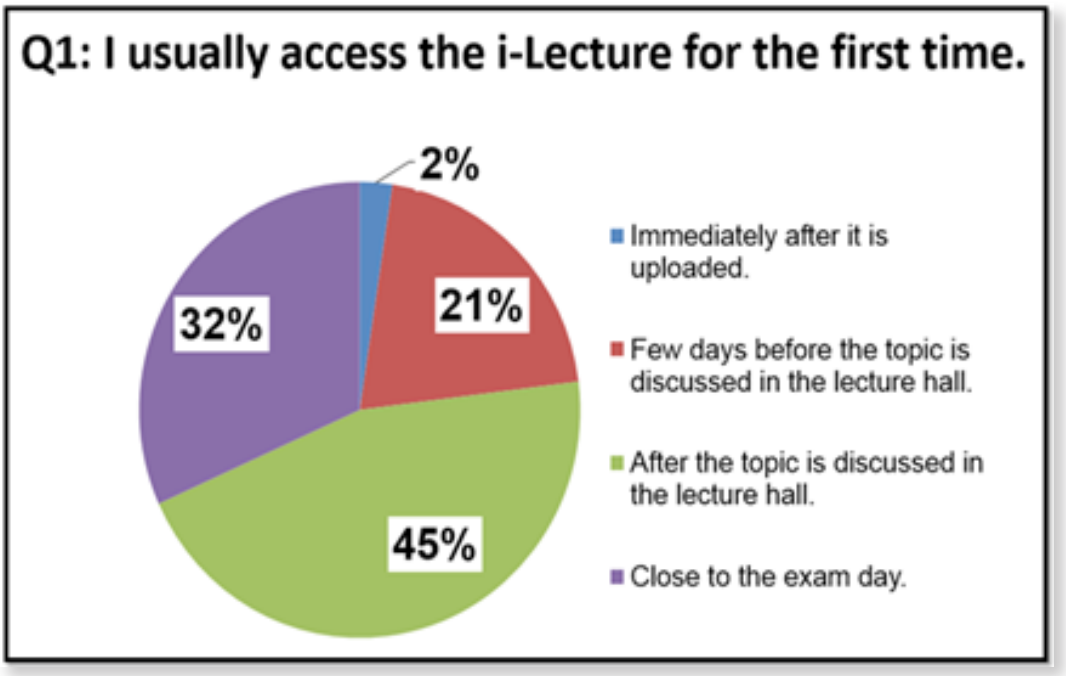


Figure 15.8: *Access to I-Lectures*

Based on Q2, 73% of respondents viewed usually the i-Lecture only once, and another 16% viewed it twice. The final 11% usually viewed it three or more times.

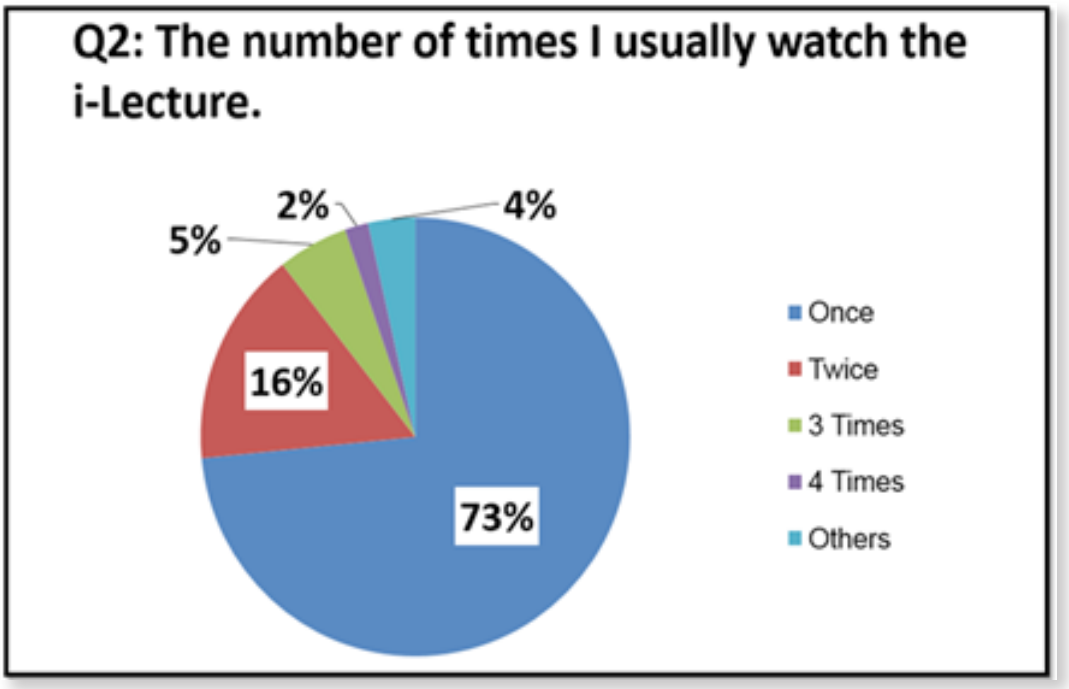


Figure 15.9: *Number of Times Watching i-Lectures*

According to Q3, respondents were most (76%) comfortable with viewing the i-Lecture from their home (or hostel). Another 21% preferred viewing it at the University, while only 3% were comfortable with viewing it in a cafe/ restaurant.

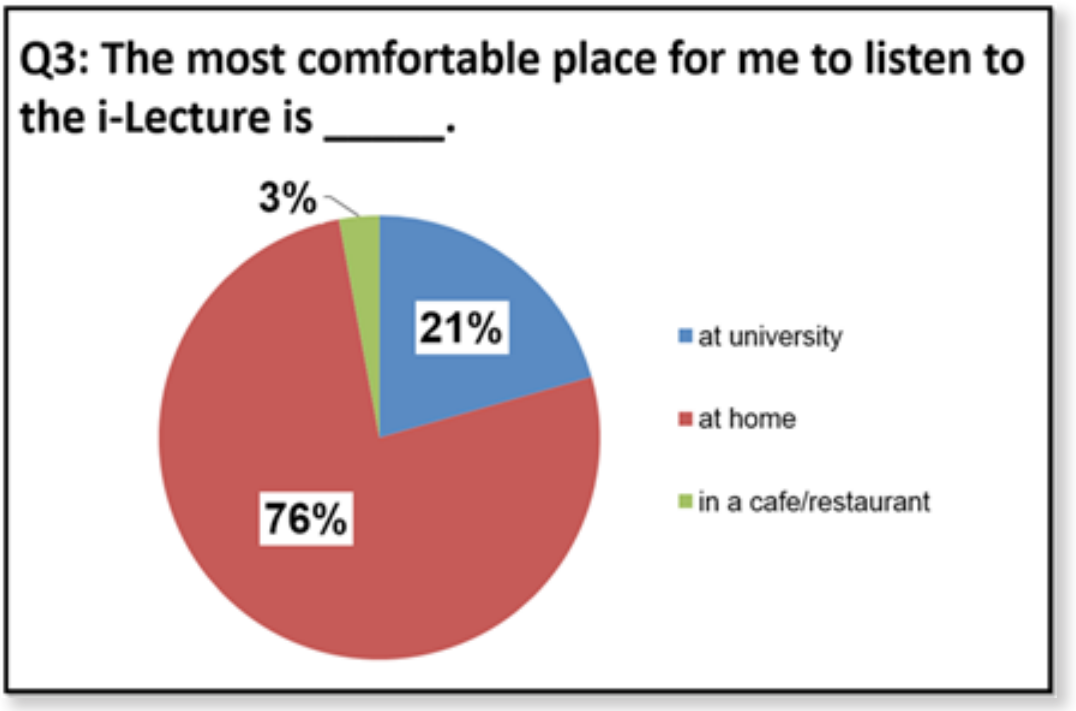


Figure 15.10: *The Most Comfortable Place for i-Lectures*

The most sort out feature missing in IMU i-Lectures according to Q4 was the ability to download and save i-Lectures to students' computer devices (52%). Interestingly, 17% responded that they do not look at i-Lectures at all, while another 28% want to be able to view i-Lectures online (which they can).

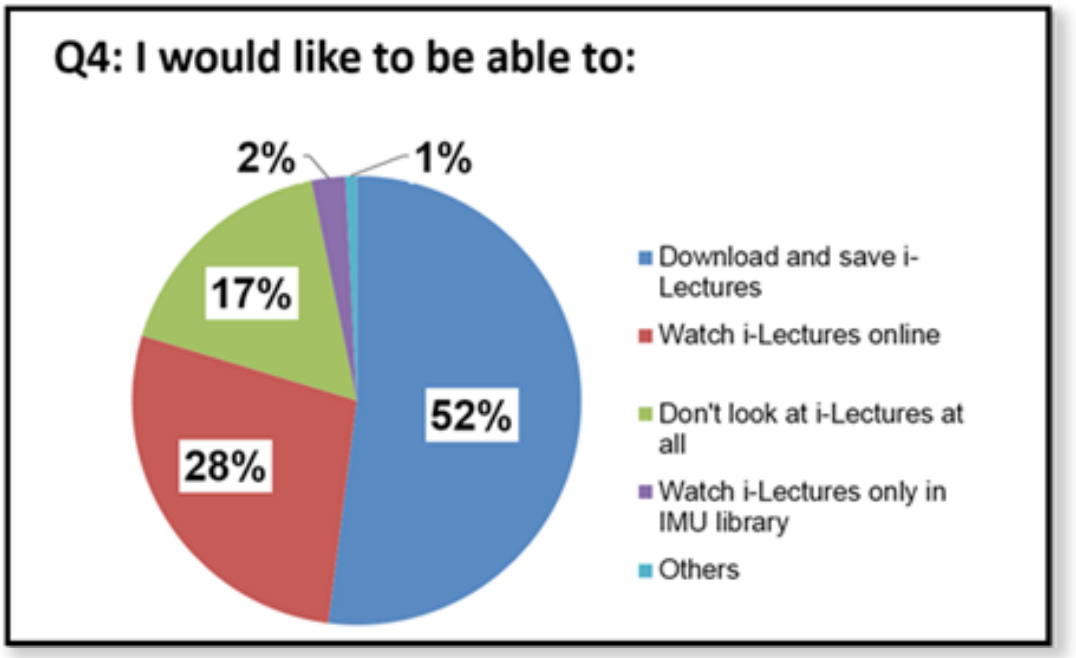


Figure 15.11: *Ability in Use of i-Lectures*

When respondents were given a choice in terms of teaching method (Q5), the majority (60%) still preferred learning through the f2f lecture. 23% preferred learning through a Problem Based Learning (PBL) session, while 17% preferred the i-Lecture.

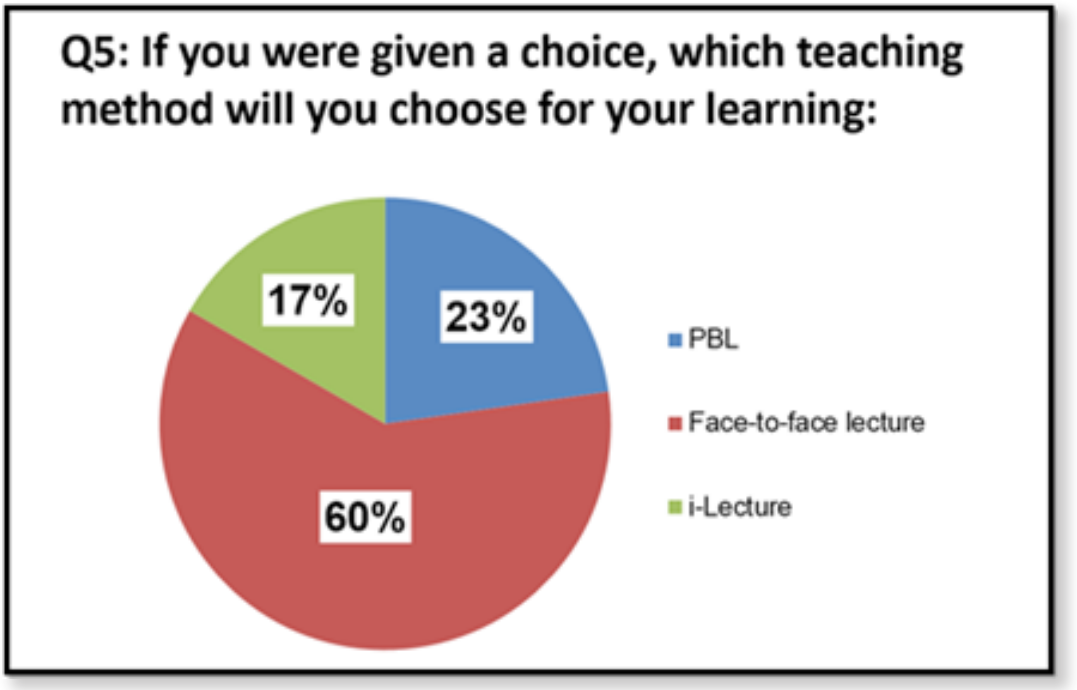


Figure 15.12: *Teaching Options for Learning*

Based on qualitative feedback from the survey conducted, the following *advantages of i-Lectures* were highlighted:

- Conveniently available anytime, anywhere for learning.
- Ability to rewind/ replay for revision.
- Getting a better overall understanding of the lecture before attending the face-to-face session.
- Covering valuable information not given (or missed) during the lectures.

Areas for improvement of IMU i-Lectures included:

- Some lecturers would just read-out-loud the slides content without any additional input.
- Some lecturer's voice is too low (or monotonous) making it difficult to listen to.
- Cannot be downloaded, so no access when there is no Internet connection.
- Lack of interactivity to empower student-student or student-lecturer interaction.
- The content should be more chunked making it ideal for mobile learning.
- Attracting more students to view i-Lectures before the scheduled f2f learning session.

Flipped Classroom (FC) Sessions

Once you have made your traditional lecture content available online in the form of i-Lectures, your next big challenge is to design and transform your f2f session to make it more interactive, engaging and effective for student learning. As many lecturers at the 'School of Pharmacy' were new to FC, they were required to attend training organized by 'Teaching & Learning Department' to make their f2f sessions more engaging, and they were taught to use various interactive teaching methods, including:

- Small group presentation/ discussion
- Brainstorming
- Think-Pair-Share/ Write-Pair-Share
- Problem Solving or Case Study
- Brain dump/ Free write
- One sentence summary

By the e-Learning Team, they were taught how to use various interactive Web tools, such as Poll Everywhere, Socrative, Padlet and Infuse Learning. These interactive Web tools empower lecturers to engage students with open and closed-ended questions via their mobile phones and then, results can be projected to students providing them with immediate feedback on their choices and written reflections.

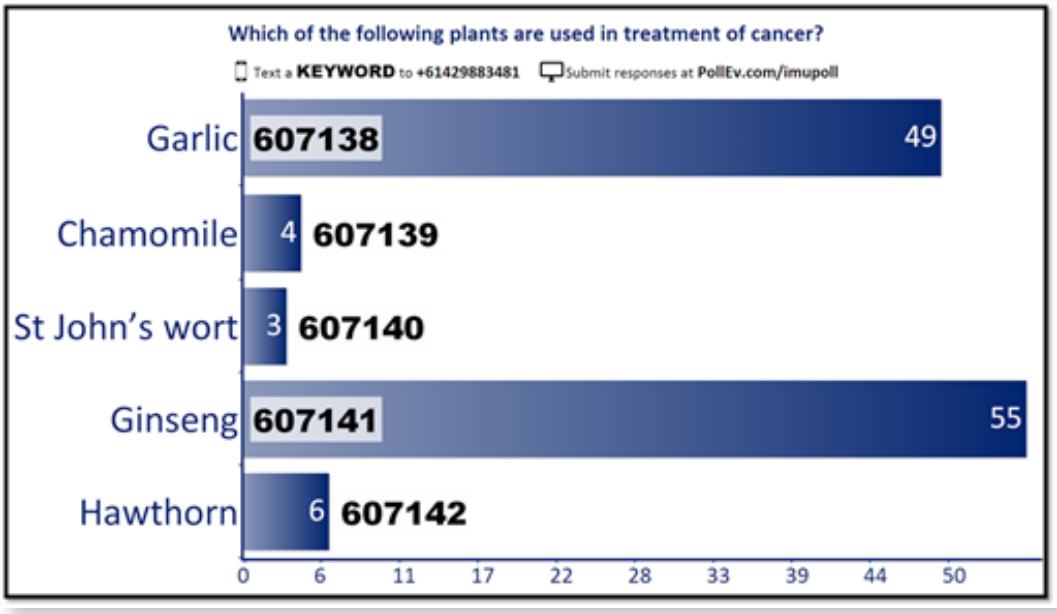


Figure 15. 13: *Poll Everywhere Closed-Ended Question*

In one research survey carried out by lecturers at the 'School of Pharmacy' (Gubiyappa, Barua, Das & Baloch, 2014), it was found that using Poll Everywhere with students during large lectures had a positive impact on their learning experience (112 student respondents).

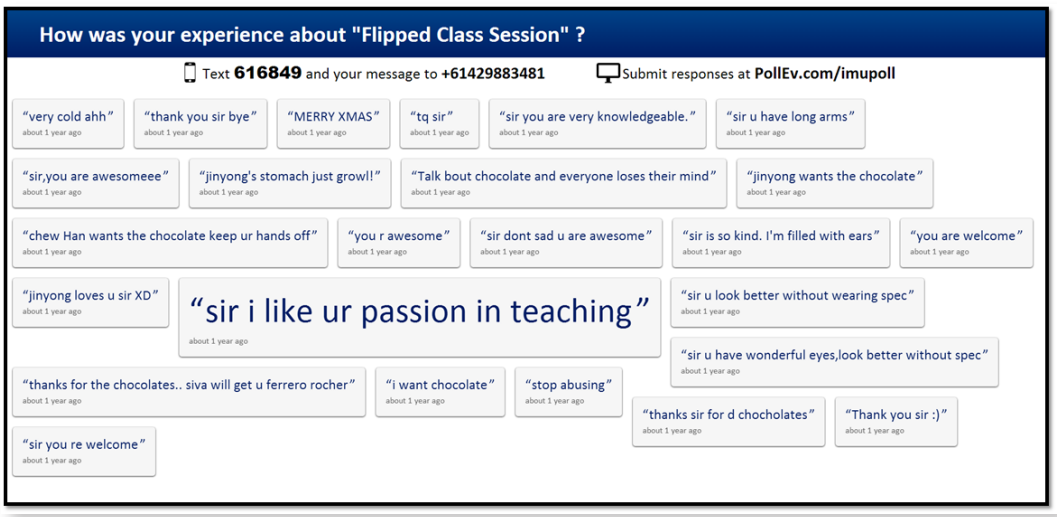


Figure 15.14: *Poll Everywhere Open-Ended Question (Cluster)*

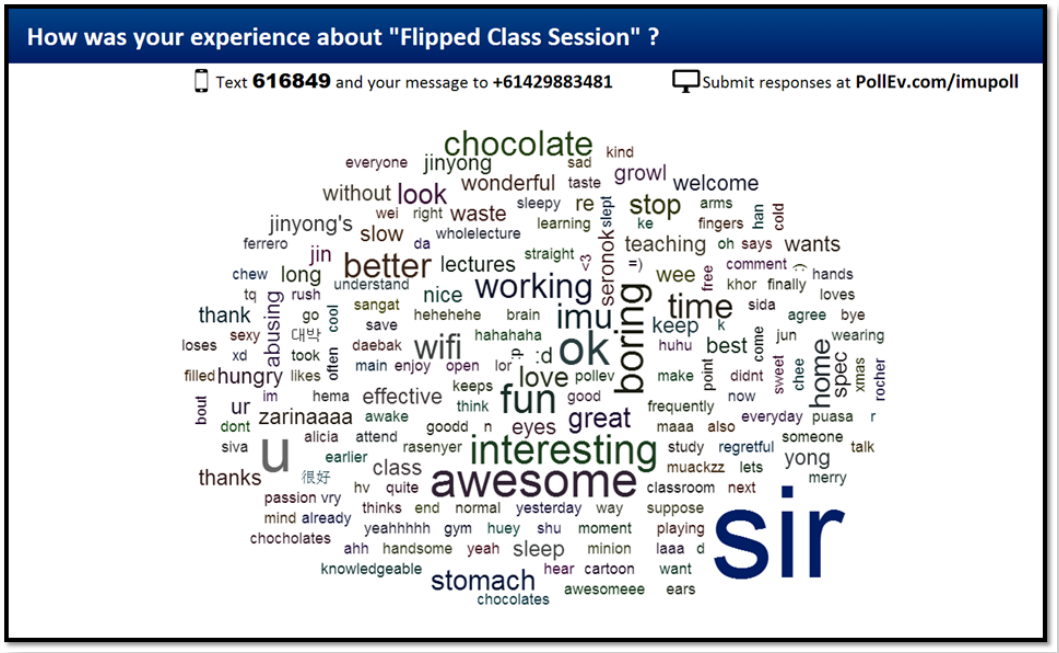


Figure 15.15: *Poll Everywhere Open-Ended Question (Word Cloud)*

According to Q6 of the survey, 95% of the respondents from the survey either agreed or strongly agreed that using Poll Everywhere during a FC session had *increased their understanding of the key concepts*. Interestingly, only 1% disagreed, while 4% were still undecided.

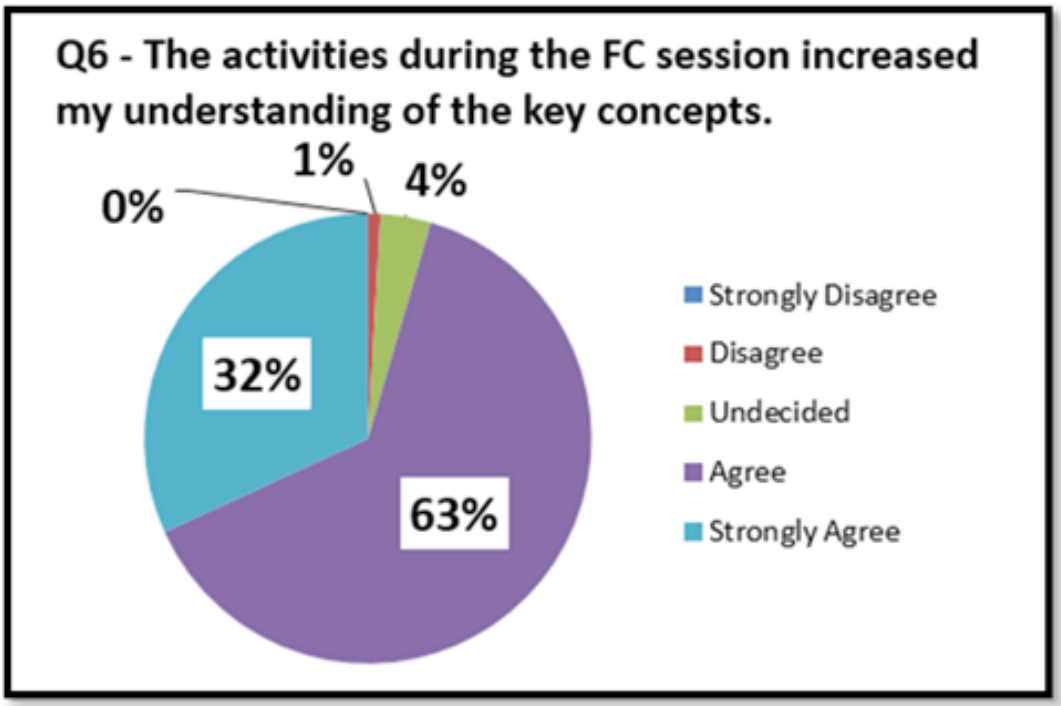


Figure 15.16: *The Activities during the FC Session*

A total of 79% of respondents either agreed or strongly agreed that FC sessions *inspired them to pursue further learning of the subject* (Q7). Importantly, only a small percentage (3%) either disagreed or strongly disagreed with the Q7 statement.

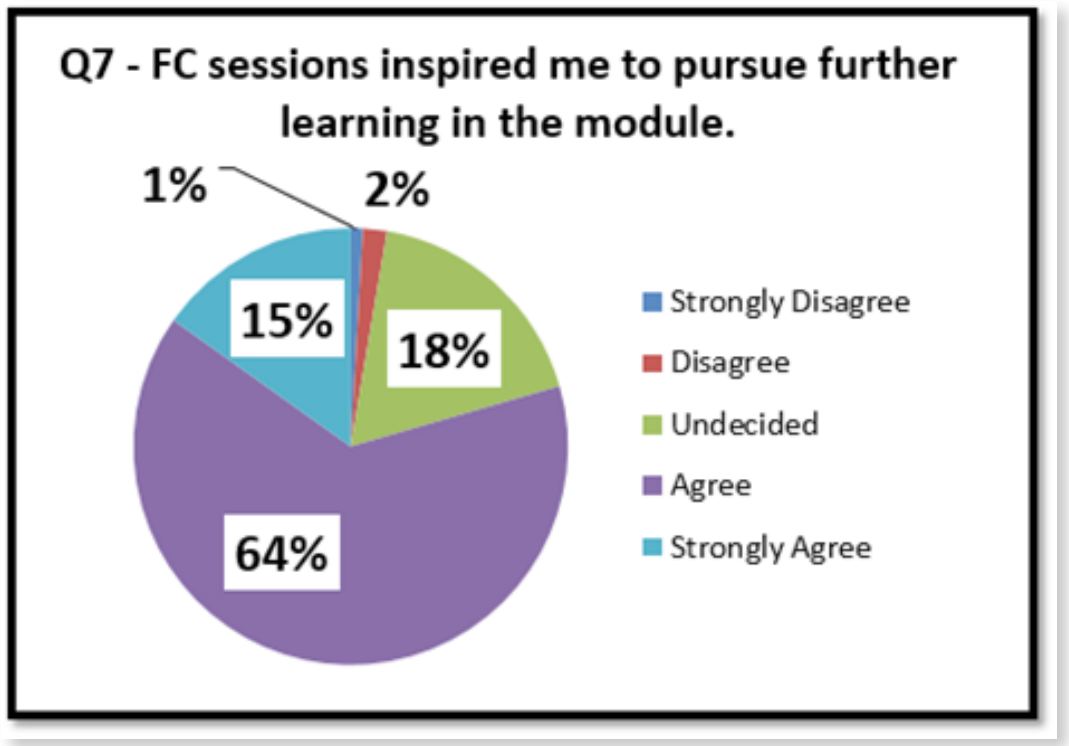


Figure 15.17: *FC Session Inspiring*

Did students prefer the FC method compared to traditional lectures? Based on this survey, 62% either agreed or strongly agreed that *they preferred the FC method* compared to traditional lectures (Q8). However, 29% of the respondents were still undecided, while 9% disagreed with the statement in Q8.

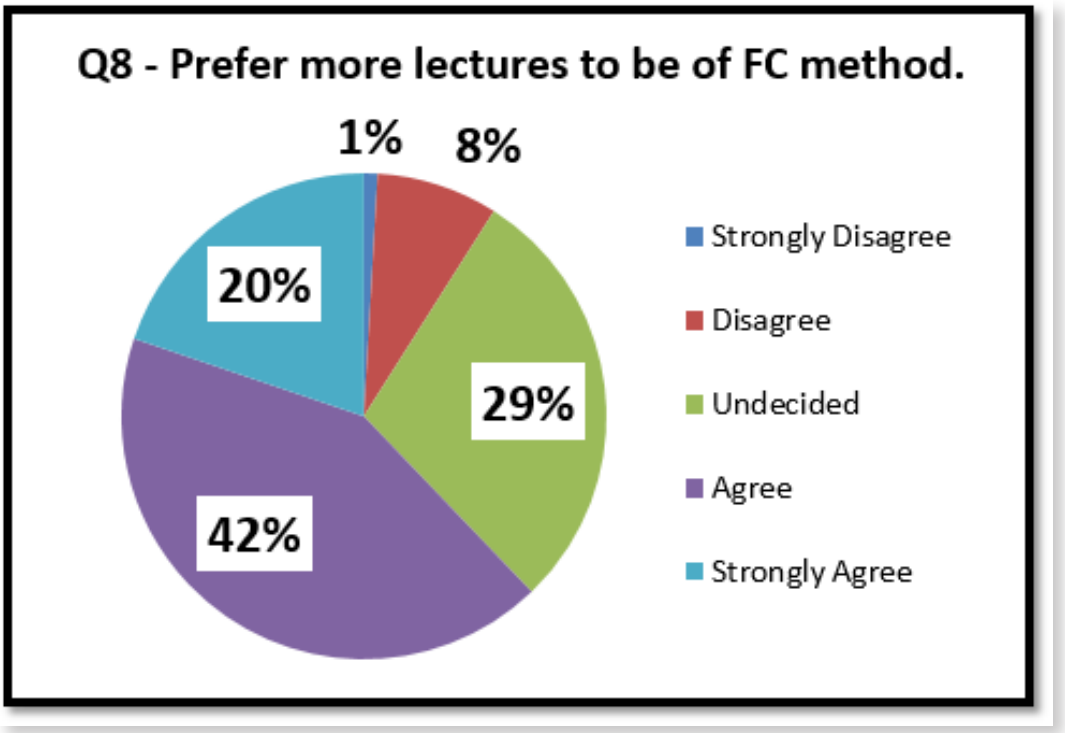


Figure 15.18: *FC Method Preference*

Although, students from the 'School of Pharmacy' seemed based on the survey to be more engaged and motivated to learn using the FC method, more research needs to be carried out to find out whether this method has a positive impact on students' results in summative assessments and final exams.

Moving Forward

i-Lectures

Based on the findings from this student feedback survey and other focus group sessions, the 'School of Pharmacy' (and IMU as a whole) has worked closely with the e-Learning team to improve the quality of i-Lectures, and explore new ways to encourage more students to view and reflect them before coming for f2f learning sessions. As a result, the following quality improvement measures and guidelines have been established:

- i-Lecture quality checklists (refer to 'i-Lecture Review Checklist' table);
- Templates based on instructional design principles;
- Random quality audits to assess whether i-Lectures meet the standards (quality checklist);

- More content development workshops to boost the lecturers skills in designing PowerPoint presentations, and using Articulate's interactive tools such as Quiz Maker and Engage;
- Using social media tools such as Facebook, Twitter, Wikis, blogs, etc. to engage students to reflect and do before, during and after f2f sessions; and
- Adding a discussion forum or an online quiz (5 - 10 questions) in the e-Learning portal for each i-Lecture, which students are required to do before the f2f learning sessions.

i-Lecture Review Checklist

	Module	#	Item	Yes/No
A	Technical / Functionality	1	It contains IMU logo.	
		2	It contains Presenter's name.	
		3	It contains lecturer's photo.	
		4	It contains lecturer's email and phone DID.	
		5	All slides contain header titles.	
		6	Copyright notice is provided.	
B	Instructional Design & Architecture	1	Begins with an attention grabber.	
		2	SMART (specific, measurable, achievable, relevant and timely) learning outcomes are provided in the beginning of the i-lecture.	
		3	Activation of students' prior knowledge relevant to the current lesson (facts, rules, procedures or skills).	
		4	At least 2 ways are used to present the content. (e.g. text, graphics, simulations, diagrams, animation, annotation and flowcharts are used to simplify complex ideas.)	
		5	Knowledge checks related to learning outcomes are present at the end of every topic.	
		6	Every question response is provided with prompt, relevant feedback.	
		7	External resources (Videos) are given as an external link. External resource pictures have the references.	
C	Design	1	Consistent layout is applied for every slide.	
		2	Contrast the background with text. (Recommendation: lighter background with darker text).	
		3	Font type used is clear and easy to read. (Recommended: Sans Serif , Arial & Verdana)	
		4	Font size used is large enough to read.	
		5	Narration of slides are complimentary to the text content (not exact reading of slides)	
		6	Narration audio is loud, clear and at a comfortable pace.	

Figure 15.19: *i-Lecture Review Checklist*

In addition, Articulate Storyline is being piloted in 2014 for the development of scenario and case-based learning content as an alternative to i-Lectures. Also, live lecture capture tools such as Echo360, recording of online webinar sessions (WizIQ or Google Hangout), or using Screencasting software (Camtasia, Articulate Replay, etc.) are being explored to provide lecturers with more relevant, convenient and creative solutions to digitize, or transform their lectures into i-Lectures.

Lecturers are also encouraged to reuse/ remix existing videos and resources from Open Educational Resources (OER) as an alternative to self-developed content for the 'Flipped Classroom' sessions. Why reinvent great open content that already exists? OERs are made available with the mission for others to reuse and remix (if allowed) using one of the six Creative Commons (CC) licenses (http://creativecommons.org/).

If IMU lecturers are groomed with the appropriate skills to create quality i-Lectures, many IMU students will explore them without requiring any additional 'carrot or stick' measures. The i-Lecture itself becomes the carrot!

Flipped Classroom Sessions

As for transforming traditional lectures into Flipped Classroom (FC) sessions, it is critical for rooms or halls chosen to have good Wi-Fi access that can support the number of students using mobile devices to participate in the learning activities using interactive Web tools.

Also, most interactive Web tools free versions are usually limited in terms of features and usage, and therefore for those tools that IMU has decided to use for large lectures or groups, it has purchased the commercial license version, too. For example, the free version of Poll Everywhere is limited to only 40 respondents for every question posted.

To make FC sessions even more engaging, gamifying the learning activities is the way forward (Alsagoff, 2013). Tools such as Socrative (e.g. Space Race) Kahoot and FlipQuiz (http://flipquiz.me/) empower lecturers with features to easily gamify quiz questions and learning activities with various templates.

TEST-Learning Framework

How do we know that we are using the appropriate technology and learning methods to enhance or transform the students' learning experiences?

The TEST Learning framework (The TEST-L acronym letters are sequenced in this manner, so that it can be easily remembered; Not meant to be necessarily applied in chronological order.) is a comprehensive learning framework that provides a set of guidelines and tips to assist lecturers and the University to develop quality blended, flipped classroom or online courses for the future (Alsagoff, 2014).

Whatever learning tool or method we use, the focus should always be to improve the students' learning experiences, and strive towards designing learning

activities and assessment, aligned with the learning outcomes we require students to learn.

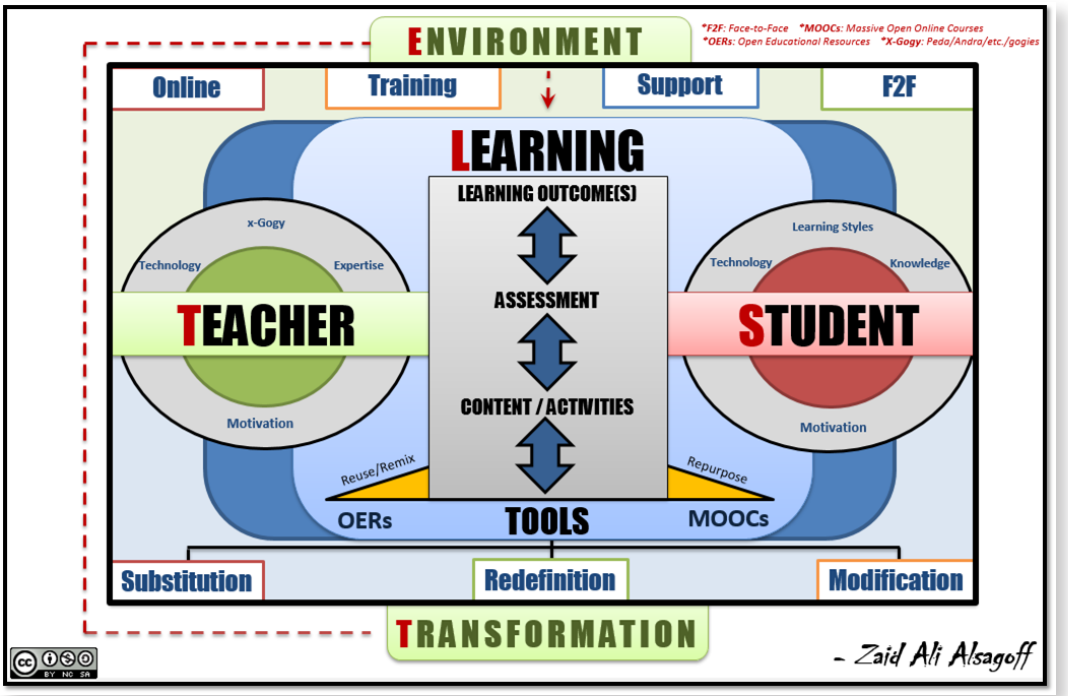


Figure 15.20: *TEST-Learning Framework (Alsagoff, 2014)*

Conclusion

At IMU, the 'School of Pharmacy' has been most successful in implementing the 'Flipped Classroom' method until now. However, IMU's other schools such as School of Medicine, Dentistry, Health Sciences and Post-Graduate are also exploring their own unique ways to facilitate 'Flipped Classroom' sessions and use the best of e-Learning to empower students with more engaging and effective learning experiences anytime, anywhere and anyhow.

References

Alsagoff, Z.A (2013, September 4). *From Flipped to Gamified Classroom Learning!* [Blog post]. Retrieved from http://zaidlearn.blogspot.com/2012/09/from-flipped-to-gamified-classroom.html

Alsagoff, Z.A (2013). *LN 04 - use padlet to break the ice, brainstorm, share ideas and have fun!*. Retrieved from *http://zaidlearn.blogspot.com/2013/07/ln-04-use-padlet-to-break-ice.html*

Alsagoff, Z.A (2014, July 1). *Designing Engaging Presentations!* [SlideShare]. Retrieved from http://www.slideshare.net/zaid/designing-engaging-presentations

Alsagoff, Z.A (2014). *TEST-learning framework [SlideShare*]. Retrieved from http://www.slideshare.net/zaid/testlearning-framework

Faculty Focus Report (July 2014). *Blended and Flipped: Exploring New Models for Effective Teaching & Learning. Retrieved from http://www.facultyfocus.com/free-reports/blended-flipped-exploring-new-models-effective- teaching-learning/*

Flip teaching. *In Wikipedia*. Retrieved July 14, 2014, from http://en.wikipedia.org/wiki/Flip_teaching

Gubiyappa, K. S., Barua, A., Das, B. & Baloch, H. Z. (2014). *Exploring the Flipped Classroom by Using Poll Everywhere. 11th Asia Pacific Medical Education Conference(APMEC) 2014 on January 17-18 Retrieved from http://www.slideshare.net/hasnainzafar/exploring-flipped-classroom-with-poll- everywhere*

Kappers, Wendi M. (2014). *Poll Everywhere! Even in the Classroom: An investigation into the impact of using Poll Everywhere in a large-lecture classroom*. Retrieved from http://www.asee.org/public/conferences/32/papers/8854/view

Chapter

16

This page intentionally left blank



Chapter 16

Flipped Classroom & Meaningful Learning among UKM Graduate Students: A Teacher's Reflection

Raihanah M.M.

Universiti Kebangsaan Malaysia

Introduction

This chapter discusses how the flipped classroom or also known as the inverted classroom can be an approach that engages learners in a meaningful way irrespective of their diverse cognitive abilities. Using a graduate class at the School of Language Studies and Linguistics, National University of Malaysia (UKM) as a case study, this chapter presents my personal reflection on switching to a flipped classroom approach since 2013. The chapter is divided into sections based on questions I asked myself at the onset of my journey switching to this teaching approach after 17 years (from 1995-2012) of pursuing the conventional path of conducting an hour of lecture followed by a-two-hour tutorial (1L+2T) and face-to-face and email based consultations that students get as part of their assignment preparations (see Diagram 16.1).

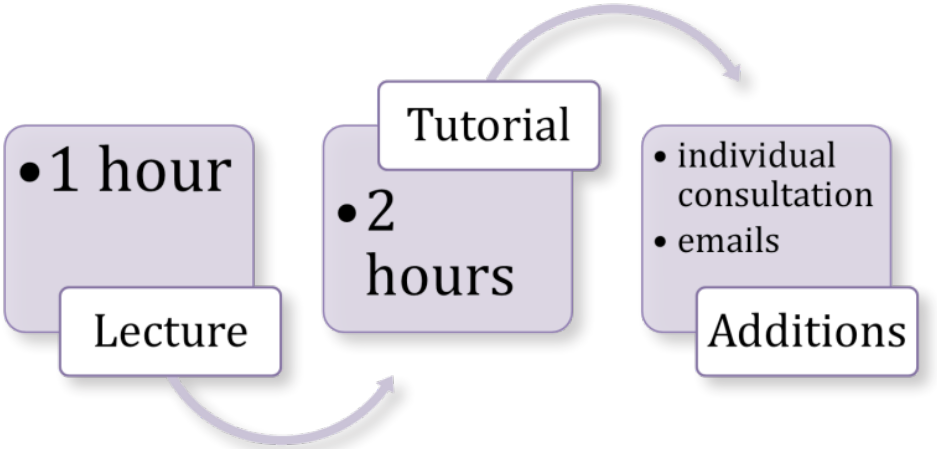


Diagram 16.1: *Teaching and Learning Approach From 1995-2012*

To begin with, allow me to reflect on the conventional *1L+2T* approach, and discuss the extent the flipped classroom, while presenting 'the road not taken' for some, offers more for both teachers and learners.

What were the shortcomings of the conventional 1L+2T approach?

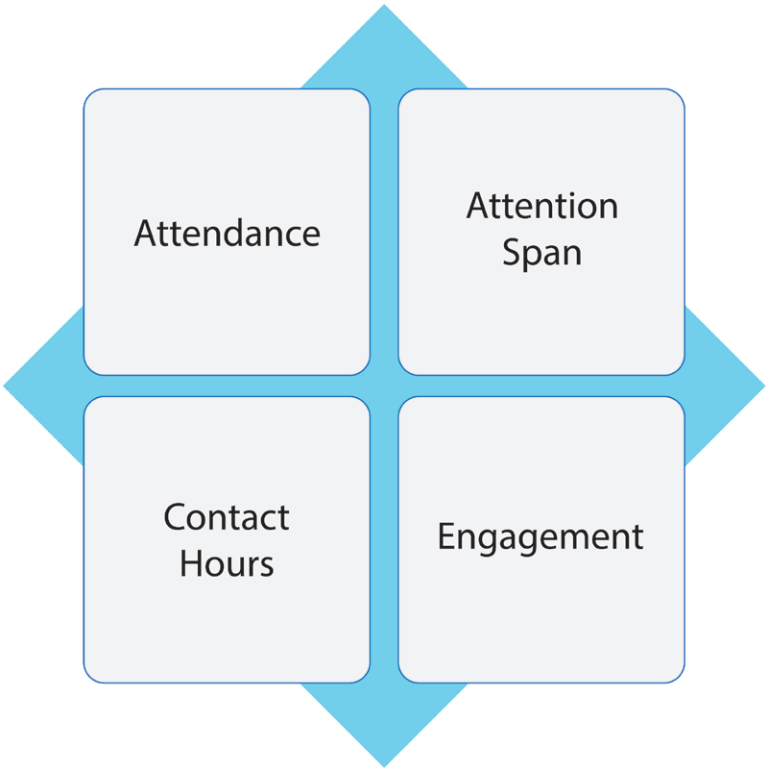


Diagram 16.2: *Problems Encountered Using 1L+2T Conventional Method*

The main concerns I have had during the 17 years of coordinating and teaching different literature courses can be summarised into these four areas – attendance, attention span, engagement and contact hours. In the conventional approach, I would give an hour lecture at the time specified in the timetable (set by the faculty/ school) on the topic that was already prepared based on the course outcome.

However in almost all lectures, I find the same problems cropping up. There will always be some students coming in 10 to 15 minutes after class had started. They would have missed the introduction and schema-building-interactive-questions that usually happen at the beginning of the lecture. At this point their attention span becomes problematic and they are having to rely on their friends for some form of scaffolding. Subsequently, their ability to engage in the interactive discussion that usually follows midway through the lecture is truncated and the contact hour ends with little in the form of learning based on the fragmented input that they must have experienced. Then, there are those who are not able to attend class due to other university related activities such as sports meets, and social/ cultural activities that require them to be away from the university. These students literally miss the entire topic which means they attend neither the one-hour lecture nor the two-hour tutorial. When they do show up for class the following week, their engagement is equally problematic and their learning is unfortunately hampered.

What was the primary motivation to try the flipped classroom approach?

I was very discouraged by the students' overall lack of engagement in class and felt the need to improve the situation. As much as I am passionate about what I do for a living, I also know that what really matters in the end is the learning that takes place, which is the true mark of my success as a teacher (see Robinson, 2013). Equipped with the new found knowledge of the flipped classroom I embarked on a journey of retooling myself and my approach to teaching and learning with an intervention type research on using the flipped classroom to develop students' cognitive capacity in a graduate classroom (Research Grant PTS-2013-038).

What is the flipped classroom?

The flipped classroom methodology has been growing dramatically in the educational scene in recent years, replacing the traditional approach of in-class lecturing, and take-home tasks. Jonathan Bergmann and Aaron Sams (2012) the chemistry school teachers from Woodland Park, Colorado, US, who first utilised this approach in their classroom, began with the intention to ensure that the students who missed a class can still follow the lesson through the recorded lectures that they made available on line. Thus, instead of spending "inordinate amounts of time reteaching lessons to students who missed class" (Bergman & Sams, 2012: 3), they made available the needed classroom instructions and lessons using video recordings which are placed online to be accessed by the students prior to classroom contact hours, which in essence defines the flipped classroom (Cockrum,

2014; Berrett 2012). It reverses the paradigm of the classroom environment from conventional ways of delivering information to a more interactive situation of sharing and discovering of knowledge both in class and outside (Lage, Platt & Treglia 2000; Kachka, 2012a; Makice, 2012). As scholars have conceptualised it, the main features of a flipped classroom are numerous. Jared Keengwe *et al.,* (2014: xv) for instance couched the flipped classroom as a "sustainable instructional innovation" which addresses three main areas: "focusing on the hard stuff", "time shifting" and "increasing student engagement." I identify the following six based on my own experience of using this approach (see Diagram 16. 3) Unlike in a conventional classroom where the teacher appears to be the "bearer of knowledge", in a flipped classroom the teacher plays the role of a facilitator, guiding the construction of knowledge that students participate in. This being the case, the typical flipped classroom is akin to a workshop in which learners are engaged in different activities towards fulfilling the week's learning outcome based on the tasks assigned earlier. The input for the lesson is provided on an available Learning Management System (LMS) which can be accessed and viewed anywhere, thus reversing the teaching time and allowing learning to be customised using the technology available. The main features of the approach can be summarised in the Diagram 16.

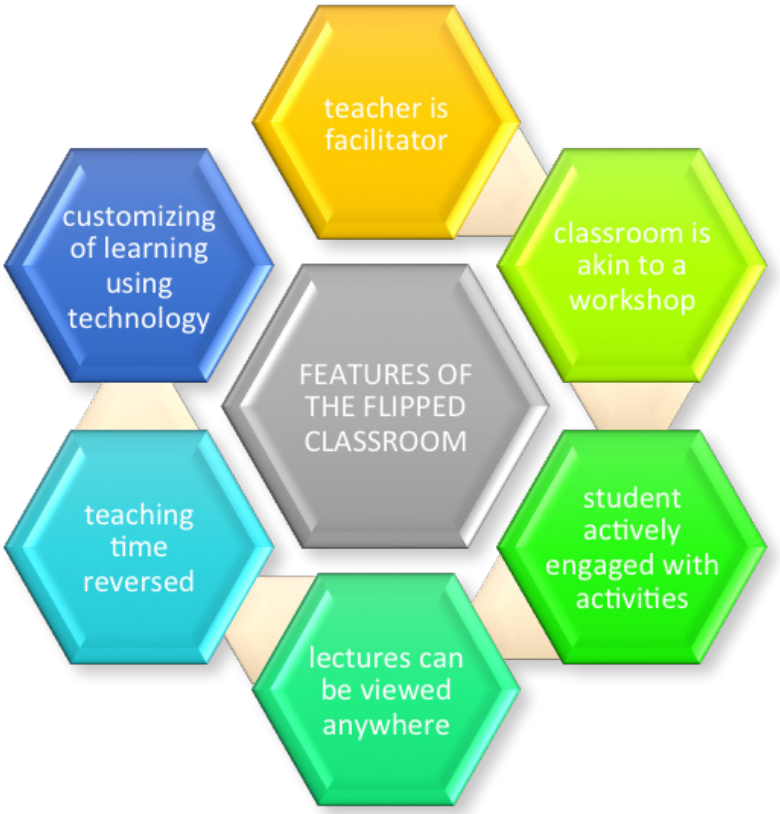


Diagram 16.3: *Flipped Classroom Feature*

Why use the flipped classroom methodology?

As a teaching approach, the flipped classroom is useful for different reasons. To begin with, it can be a good way to get students to start work on a topic before class. By doing this, students can start the learning process in advance (Kachka, 2012b, Fulton, 2014). In other words, the flipped classroom inverts the management of the classroom and allows the students time to prepare their homework well in advance prior to meeting the teacher in class for the lesson. Unlike the flipped classroom which merely inverts the class input using video recording which are provided to students before class hours, Flipped Learning goes one step further by inverting even the responsibility of discovering and understanding the necessary topic to the students (Bergman & Sams, 2014). At the core of both flipped classroom and Flipped Learning is the blended approach which incorporates both online learning and face-to-face interaction.

In my graduate class, the Blended Learning is practised as such: students are given the input for the week's topic through a recording of a lecture at least 4-5 days in advance. This recording is uploaded onto the university's Learning Management System (LMS) at www.ifolio.ukm.my. They are also given specific tasks to respond to based on the lecture. They are to upload their responses at least 12 hours before class begins, which allows me time to review their work. This is also the time I get to identify the advance learners from the average or intermediate ones. In my review process, I would note down certain comments by the students which warrants discussion later in class. During class, we review the lecture as well as the tasks given, allowing students the opportunity to ask any questions they have on the topic. We then proceed with reviewing each student's output. This output is showcased as part of the learning process using the 'fishbowl' interactive learning (IL) technique where I single out the strength and potential of each response to be shared with the class. This is also the opportunity I get to identify the true diversity of my learners' cognitive capabilities and the abilities to reach the learning outcome for the week; between those who understood the input given and those who do not; between those who can analyse the issue given and those who cannot; and between those who can synthesise the new knowledge with the previous one and those who cannot. Based on my assessment of the students' output, I can plan certain intervention strategies to ensure the topic is covered well in class, especially for the benefit of those who might not have understood the subject matter. Thus, instead of having Lecture and Tutorial as the main focus for the week, the Flipped Learning approach emphasises on INPUT and OUTPUT as seen in the Diagram16.4.

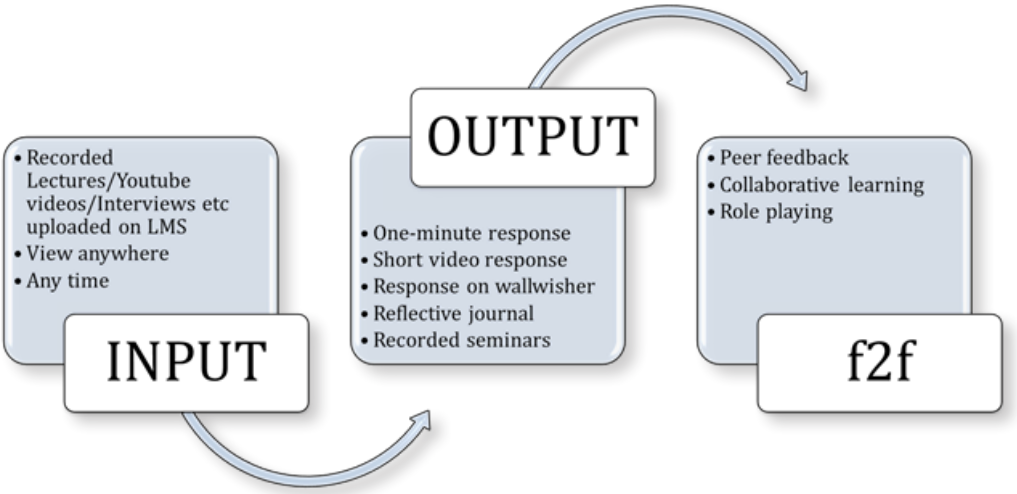


Diagram 16.4: *The Flipped Learning Strategy*

In addition, the use of Flipped Learning methodology can also promote a more creative and innovative way of approaching learning. As learners of the digital era, our students are exposed to the internet all the time. It is the place they go to chat with friends, to find out information about their favourite celebrity and to purchase merchandise including books, clothing and games. As studies have shown, the internet and in particular the social media, has superseded the mall as the number one place for young people to "hang out" (Boyd, 2014). That being the case, the learning that these young people are doing is also located online. The numerous online resources that are at their disposal including YouTube, TEDTalk and Open Learning websites make it accessible for learners to engage with knowledge and skills at their leisure. As illustrated in Diagram 16.3, the flipped classroom allows for learning to be customised to the learner's interests using technology. Thus, by tapping into these avenues for them to conduct their learning online, as a teacher I can promote a more engaging and digital-friendly learning space.

Furthermore, the Flipped Learning also creates emphasis on the learner and the learning process as opposed to the teacher and the teaching process. Taking a multicultural, diverse approach to education, this 'difference friendly' (Taylor, 1994), learner centred approach can allow students of different ranges of abilities and interests to develop their knowledge and skills of a given subject at their pace and abilities. Take one of my graduate students, Mohd, who prefers to study at night. For Mohd, a 24 year old fulltime fresh graduate, meaningful learning takes place when he is in the comfort of his own space and time. In class, Mohd like most of his peers are generally less engaged and at times slow to respond to questions asked. However, based on his consistent uploading of his tutorial tasks, I am able to assess his level of participation and engagement with the subject.

Likewise, with another student Siti, who is a full-time teacher at a secondary school in Serkam, "meaningful learning" happens mostly in the evening and

weekends. She travels 120 kilometers to class every week after completing her teaching in Arab Assaiyidah Khadijah Secondary School in Serkam, Malacca. By the time she arrives in my class after 2 hours of driving, she appears emotionally and psychologically disengaged. Coupled with her introverted personality, it's an uphill task getting any responses from her. However, based on the weekly tasks assigned on the LMS and her weekly responses which she uploads, like Mohd, Siti's level of participation and engagement of the subject are evident.

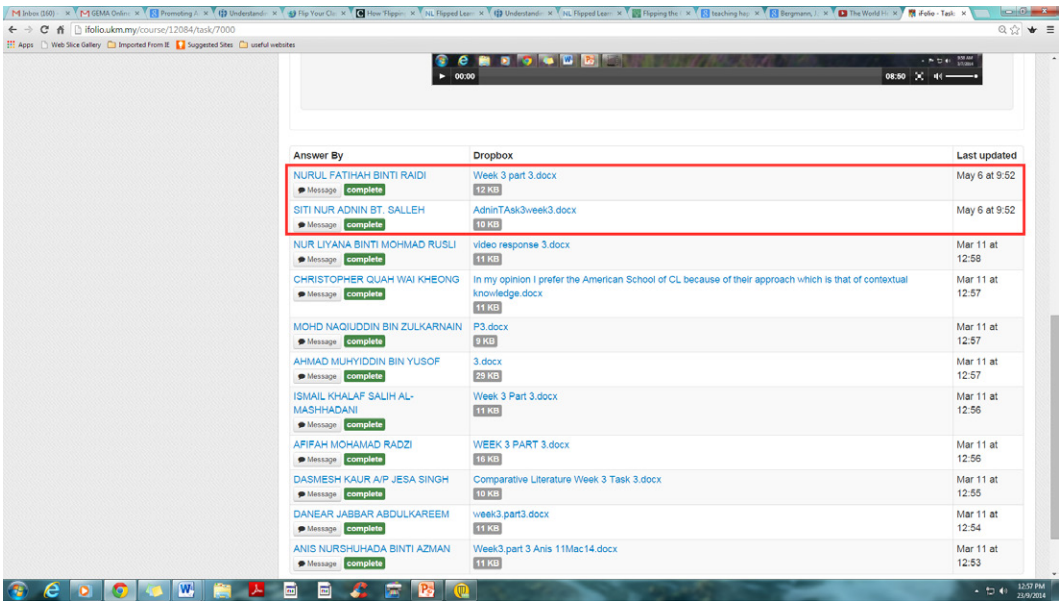
What is the focus of the flipped classroom?

The backbone to my learning management has always been to promote learning, and more importantly, meaningful learning as problematized by David Ausubel in the 1960s (Ausubel, 2000). Meaningful learning differs from "learning by rote". The latter approaches each new knowledge in isolation of any previous or "old" knowledge and does not require the learner "to integrate new concepts and propositions with relevant concepts and propositions already known" (Novack, 2011: 1). The former on the other hand, requires the learner to attempt "to integrate new knowledge with relevant existing knowledge." (Novack, 2011: 1) Irrespective of the approaches taken, the task of the learning, then, lies on the shoulders of the learners, as Joseph Novak (2011: 2) asserts, "this responsibility cannot be shared." The responsibility of the teacher in this context is to ensure that the proper environment is available for the meaningful learning to take place. Within the context of a Blended Learning, where as stated earlier the learning process utilises both the online platform and the face-to-face medium (Garrison & Vaughan, 2008), meaningful learning requires careful structure and context to succeed, especially for the teacher. As studies have shown, the teacher has to ensure that the tasks set is "authentic" while engaging learners in an "active", "constructive" and "collaborative" learning atmosphere. (see Mohamed Amin Embi, 2013).

As shown in Diagram 16.3, the teacher in a flipped classroom is mentor or a facilitator who guides the learners towards achieving the intended learning outcome based on their own abilities and efforts. In order to succeed in developing meaningful learning using the flipped classroom approach, as a teacher, I engaged my learners' interest, and motivated them to learn the topic at hand during the face-to-face session as well as through messages sent on the class WhatsApp. I also ensured that the learning that takes place is done at their level and not the level of their friends. This is monitored through each student's weekly output. Reminders are sent to the students who have not participated in the week's task via email and the group WhatsApp. In addition, I made sure that the learners who have difficulties completing the tasks for the week, especially the part-timers, are given extensions to ensure the tasks are completed before the end of the semester. Hence, the focus of this approach is not to get the topics covered during lecture and tutorial, rather to ensure that the learners complete their tasks which subsequently reflect the extent of meaningful learning that has taken place for each of them.

How do the students' respond to the flipped classroom methodology?

Generally, when students register for a course, they have expressed the intention to themselves and their teacher, that they want to acquire knowledge in that given subject matter. Yet time and again, having been in this profession for nearly 20 years, what I find most disturbing is the level of commitment exhibited by some students when faced with the conventional method of lecturing in class. These students are either doing something else including being on their mobile devices when they are in class or absent from class. Either way, they are not following the lecture and are thus not able to perform the tutorial task assigned. Since using the flipped classroom methodology, the students' level of engagement has exponentially increased. Each weekly task is completed by all the students, albeit at different times. Some are attentive and are able to complete the task within the time frame given. A few, like my two part-time students Nurul Fatihah and Siti Nur Adnin who are also full time teachers from different schools in Malacca, on average complete the task after the dateline. See Diagram 16.5 for the details of one such task where the dateline was 11th March yet Nurul Fatihah and Siti Nur managed to complete it only on the 6th of May, almost two months later.



Answer By	Dropbox	Last updated
NURUL FATIHAH BINTI RAIDI	Week 3 part 3.docx (12 KB)	May 6 at 9:52
SITI NUR ADNIN BT. SALLEH	AdninTAsk3week3.docx (10 KB)	May 6 at 9:52
NUR LIYANA BINTI MOHMAD RUSLI	video response 3.docx (11 KB)	Mar 11 at 12:58
CHRISTOPHER QUAH WAI KHEONG	In my opinion I prefer the American School of CL because of their approach which is that of contextual knowledge.docx (11 KB)	Mar 11 at 12:57
MOHD NAQIUDDIN BIN ZULKARNAIN	P3.docx (9 KB)	Mar 11 at 12:57
AHMAD MUHYIDDIN BIN YUSOF	3.docx (29 KB)	Mar 11 at 12:57
ISMAIL KHALAF SALIH AL-MASHHADANI	Week 3 Part 3.docx (11 KB)	Mar 11 at 12:56
AFIFAH MOHAMAD RADZI	WEEK 3 PART 3.docx (16 KB)	Mar 11 at 12:56
DASMESH KAUR A/P JESA SINGH	Comparative Literature Week 3 Task 3.docx (10 KB)	Mar 11 at 12:55
DANEAR JABBAR ABDULKAREEM	week3.part3.docx (11 KB)	Mar 11 at 12:54
ANIS NURSHUHADA BINTI AZMAN	Week3.part 3 Anis 11Mac14.docx (11 KB)	Mar 11 at 12:53

Diagram 16.5: *Student's Output and Date of Submission*

Irrespective of the completion time, what matters to me, as stated earlier, is the meaningful learning that I hope each student can develop in the course of the 14-week semester. By the end of the semester, each student has conducted all the tasks assigned to the best of their abilities and fulfilled the learning outcomes of the course which is something I could not ascertain using the conventional *1L+2T* method.

In addition, in order to further gauge their meaningful learning, I set my students four reflective journal tasks in the course of the semester. Each task required them to write down or record their thoughts based on the questions asked. They then had to upload their journal entries to our LMS. Based on my preliminary analysis of the reflective journals submitted by the students, overall they see the learning that they have been part of and are better able to understand the topics discussed in a guided manner. To illustrate the preliminary findings, as part of the final class the students were asked to leave a summary of their thoughts on the use of the flipped classroom on a wallwisher account created at padlet.com/raihanah_mydin/SKBK6153 (see Diagram 16.6)

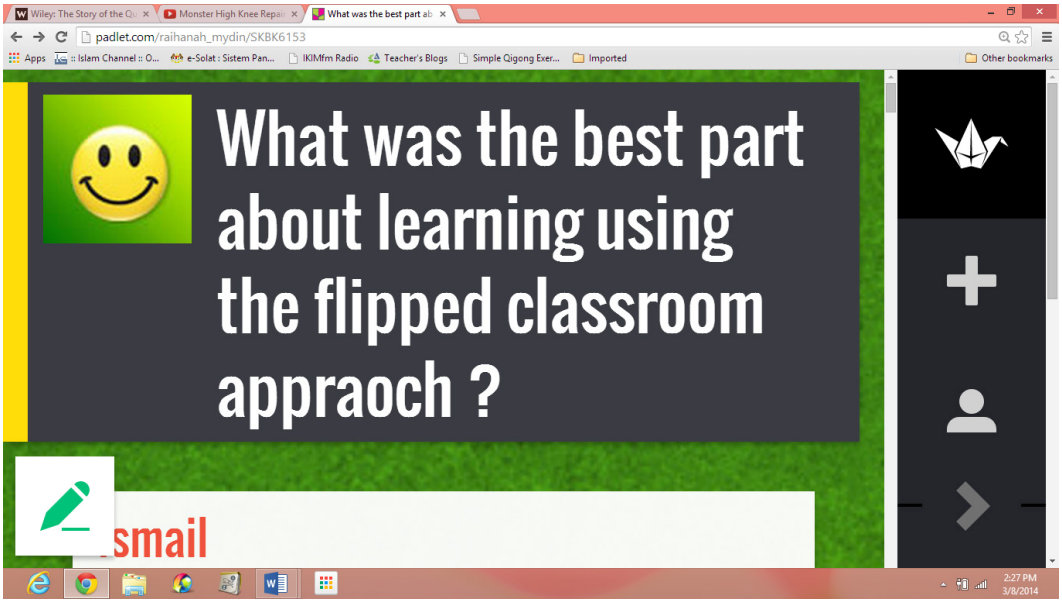


Diagram 16.6: *Padlet Activity*

The reflections by these graduate learners signal their abilities to critically evaluate the learning they have experienced in the duration of 14 weeks. Each learner identified aspects of the flipped classroom approach including viewing the lectures virtually and having course input prior to class. These responses also illustrate each learner's concerns and priorities as graduate learners of the course. (see Diagrams 16.7-16.14 which lists the twelve learners who attended the course SKBK 6153 Parameters of Comparative Literature).

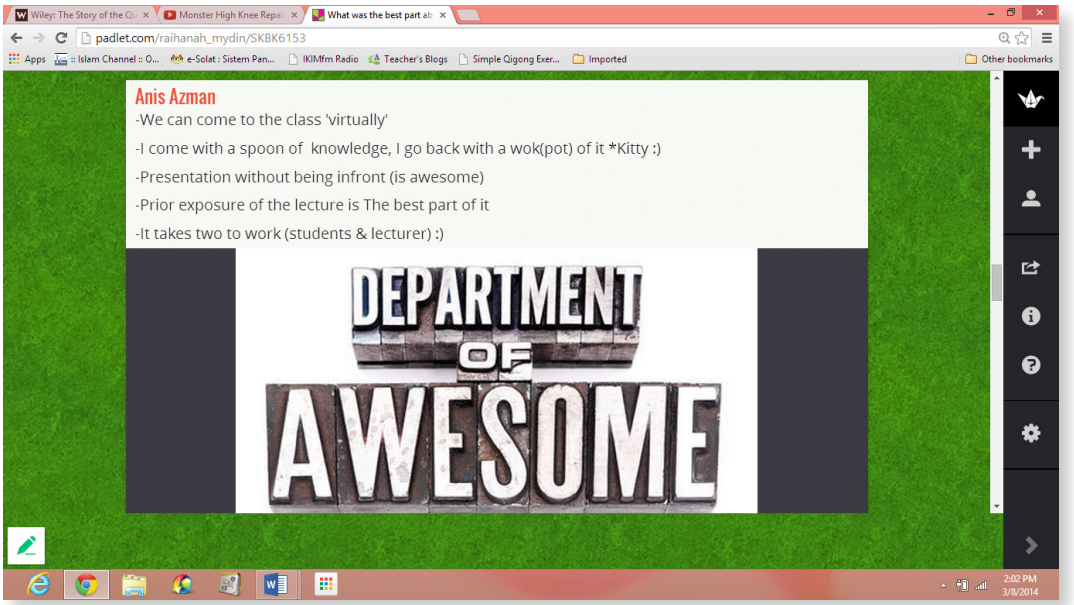


Diagram 16.7

Learner 1 Anis Azman

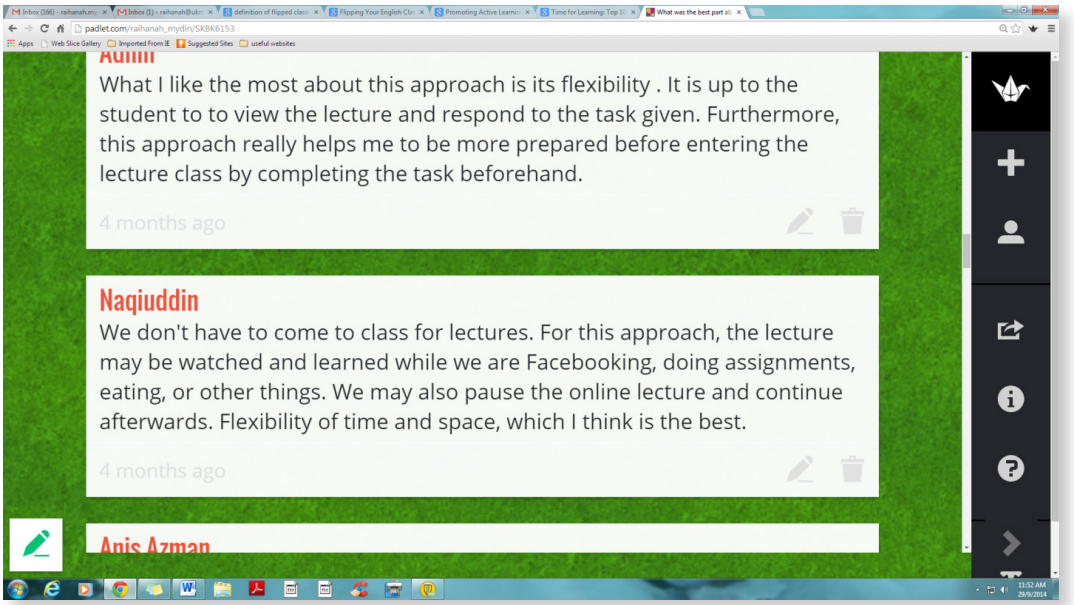


Diagram 16.8

Learner 2 Naqiuddin

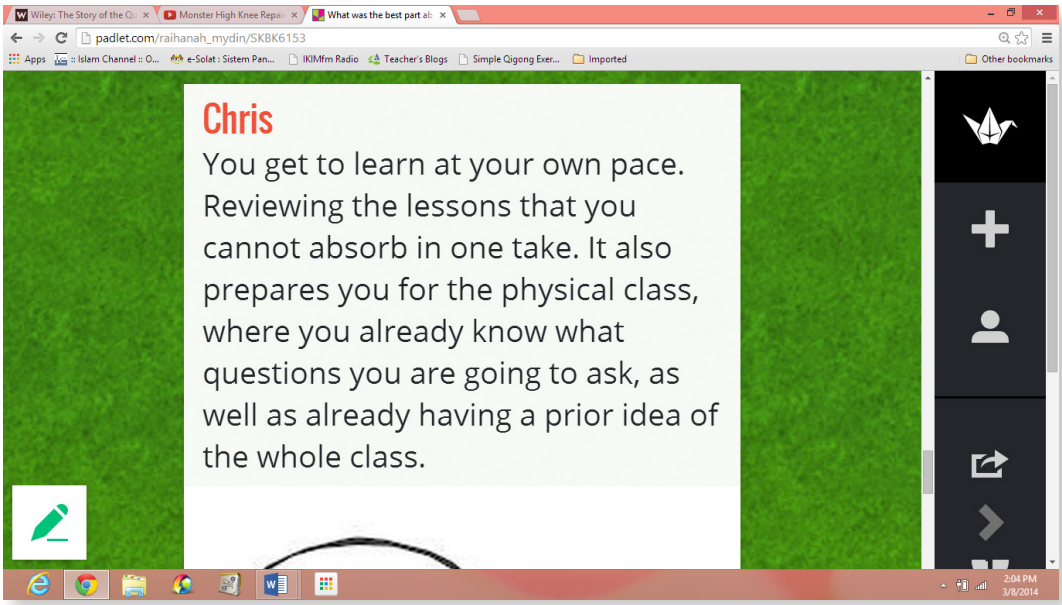


Diagram 16.9
Learner 3 Chris

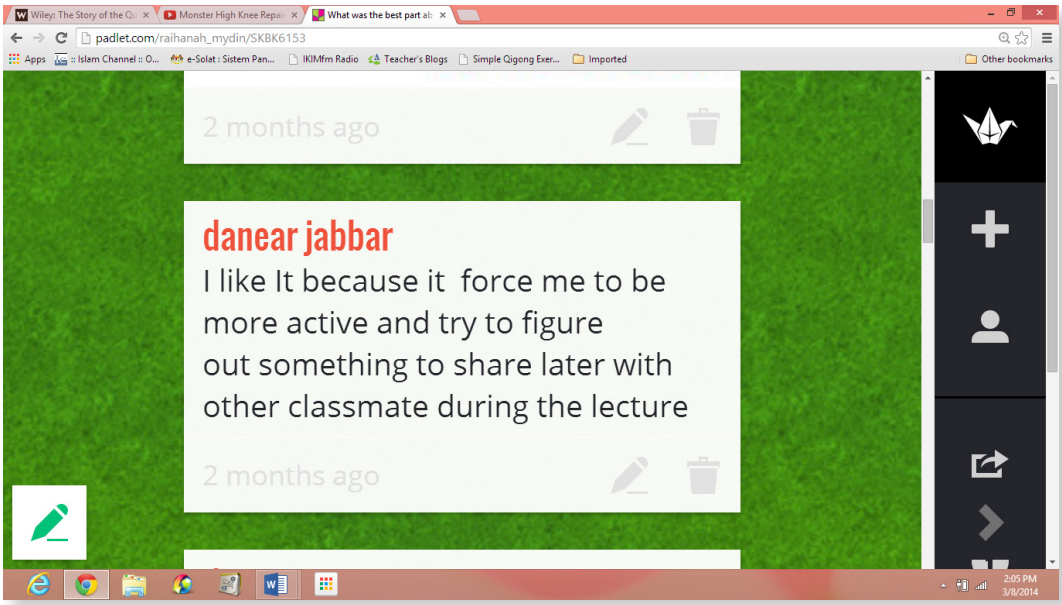


Diagram 16.10
Learner 4 Danear Jabbar

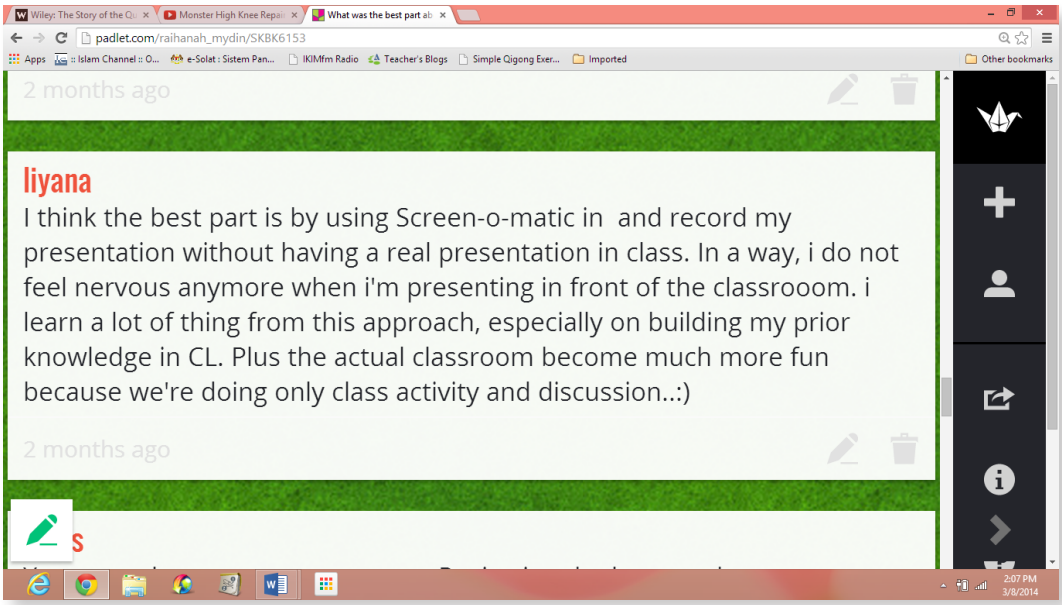


Diagram 16.11

Learner 5 Liyana

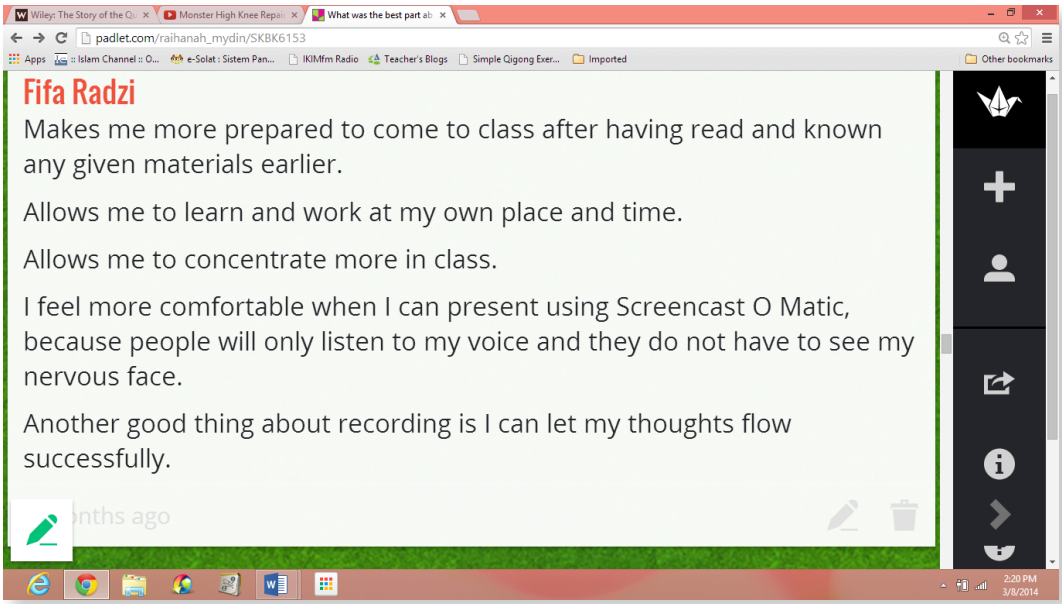


Diagram 16.12

Learner 6 Fifa Radzi

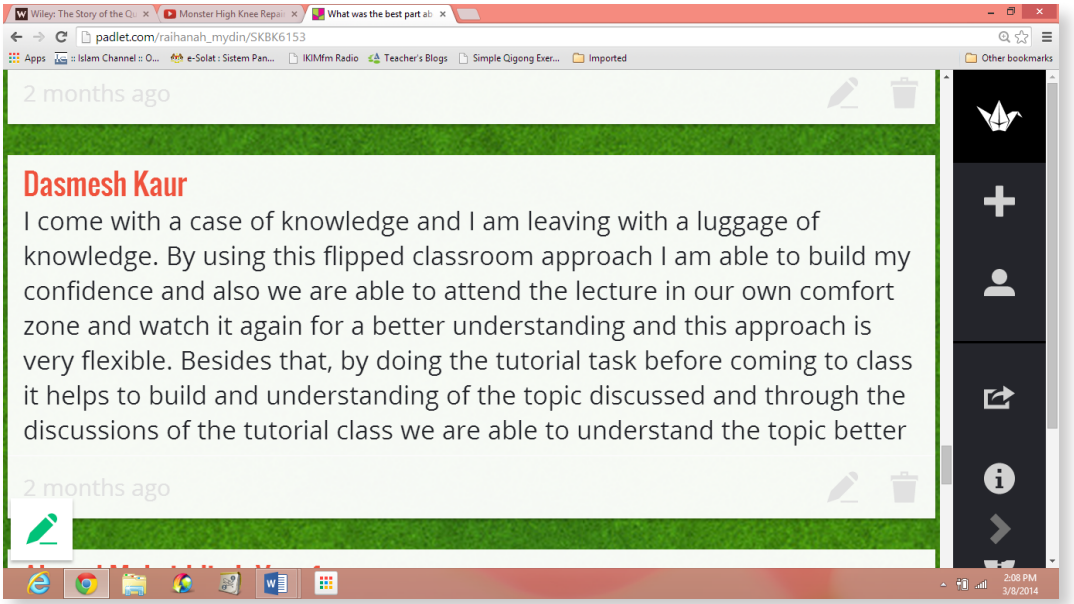


Diagram16.13

Learner 7 Dasmesh Kaur

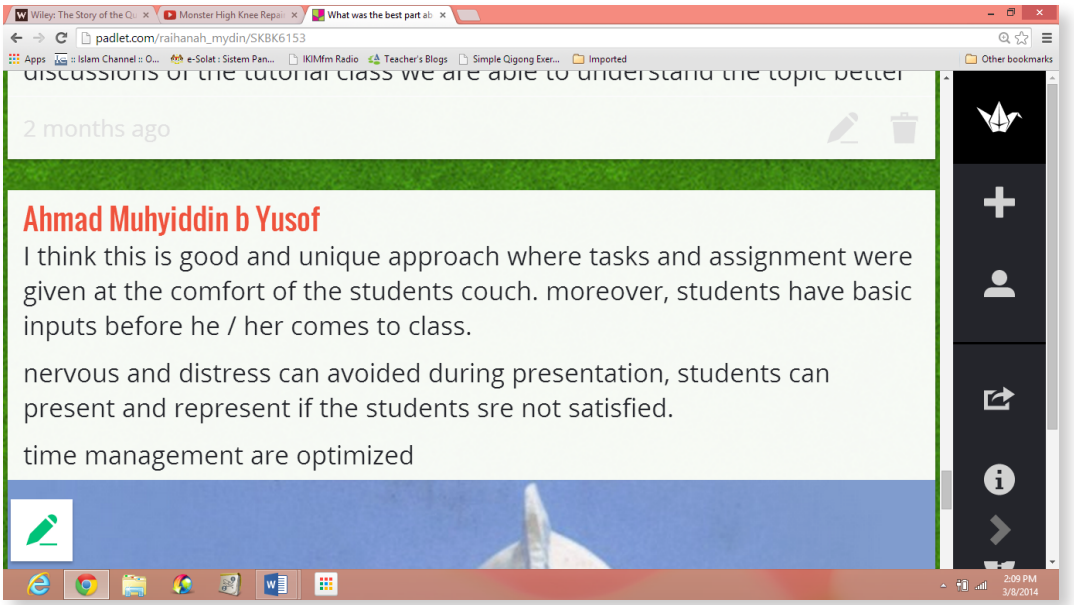


Diagram 16.14

Learner 8 Ahmad Muhyiddin

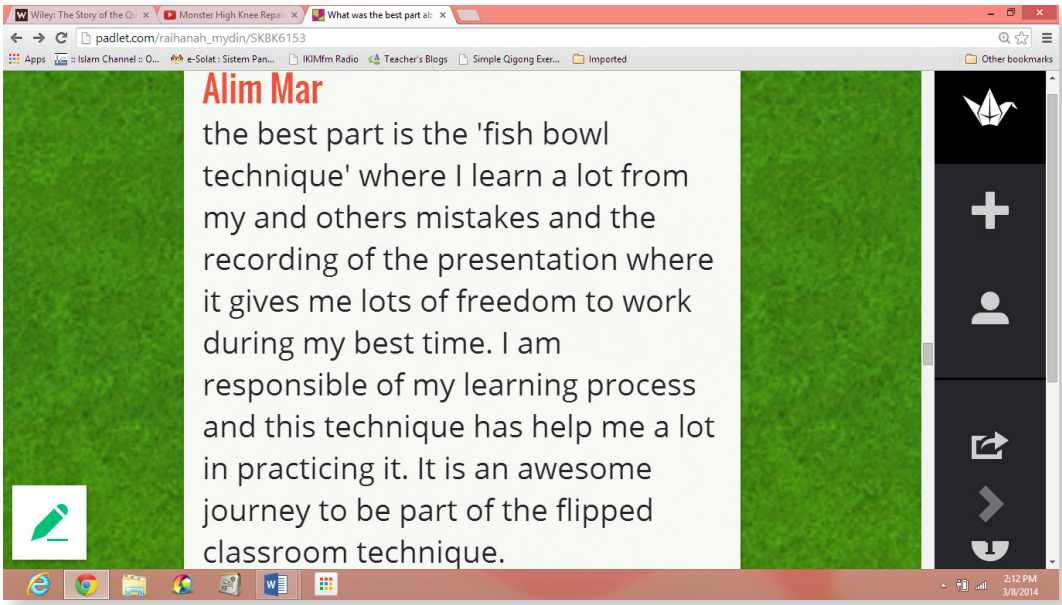


Diagram 16.15

Learner 9 Alim Mar

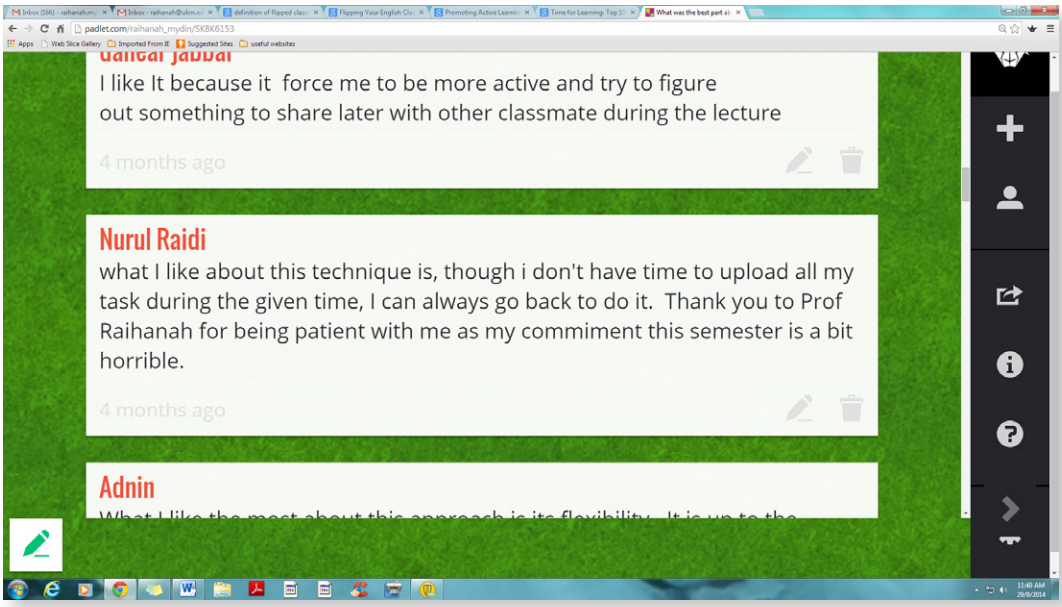


Diagram 16.16

Learner 10 Nurul Raidi

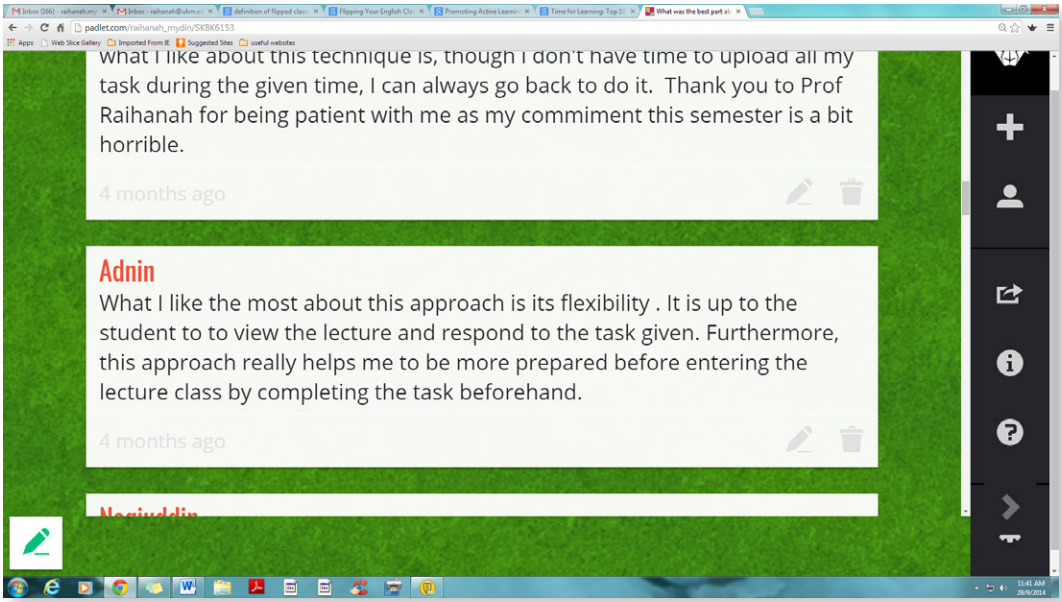


Diagram 16.17

Learner 11 Adnin

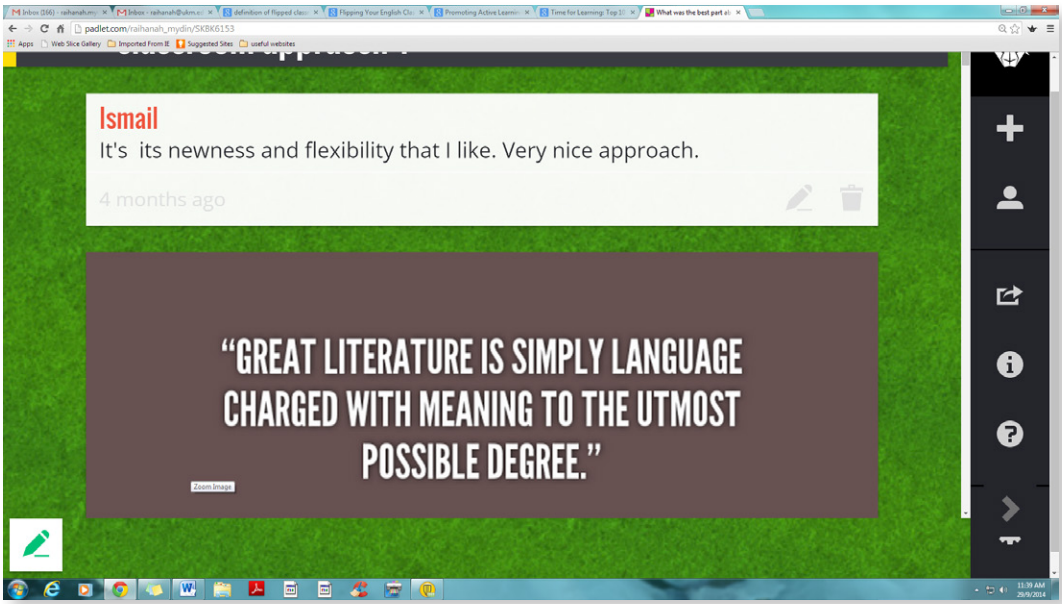


Diagram 16.18

Learner 12 Ismail

Based on these twelve students' responses, I have explicated four main themes that the graduate learners focused on, namely course input, course output, learner empowerment, and flexibility of engagement. Having the course input provided to them prior to class allows them to "learn at [their] own pace" as Chris and Fifa Radzi concur. (Diagram 16.9 & 16.12, respectively). It also allows them to be "more prepared to come to class after having read and known any given materials earlier," as Fifa Radzi says (see Diagram 16.12). Adnin also agrees with the importance of being "more prepared before entering the … class by completing the task beforehand" (see Diagram 16.14).

As for the course output, the students are equally positive about having the tasks assigned prior to class. According to Danear Jabbar (see Diagram 16.10), this approach allows him "to be more active and try to figure out something to share later with other classmate." Nurul Raidi (Diagram 16.16) also agree when she comments, "what I like about this technique is, though I don't have time to upload all my task during the given time, I can always go back to do it." In addition, as this approach allows them to record their assignment presentation, as Alim Mar (Diagram 16.12) comments: "it gives me lots of freedom to work during my best time." They are also excited with the fact that they no longer have to deal with nerves in the classroom as the seminars conducted by the students which are usually presented during class time, can now be recorded and uploaded prior to class. As Liyana (Diagram 16.11) comments: "I think the best part is by using Screen-o-matic in and record my presentation without having a real presentation in class. In a way, I do not feel nervous anymore when I'm presenting in class." Ahmad Muhyiddin (Diagram 16.14) and Fifa Radzi (Diagram 16.12) concur with similar observations, respectively, that "nervous and distress can avoided during presentation, students can present and represent if the students are not satisfied" and "I feel more comfortable when I present using Screencast O Matic, because people will only listen to my voice and they do not have to see my nervous face."

This leads to the third theme based on the students' reflection of the flipped classroom, which is learner empowerment. As Anis comments, "It takes two to work (students & lecturer)" (Diagram 16.7), while Dasmesh Kaur (Diagram 16.13) overtly spells out her increased self-confidence: "I come with a case of knowledge and I am leaving with a luggage of knowledge. By using this flipped classroom approach I am able to build my confidence". Likewise Alim Mar (Diagram 16.15) also feels more empowered with this approach as she says, "I am responsible of my learning process and this technique has help me a lot in practicing it."

Flexibility of engagement is also a crucial issue with these graduate students, as Ismail (Diagram 16.18) states "it's its newness and flexibility that I like." Having flexibility in terms of when and where they view the course input appeals to them. According to Naqiuddin (Diagram 16.8), "the lecture may be watched and learned while Facebooking, doing assignments, eating and other things." Similarly, Adnin (Diagram 16.17) states that "What I like most about this approach is its flexibility. It is up to the student to view the lecture and respond to the task given."

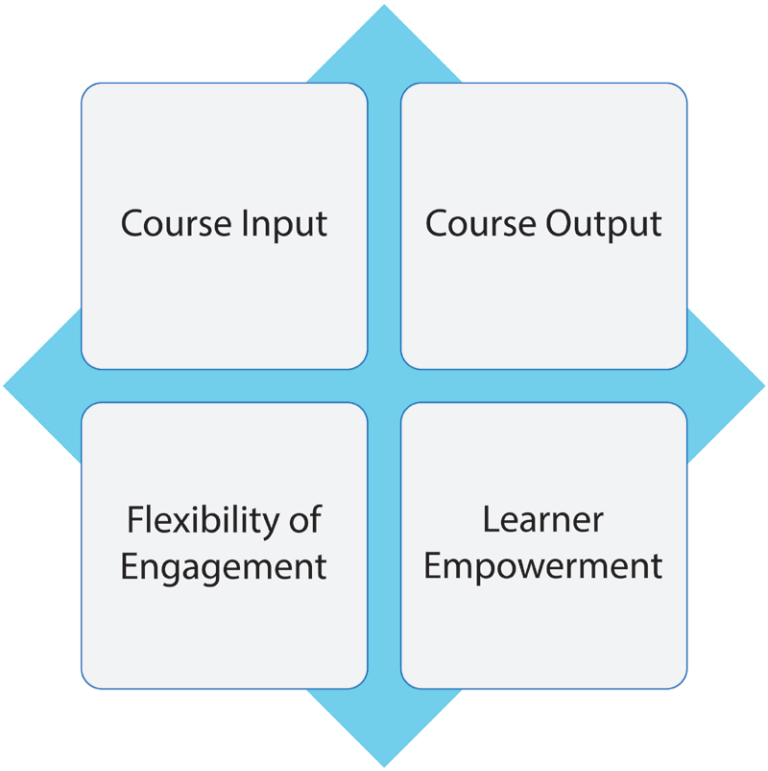


Diagram 16.19: *Themes identified based on students' reflection on the use of the flipped classroom*

The implication of these brief reflections by the students is remarkable. They illustrate the graduate students' central preoccupation when it comes to their learning. They appreciate the value of the learning process and more significantly, they value the process as much as the end product. To begin with the learners in articulating their observations of the benefits of the flipped classroom now appear to better understand their role in the learning process. They are not the passive participants of a class, but rather the most important and significant active agents of the learning process. Furthermore, as the learning is more centred to them and is thus catered to their time and pace, they recognise how time management can affect their performance and thus are completely responsible for any learning that may take place for each week. Finally, as they develop their understanding of the topics, they also learn to acknowledge the importance of self-confidence and focus to their success as learners. Subsequently, in being aware of this crucial aspect of the meaningful learning process, they become more empowered. As the course coordinator, I now see that besides the overt course objectives that are attained, through the use of the flipped classroom, these learners leave the course with an added advantage; they are more perceptive to their responsibilities in the learning process. This is paramount to any meaningful learning. These reflections hence give me an added incentive to pursue the current path of flipping my classroom in the coming semesters. I will monitor the extent other learners are able to experience and articulate similar benefits in the future.

How has this approach engaged my own teaching and learning?

As teachers, we are at times left with a feeling of uncertainty of whether the lessons we taught have met the intended target. Has the learning outcome been met for each and every student? Are there any students left behind in my classroom? Can I reach each one of them equally at their level? Perhaps in an ideal situation, we can assume that all our students are at the same level both cognitively and in their commitment to learning. However, as all teachers will acknowledge, the truth is far different. We are faced with students with divergent abilities and needs in our classroom that as teachers, we may try to do more than what they are capable of or vice versa. My switch to the Flipped Learning approach was partly driven by my need to create some form of equality among my diverse group of learners and the necessary space in which the equity can be translated into actual practice. Using this approach I feel I am better equipped to empower my learners into constructing knowledge based on the tasks assigned to them.

This approach also allows me to be better acquainted with my students thought process. As scholars of the constructivist classroom argue, one of the fundamental shortcomings of many classrooms is the lack of value placed on student thinking:

> *When asking students questions, most teachers seek not to enable students to think through intricate issues, but to discover whether students know the 'right' answers. Consequently, students quickly learn not to raise their hands in response to a teacher's question unless they are confident they already know the sought-after response. Doing otherwise places them at some risk (Brooks & Brooks, 1999: 7).*

The point raised in this quote is critical and paramount to developing the right balance between teaching and learning. It's in the ability of our learners to think critically through each lesson that the true strength of their learning lies. When I reflect upon my own teaching these last 19 years, the main contention I find with my own approach is my ability or lack of, to engage each learner critically and "make thinking visible" (November, 2012: 5). The *1L+2T* mode which limits my engagement with my students has been expanded to include both pre- and post-face-to-face classroom hours using the Blended Learning mode. The "mimetic" behaviour which signifies the traditional classroom in which some learners demonstrate a semblance of learning by copying responses of their classmates can be minimised as each of them have to participate prior to classroom time. Thus, the Flipped Learning approach allows me to monitor each learner's output and in so doing gauge their learning outcome against the course's learning outcome more overtly.

In conclusion, the transformative Blended Learning approach that learners experience is an ideal complement to the constructivist approach which emphasises on the internalising and reshaping of knowledge in the mind of the learner in the digital age. However as most teachers will admit, we can "invite transformations, but can neither mandate nor prevent them." (Brooks & Brooks, 1999: 15). My decision to switch to the flipped classroom methodology is my way of 'inviting' the learners

towards developing "deep understanding" (ibid.) of a given subject. I am able to monitor using the LMS what my students can "generate, demonstrate and exhibit" (ibid, 16) which ultimately corresponds with the learning outcome. It is, to quote Robert Frost, my "road less traveled" as a teacher after over a decade and a half in the profession, and I end with his famous words that sums up my sentiments having embarked on this Flipped Learning journey:

"Two roads diverged in the woods, and I,
I took the one less travelled by
And that has made all the difference."

References

Alvarez, B. (2011). *Homework in class, lesson at home. Learning First Alliance*. Retrieved from http://www.learningfirst.org/flipping-classroom-homework-class-lessons-home

Ausubel, D.P. (2000). *The Acquisition and retention of knowledge: A cognitive view*. New York: Kluwer Academic Publishers.

Boyd, D. (2014). *Kids online: Parents don't panic*. *The Guardian*. Retrieved from http://www.theguardian.com/lifeandstyle/2014/mar/01/young-people-online-parents-dont-panic-instagram-snapchat

Bergmann, J., and Sams, A. (2012). *Flip your classroom*. International Society for Technology in Education. San Diego, CA

Bergmann J. & Sams, A. (2014). *Flipped learning: Gateway to student engagement*. International Society for Technology in Education. San Diego, CA

Berrett, D. (2012). How flipping the classroom can improve the traditional lecture. *Chronicle of Higher Education*, 58(25), 16- 8.

Brooks J. G. & Brooks, M. G. (1999). *In search of understanding: The case for constructivist*. classrooms. Alexandria, VA: Association of Supervision and Curriculum Development

Cockrum, T. (2014). *Flipping Your English Class: Strategies and lesson plans*. New York: Routledge.

Fulton, K. P. (2014). *Time for learning: Top 10 reasons why flipping the classroom can change education.* Corwin Press.

Garrison, D.R. & Vaughan, N.D. (2008). *Blended learning in higher education: Framework, principles and guidelines.* New York: John Wiley & Sons, Inc.

Kachka, P. (2012a) *Understanding the flipped classroom: Part 1. faculty focus. Higher Ed Teaching Strategies From Magna Publications.* Retrieved from http://www.facultyfocus.com/articles/teaching-with-technology-articles/understanding-the-flipped-classroom-part-1/

Kachka, P. (2012b). *Understanding the flipped classroom: Part 2. Faculty Focus. Higher Ed teaching strategies from magna publications.* Retrieved from http://www.facultyfocus.com/articles/teaching-with-technology-articles/understanding-the-flipped-classroom-part-2/

Keengwe, J., G. Onchwari & J. N. Oigara, (2014). Promoting active learning through the flipped classroom model. *Information Science Reference.*

Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. *The Journal of Economic Education*, 31(1), 30-43.

Liles, M. (2012). [*Web log message*]. Retrieved from http://blog.discoveryeducation.com/blog/2012/04/10/flip-your-classroom-with-discovery-education

Makice, K. (April 2012). *Flipping the classroom requires more than video*. Retrieved from http://www.wired.com/geekdad/2012/04/flipping-the-classroom/

Mohamed Amin Embi (2013). Successful e-learning experiences designed to improve learning: A Malaysian case study. *Paper presented at the Third International Conference on e-Learning & Distance Education 2013, Riyadh.*

Robinson, K. (2013). *How to escape education's death valley TED Talks.* Retrieved from http://www.youtube.com/watch?v=wX78iKhInsc.

Novack, J. (2011). A theory of education: meaningful learning underlies the constructive integration of thinking, feeling, and acting leading to empowerment for commitment and responsibility. *Meaningful Learning Review* , 6(2), 1-14.

November, A. (2012). *Flipped learning: a response to five common criticisms*. *November Learning*. Retrieved from http://novemberlearning.com/educational-resources-for-educators/teaching-and-learning-articles/flipped-learning-a-response-to-five-common-criticisms-article.

Taylor, C (1994). The politics of recognition. In *Multiculturalism: Examining the politics of recognition.* Ed by A Gutmann. Princeton, New Jersey: Princeton University Press.

Chapter

17

This page intentionally left blank



Chapter 17

Designing an Interactive Book for Flipped Learning

Sazilah Salam, Norasiken Bakar, Halimatussaadiah Mohd Asarani & Siti Nor Fadilah Mohamed Saki

Universiti Teknikal Malaysia Melaka

Introduction

UTeM is started to adopt Flipped Learning as a new teaching strategy in teaching and learning. Among others, the adoption is initiated with hope that student engagement & interaction will increase and students become more responsible to their learning. By encouraging Flipped Learning implementation, classes are targeted to conduct various student-centered learning activities to allow students to practice higher order thinking skills. However, in order to achieve the target, one of the core challenges is in designing and developing the learning materials that students will use prior to attending a class.

As shown in Figure 17.1, in UTeM, one of the initiatives in e-content development is to develop original e-content in the form of interactive books (iBooks) for students to use on iPad so that students can learn the e-Content anytime anywhere before attending the class. iBooks are developed using iBook Author software as the main authoring tool. Nowadays, tablets such as iPad are small light affordable gadgets even for a student. Learning can happen anytime anywhere for many subjects stored as iBooks. In this chapter, we will present the design approach of an interactive e-Content development for Flipped Learning usages.

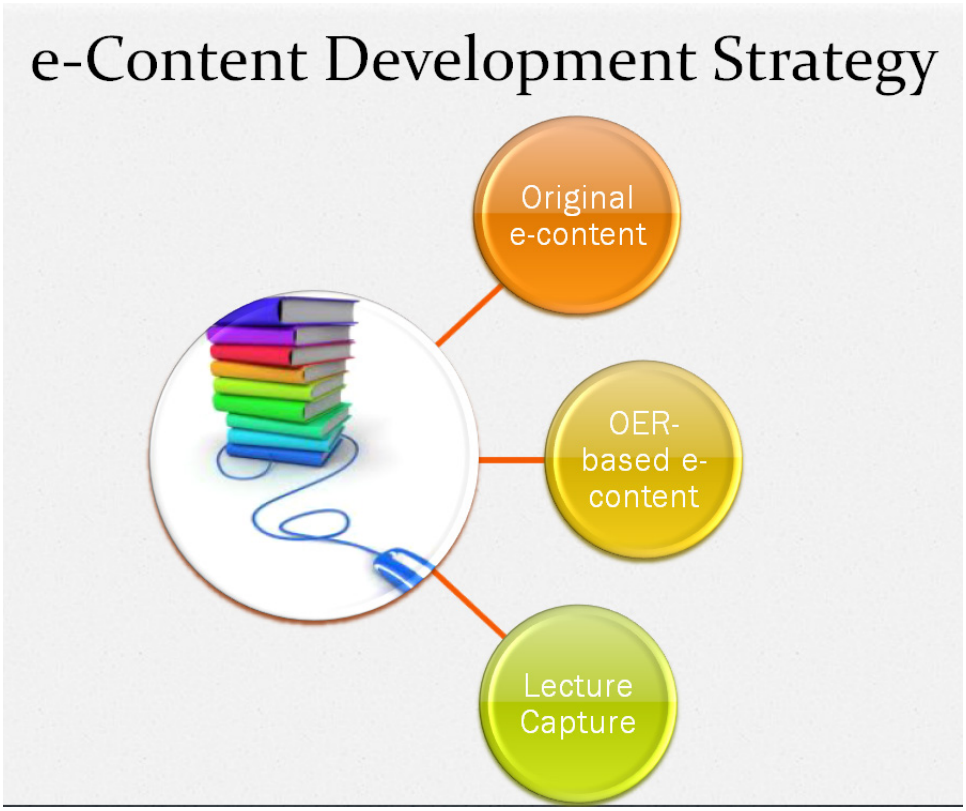


Figure 17.1: *e-Content Development Strategy at UTeM*

Flipped Learning

Normally, in order to implement Flipped Learning, lecturers record/ prepare video/ e-content for each learning unit for their classes. Then, the video/ e-content is uploaded onto a learning or content management system so that students can access it anytime anywhere. This allows students to control their learning according to their learning needs. Students are asked to watch the learning video prior to a face-to-face class. Classes are time for: 1) student-centered activities such as problem-based learning, cooperative learning etc. 2) doing exercises, 3) cooperate & interact using higher order thinking skills, 4) lecturers to guide students, and 5) students collaborate & interact to each other. Ability to access learning video/ e-content outside of the class hour allows learning to happen based on students' paces (slow, medium or fast learners). This new teaching strategy was formulated to fulfill students' individual learning requirement. Students also can access video/ e-content at any time & from anywhere using PC, laptops, tablets and/ or mobile devices such as smartphones. They also can bring the video/ e-content to class and repeat watching it whenever required. This Flipped Learning concept is summarized in Figure 17.2.

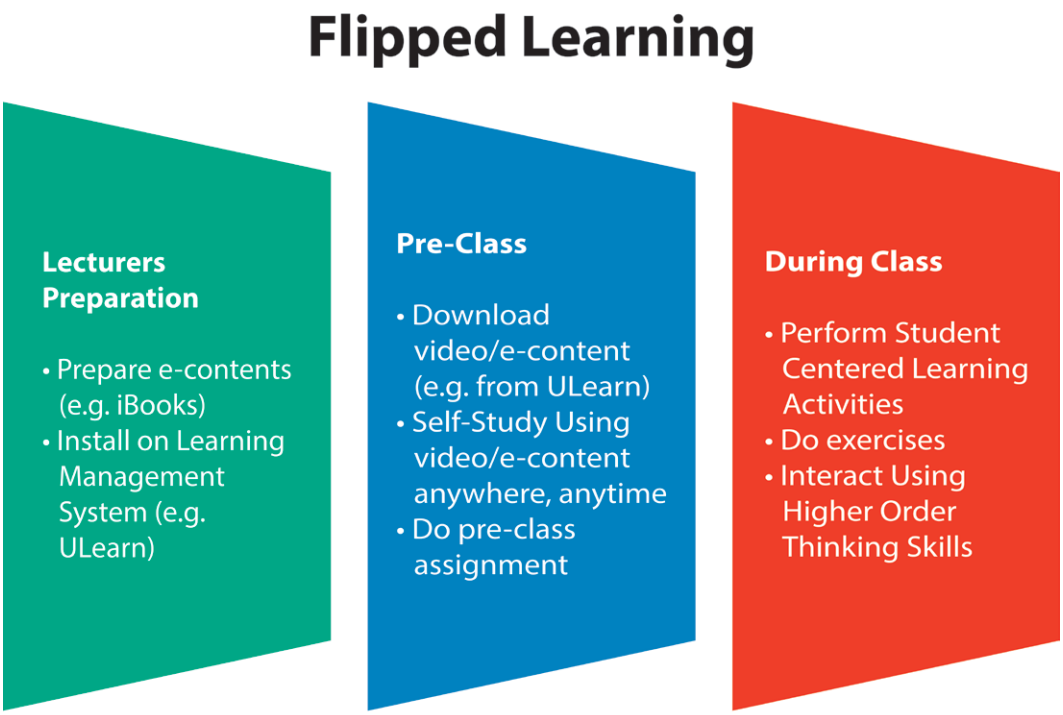


Figure 17.2: *The Concept of Flipped Learning*

A: Project Objectives

The objectives of the interactive e-Content project are:

- To propose development methodology to develop interactive books for Flipped Learning usage.
- To design and develop the interactive book for Flipped Learning implementation.

B. Research Questions

Based on the problem background and research objectives of this project, two (2) research questions were derived:

- What is the development methodology that is suitable to guide the development of interactive books for Flipped Learning usage?
- How to design an interactive book using the methodology proposed?

Methodology

In this project, a development methodology adapted from ADDIE model was proposed and adopted. Figure 17.3 shows the development methodology proposed & used for designing and developing the interactive books for Flipped Learning usages. The methodology integrates content requirement, instructional design requirement, and interactivity requirement into the iBooks development processes. The proposed model consists of 5 main phases which are Content Structuring, Storyboarding, Instructional Design Development, Multimedia Interactivity Integration, and Testing & Acceptance.

A. Content Structuring

Content Structuring is the first phase in the proposed development methodology. In this phase, the developer (cum lecturer) studies the subject/ content to be developed and prepare a list of learning outcome to be achieved after students have completed each lesson. Normally, for each learning outcome at least one learning object is identified and created. At the end of the content structuring phase, a hierarchy of learning object for the iBook is produced that shows the organization of the content.

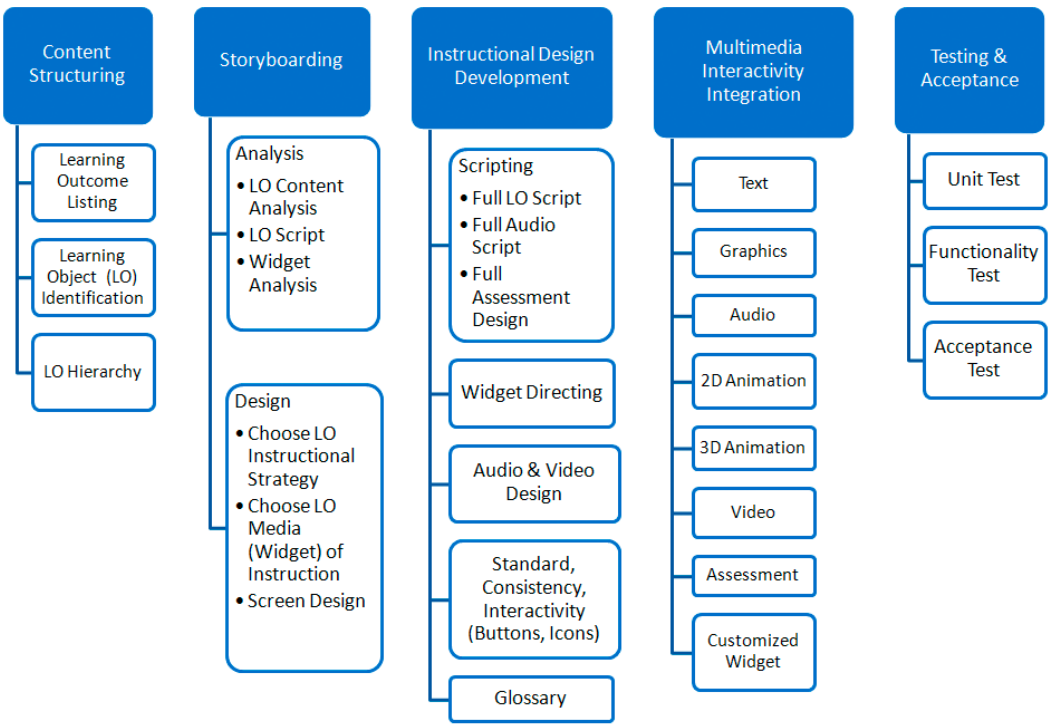


Figure 17.3: *Development Methodology*

B. Storyboarding

Storyboarding Phase is divided into Analysis & Design. During analysis phase, developer does more content analysis for each learning object and lists all facts related to each learning object. Developers document all the analysis tasks and design tasks during the storyboarding phase in a Learning Design document. The Learning Design consists of a list of draft scripts, selected instructional strategy, selected widgets of instruction, and screen design for each learning objects (LO).

C. Instructional Design Development

In Instructional Development phase, the Learning Design for each LO is further developed by improving the LO scripts, the art of directing widgets, the design of audio, video, and standard interactivity design using buttons & icons. Glossary of related terms may also be identified & defined during this phase. At the end of this phase, a complete documentation of Learning Design document for each LO is produced.

D. Multimedia Interactivity Integration

During this phase, each multimedia object defined in the Learning Design document for each LO is created and finally integrated into the iBook using iBooks Author.

E. Testing and Acceptance

This phase is assessment procedures. The evaluation phase is an important role from the beginning of the development system until the end of the development system.

Results

In this section, Figures 17.4 and 17.5 present some of the results obtained using the proposed methodology discussed in the previous section.

A. Content Structure

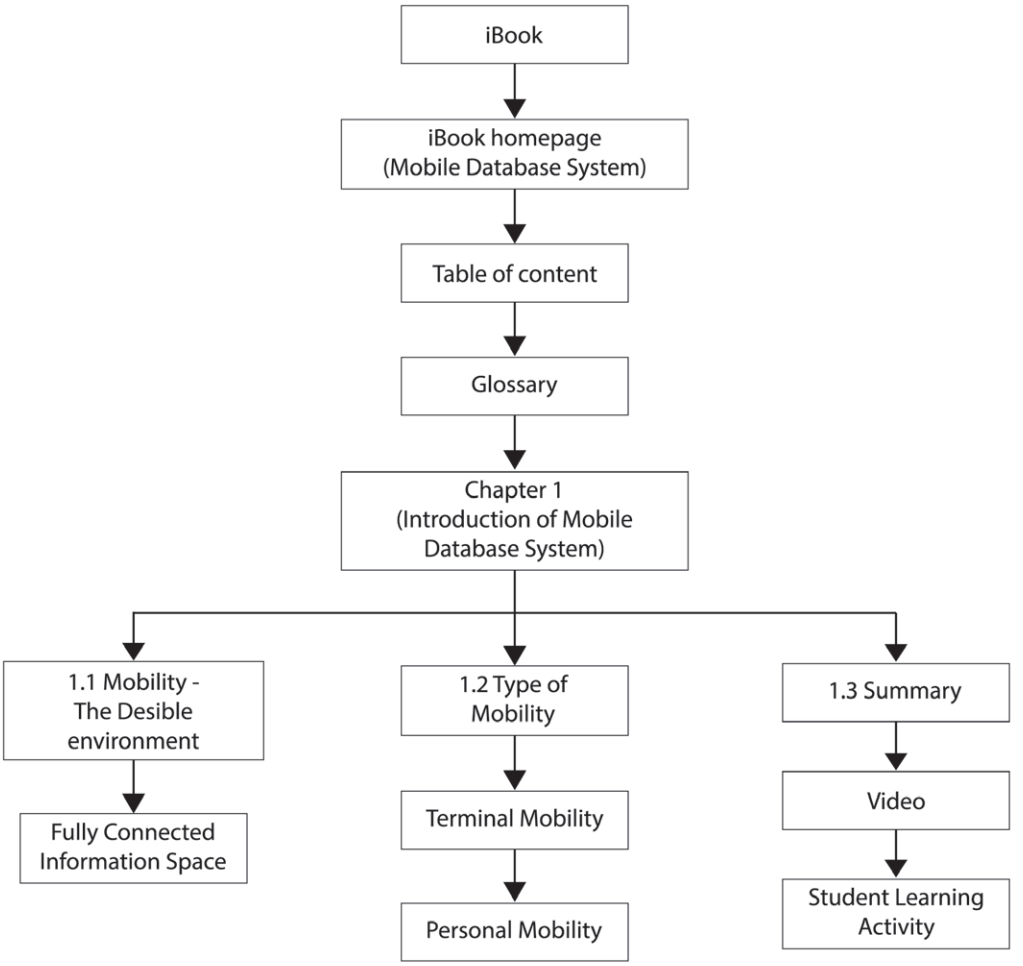


Figure 17.4: *Example of Content Structure for Chapter 1: Mobile Database System.*

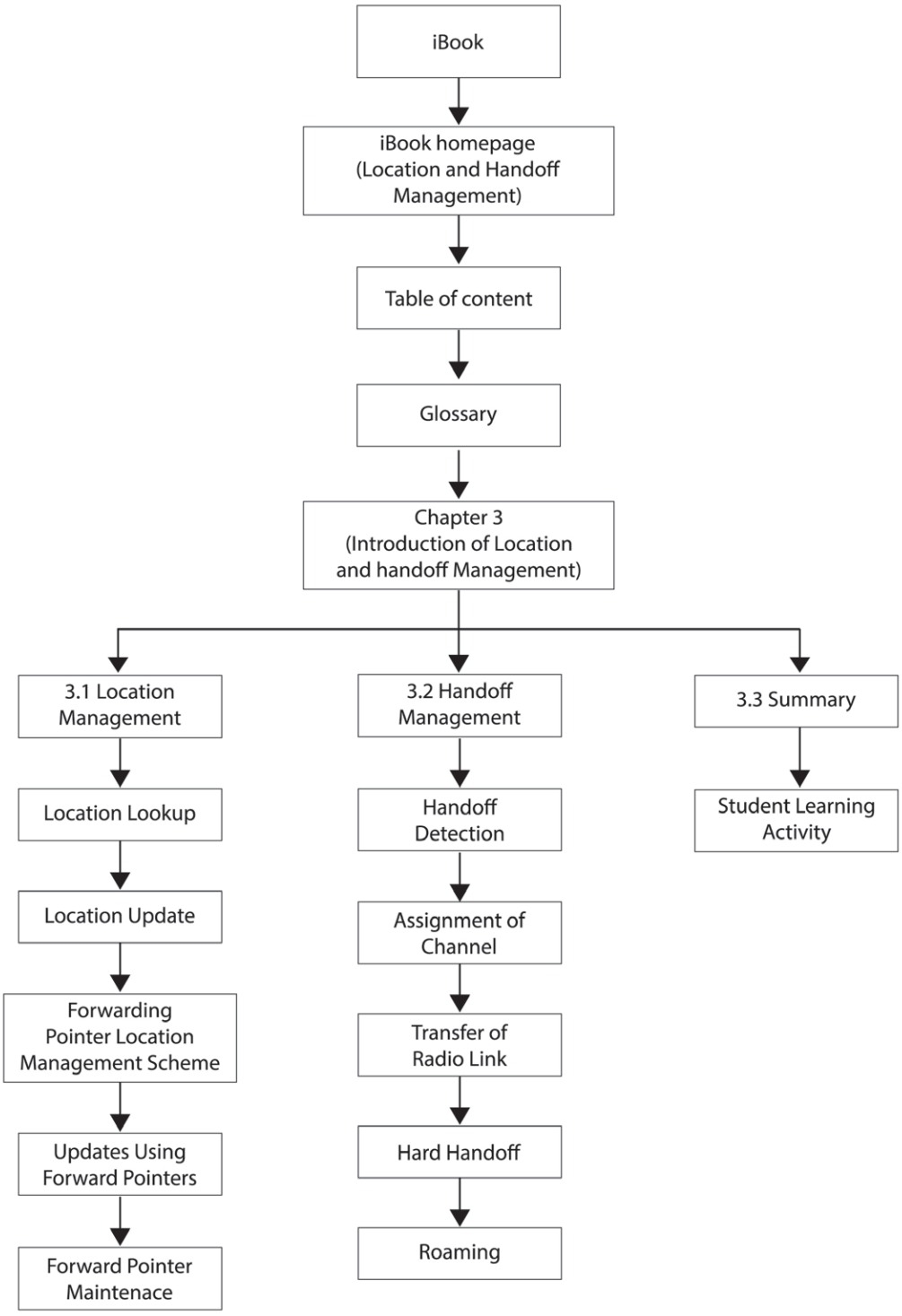


Figure 17.5: *Example of Content Structure for Chapter 3: Location and Handoff Management.*

B. Screen Design

Screen designs are gradually developed during storyboarding, instructional design development, and multimedia element integration. Apart from attracting user's interest to be more focused in their learning, designs are aimed to satisfy user's different learning styles. The designs apply different multimedia elements and widgets such as animation, audio, video, graphics, text, fonts, scrolling sidebar, pop over, interactive image, review question, keynote and media gallery.

Customized widgets may further improve user's understanding through enhance visualization & interactivity. Figure 17.6 to 17.9 show some of the screen designs developed for the iBooks.



Figure 17.6: *The screen design of Chapter 1.*



Figure 17.7: *The Screen Design of Chapter 5*

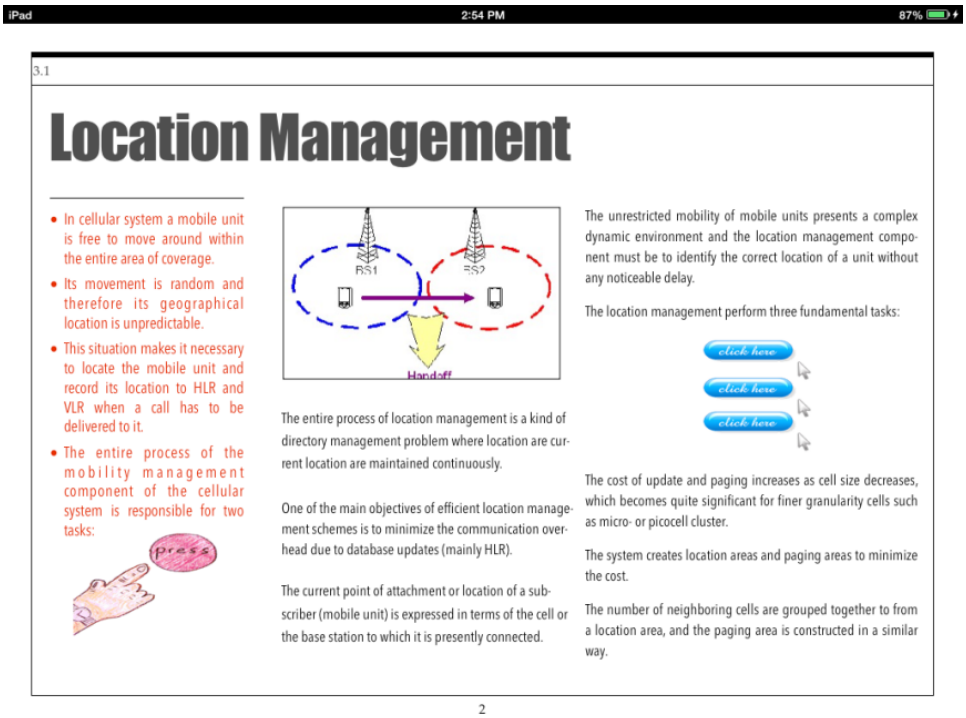


Figure 17.8: *Example of Screen Design of Pages Using Graphics & Pop Over Widgets*



Figure 17.9: *Example of Screen Design Using 2D Animation, Keynotes, & Scrolling Sidebars*

Future Work

The project was a proposed solution for partial effort towards flipped classroom implementation. The development of an interactive book for flipped classroom is a new arm in the field of learning. The strength and weaknesses will be used for further improvement in other projects.

References

Johnson,R. (2012). *Effect of the flipped classroom model on a secondary computer application course: Student and teacher perceptions, questions and student achievement. Retrived from http://theflippedclassroom.files.wordpress.com/2012/04/johnson-renner- 2012.pdf.*

Chapter

18

This page intentionally left blank



Chapter 18

Blended Learning: Flipped, Flopped or Forgotten?

Alma Harris & Michelle Jones

University of Malaya

Introduction

Without question, higher education is increasingly under pressure to respond to powerful, relentless and unstoppable technological change. While new technologies offer significant opportunities for cultural breakthroughs as well as technical ones, there are also limitless possibilities to transform teaching and learning processes. The rise of social media means that effective learning is increasingly dependent upon connecting with others in the virtual world.

For Universities, the digital world looks set to revolutionize pedagogical practice and to re-draw the boundaries around student learning. While there are no set answers to exactly what is required to meet the challenges of learning in a technological age, one thing is clear - a greater degree of virtual collaboration between students and their lecturers is one important game-changer and some would argue, an urgent necessity. The influence of future connectivity with access to 24/7 digital knowledge and new online tools is disrupting, redefining and repositioning what we currently understand as education and learning.

In this brave new technological world, those teaching in higher education will have to respond to greater demands associated with student choice and personalization along with the rapid expansion in the adoption and use of new technologies. With rising connectivity new pathways for learning are being created

daily. Higher education is being radically redefined with traditional approaches to teaching being fundamentally challenged.

The widespread use of on–line platforms and networks is fast becoming the medium of learning in higher education. Every day, in Universities across the globe, more and more courses are being created to embrace Blended Learning approaches. Classes are now being 'flipped' in the pursuit of more effective learning and better student outcomes. But what exactly is Flipped Learning?

The answer, it seems, is far more straightforward than the actual process of delivering it. In a flipped classroom, the content of the lesson or lecture is placed on line before the sessions and students are expected to come and discuss the key ideas in class and to have undertaken key tasks in advance of the teaching session. In short, a flipped classroom is where the students, rather than the lecturers, play a critical role in the learning process. It inverts the typical cycle of knowledge acquisition and application so that students access the necessary knowledge before class, and the lecturers guide students to actively and interactively clarify and apply that knowledge during class.

Flipped Learning and Teaching

Within Flipped Learning and teaching, a shared on–line platform is an essential component. In designing a new 'Masters of Educational Leadership', (MEL) we were fortunate to have the University of Malaya's online learning platform, SpeCTRUM, at our disposal. This is a platform that affords many online features such as chats, forums, assessments and online activities. This platform is designed to support Flipped Learning because individual courses can be built on line with the benefit of uploading a huge range of multi-media support material that can enrich the learning experience.

This platform affords around the clock access so learners can access all of their learning materials any time it suits them. They can learn anywhere, anytime and prepare for class without having to be in any particular location. SpeCTRUM also affords the opportunity for students to communicate with each other, to share ideas, to collaborate on assignments and to have direct communication with their lecturers. The MEL course is 50% face-to-face and 50% on line students are responsible for a large part of their learning but guided by the online materials and activities,

Within the MEL course, learning is 'flipped' because the students are no longer dependent on the lecturer giving them knowledge but instead, are actively engaged in acquiring knowledge themselves online and then using the teaching session to extend and deepen that knowledge. The notion of a flipped classroom draws upon such concepts as active learning, student engagement and experiential learning. At the heart of a flipped classroom is in the repurposing of class time into an interactive workshop where students can inquire about lecture content, test their skills in applying knowledge, and collaborate with one another in related activities.

During MEL class sessions, lecturers function as coaches or advisors, encouraging students in individual inquiry and collaborative effort.

In Flipped Learning there is a great reliance on a shared platform that is a critical source of collective and interdependent learning. The online platform is the medium for the exchange of ideas but also for co-construction and generating mutual understanding. Flipped Learning embodies the separation of the *place* of learning from the *source* of the instruction or learning. However, the 'flipped classroom approach' is not failsafe and without the right components, this form of learning will easily flop or simply be forgotten.

Flipped, Flopped or Forgotten?

In Flipped Learning, the traditional lecturer's role has to change. The lecturer has to move from instructor to facilitator from supervision to coaching. In the MEL course, the role of the facilitator is to guide and direct the individual and the collective work so that it stays on track and is ultimately productive. Successful 'Flipped Learning' facilitators learn how to cross time, distance and space in order to intervene in ways where direct supervision and interaction are impossible.

Flipped Learning can also *flop* particularly if lecturers simply try to teach in the way they always have done but by using a new medium. For example, simply putting lecture notes or slides on SpeCTRUM is not Flipped Learning. If the location of the materials is all that has changed but the mode of instruction remains the same then nothing really has altered. In authentic Flipped Learning the lecturer provides stimulus material, questions and tasks that will help the students engage with the material before they come to class and will allow them to go deeper in class. In a flipped classroom, the aim is to encourage the learners to gain expertise and knowledge through their own efforts rather than to depend only on the lecturer.

Flipped Learning can also *fail* if inadequate time is spent by the lecturer preparing activities on line and face-to-face or if these activities do not connect with the learning objectives. Unlike lectures, where you lecturers could get away with the same material time and time again, in the world of Flipped Learning, more care, consideration and thought must be taken not only over what students learn but also exactly how they learn. Flipping the classroom requires careful course design and will be doomed to fail, if lecturers do not take it seriously or try to retrofit old teaching methods and assessments into the new teaching environment. This simply will not work. Most importantly, any attempt at authentic Flipped Learning will be lost, as students will quickly see through the fact that nothing really has changed.

In a genuine flipped classroom, the lecturer has to take account of pedagogical practice that goes way beyond just reading or uploading his or her power point slides. Such practice only results in dependency as students sit and listen for endless hours, disengaged, bored and not really learning anything. Facts can be memorized but memorization is not learning- this represents superficial rather than

deep learning. Within an active flipped classroom, as our MEL results clearly show, learning is much deeper as the learner rather than the lecturer is doing all the hard work.

In the new Masters of Educational Leadership there is continuous, ongoing formative and summative assessment. Students know that in each session they will be assessed and expected to learn with others in an active way. The assessment strategies themselves signal high expectations, high stakes and an absolute focus on the demonstration of a wide range of knowledge and soft skills. Ultimately, the students are responsible for their own learning and the learning of others in the group.

Collaboration

At the heart of the MEL is an emphasis upon interdependent learning through focused collaboration. The research evidence concerning effective learning underlines the importance of social interaction, mutual dependence and active collaboration. It demonstrates that professional collaboration can have a positive impact on *student achievement*. Consequently, within MEL, there is the clear expectation from day one that participants will work collaboratively with others, in different teams, at different times.

Groups are not self-selecting but activities are structured to ensure every single participant works with everyone in the group at some point. Also, all the MEL lecturers team teach and use collaborative strategies to actively develop the collaborative skills that participants will need to complete collective tasks and to work together productively. This team teaching models what is expected in terms of team work both on line and face-to-face.

In any MEL classroom, there can be three or four lecturers working together at any one time. The teaching is not divided up between these individuals but essentially they team-teach throughout the session, stepping in and out as the learning requires. This is the same for teaching in the on line environment where collaboration is the process of 'shared creation' where two or more individuals with complementary skills interact to create a shared understanding.

Coda

From the first experience of running this new MEL programme in 2013/2014 a number of key lessons have been learned. Firstly, effective Flipped Learning hinges on a relentless focus on learning rather than teaching. Lecturers need to shift away from traditional teaching and to disband 'talk and chalk' pedagogy. Secondly, lecturers need to be able to develop the skills of facilitation to ensure that the process of Flipped Learning is a success. Not all lecturers are natural facilitators, therefore, bespoke professional training and support is needed. Thirdly, students need time to learn the skills of collaboration and to work in this new way. Therefore

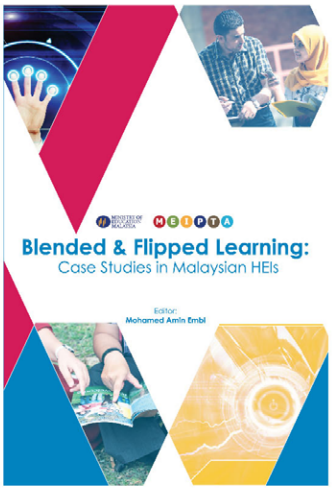
lecturers need to scaffold the learning and to model practices that students can replicate. Finally, the assessments show that the flipped classroom approach ensures that all students, of all abilities learn effectively and perform at the highest levels.

As the flipped class becomes more popular across higher education, new tools will undoubtedly emerge to support the online portion of the curriculum. In particular, the ongoing development of powerful mobile devices will put a wider range of rich, educational resources into the hands of students, at times and places that are most convenient for them. Consequently, those in higher education need to take a long hard look at their current pedagogy and ask whether it supports the kinds of active and collaborative work common in flipped classes. If not, it is undoubtedly time to for higher education providers to embrace advances in digital technologies, and for academic staff and institutions to adopt new 'flipped' pedagogical practices that will increase student engagement and secure better outcomes.

References

Berrett, D. (2012). How 'flipping' the classroom can improve the traditional lecture. *The Chronicle of Higher Education, 12*.

Fitzpatrick, M. (2012). Classroom lectures go digital. *The New York Times,* 24.



The purpose of the book is to provide an overview of the implementation of Blended Learning and Flipped Learning in selected Malaysian higher education institutions. The book is divided into 2 sections: Section A discusses Blended Learning; while section B elaborates on Flipped Learning.

Section A consists of 11 chapters (Chapters 1 to 11) covering i) overview of Blended Learning, ii) Blended Learning readiness in Malaysian HEIs and case studies on Blended Learning in Universiti Kebangsaan Malaysia, Universiti Teknologi MARA, Universiti Malaysia Sabah, Universiti Malaysia Sarawak, International Islamic University of Malaysia, Universiti Malaysia Perlis, Universiti Malaysia Terengganu and Universiti Pendidikan Sultan Idris.

Section B consists of seven chapters (Chapters 12 to 18) covering i) overview of Flipped Learning, ii) Flipped Learning readiness in UKM and case studies of Flipped Learning in Universiti Malaysia Sabah, Universiti Kebangsaan Malaysia, International Medical University, Universiti Malaya and Universiti Teknikal Malaysia Melaka.

MINISTRY OF EDUCATION MALAYSIA MEIPTA

ISBN 978-983-3168-40-8
9 789833 168408