THE INTEGRATION OF DIGITAL LIBRARY SERVICES IN BLENDED LEARNING ENVIRONMENTS: A MALAYSIAN HIGHER EDUCATION PERSPECTIVE

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Attestation of authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been accepted for the award of any other degree or diploma of a university or other institution of higher learning.

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Publications and presentations

Publications

Norasieh Md Amin & P. Gerbic. (2010). Exploring the use of digital library services in a blended learning environment: A Malaysian higher education perspective. In L. G. Chova, D. M. Belenguer, & I. C. Torres (Eds.), *Proceedings of the International Conference of Education, Research and Innovation (iCERi)* (pp. 1782–1792). Valencia, Spain: International Association of Technology, Education and Development (IATED).

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Abstract

University libraries in Malaysia have increasingly utilized modern computer technology to improve services provision, and the country's library landscape has been transformed into one that is more digital than physical. Simultaneously, the rapid advancements in information and communication technology (ICT) have seen learning environments in Malaysian universities move into blended learning, a fusion of face-to-face and online learning. One of the aims of the government's Vision 2020 was to establish the country as a regional centre of excellence in education. Towards forwarding such aims, the Ministry of Higher Education (MOHE) has introduced various initiatives, including a call for an integration or "merger of e-library services, e-learning services and computing services to facilitate collaboration and learning" (MOHE, 2006, p. 116). From my point of view as a librarian, digital library services have extended existing library services and ICT has been extensively incorporated in services provision. However, blended learning has been investigated by the academic community without a focus on the role of libraries, and there is a scarcity of research investigating the intertwining relationship between digital library services and blended learning.

The research presented in this thesis aimed to grasp a holistic understanding of the relationship between digital library services and blended learning by exploring librarian, teacher and student perspectives on the integration of digital library services in blended learning environments in Malaysia. The research thus explored 1) librarians' integration of digital library services in blended learning environments, and 2) teachers and students' perceptions and experiences of the integration of digital library services in a blended learning environment. I employed a qualitative case study methodology and drew ideas from third-generation activity theory (AT) to construct my theoretical framework. I used interviews and documents as data collection methods and selected a Malaysian university as the bounded case. Twenty-six interviews between 15 and 75 minutes long were conducted with 43 participants. Interview transcripts were transcribed and analysed, and NVivo was used to assist the analysis.

This research's findings include the following: 1) the integration of digital library services in blended learning occurred mainly through ubiquitous accessibility of the digital library, which suit distance learners well. However, the use of the digital library services was influenced by several internal and external factors including language and cultural barriers, access and connectivity, familiarity, preferences and alternatives. 2) Despite issues and challenges, librarians have made continuous efforts to improve library services and in particular their use of Library 2.0 in reaching library users of diverse localities. 3) Access, connectivity, language and cultural barriers have led to tensions that differentiate factors influencing participants in cities and rural areas in using digital library services and these tensions suggested a digital divide. The findings of this research have implications for academic libraries and blended learning in Malaysia.

CHAPTER 1: INTRODUCTION

1.1 Opening remarks

Blended learning, a thoughtful fusion of face-to-face and online learning (Garrison & Vaughan, 2008), has opened up new horizons in education. It emerged due to an increasing application of information and communication technology (ICT) in formal university education. The computer and later the Internet have increasingly become an important medium for learning, and we have seen online learning added to campus-based learning and the revolutionizing of distance learning from a print-based correspondence programme to a real-time or on-demand Internet-based programme. Simultaneously, academic libraries have made increasing use of contemporary technologies to deliver services to suit the changing demands for information. The role of a library as an information provider to university communities has been steadily evolving. Some authors (Johnson & Magusin, 2005; Johnson, Trabelsi, & Tin, 2004; Sharifabadi, 2006) have perceived the academic library in the digital age as undergoing evolution from a repository of information and knowledge, or from acting as an intermediary between teachers/learners and information, to a new dynamic role which is described as ubiquitously providing convenient, enriched and enhanced access to library and networked resources and services, anytime and anywhere, and rescuing learners from information overload. This new role can be fulfilled via proper guidance and direction based on librarians' expertise as information professionals (Sharifabadi, 2006). The evolution of the academic library's role has seen the creation of the "digital library" (Borgman, 1999).

As both the learning environment and the library environment evolved as a result of rapid technological advancement, many questions arose. Did the digital library contribute to blended learning? Did integration of both entities enhance learning? This chapter presents an overview of the research presented in this thesis and the inspirations behind it. In doing so, I begin with my background, along with the assumptions that served as the main drivers of my research journey. I then discuss the research focus, aim and objectives, and the rationale for conducting the research. Finally, I outline the structure and presentation of the thesis.

1.2 Background and motivation of research

The motivation for this research emerged from my educational background and professional experience, my beliefs and assumptions about digital library services and their roles in learning, and my critical observation of today's learning environment in higher education (HE) institutions. My decision to conduct this research was reinforced upon discovering a scarcity of research on the digital library and blended learning, particularly within the context of Malaysian HE.

1.2.1 Educational background and professional experience

This research was strongly motivated by my educational background and professional experiences as a librarian and a teacher. I completed a research project as part of my master's degree in Library and Information Science in 1998. For that project I investigated issues and trends of developing digital library projects and my interest in the digital library essentially grew from there. Upon graduation in 2000, I became a lecturer-cum-librarian at a private college in Malaysia. I was able to view learning from the perspectives of both a librarian and a teacher. As a librarian, I realize that teachers play a significant role in guiding learners, not only to locate information in order to complete their projects/assignments but also to wisely use the right information for their learning and development. Simultaneously, learners' motivation to find information to construct personal meaning also plays a significant role in their learning process. As a teacher, I view learning as a process that is significantly influenced by how much information we have in hand, how much information we evaluate, assimilate and understand, and how much we use that information to guide our thinking and decision making and to create our own knowledge. Access to information is vital to both teachers and learners. The librarian's role is to ensure access to information.

Later, I worked full time as a librarian at the International Islamic University Malaysia where my professional expertise further developed. My view of a librarian's roles in learning was highly influenced by my experience working at this university. Its library, serving as one of the established universities in the country, holds a very large collection of more than a million volumes available in various formats including monographs, periodicals, multimedia, digital content, and online databases (Norasieh & Fadzilah, 2011). The library has a huge main library building and four other buildings in

different campuses, and is managed by more than 200 employees. More than a quarter of them are professional librarians, mostly holders of a Master's in Library and Information Science. During my employment there from 2001 to 2005, I was involved in various activities related to information management and services provision.

A year before I came to New Zealand in 2005, the library embarked on a digital services project. I did not directly participate in the project but noticed that creating so-called digital library services was a significant task which involved rigorous planning; developing knowledge typology; and managing resources such as cost, staff, equipment (both hardware and software), and so on. It also involved digitizing materials and managing digital resources; designing the information architecture; and, most importantly, ensuring that the end result served the goal of developing the services and meeting the information needs of the university community. The process was very involved, but its potential usefulness to the community drove the library to commence digital services.

In 2008, I was granted a fellowship from Universiti Sains Malaysia to pursue my doctoral studies. Starting with an original focus on the digital library, I extensively reviewed the literature and existing knowledge on digital library research. I discovered that the major issues for digital library projects evolved from technical aspects (such as the digitization process, cost, copyright, expertise, management) to other issues such as interoperability, usability and continuous evaluation. I also discovered two diverse perspectives of the digital library. One perceives it as contents or system, and the other perceives it as organization or services. I decided to focus on the latter because it fitted well with my experience as a librarian and the emerging dynamic roles of academic librarians in today's changing learning environments. I acknowledged the importance of a library's contents or system; however, the latter perspective, in my view, is more holistic than the former. Based on my experience, library systems is one of the many aspects of librarianship. Other aspects involve the entire processes of selecting, acquiring, managing, and serving information resources to library users, as well as preserving and improving access to the resources. In other words, the first perspective deals with tools while the second deals with activities (see Section 3.2). Based on the literature review, I began to gradually build up an understanding of the notion of "digital library services" and described their key aspects and types of services (Norasieh

& Gerbic, 2010; Norasieh, Ruzita & Gerbic, 2013; Norasieh & Yanti, 2009) (see Section 3.2). With the rapid advancement of ICT over the past two decades, research on the digital library has dramatically increased. Through this research, I hope to further explore current issues, trends and challenges for digital libraries and make necessary recommendations to library colleagues and other stakeholders, such as university authorities and government agencies.

As noted above, my initial interest was in the digital library, specifically within the scope of online learning environment. These two areas seemed to be interrelated and closely influenced by ICT advancement. Upon completing a literature review, however, my interest in online learning was superseded by an interest in blended learning, as I discovered that the actual practice in Malaysian HE was a mix of face-to-face and online learning (Mohamed Amin, 2011). Traditional face-to-face learning has predominantly characterized the learning mode in Malaysian HE and online learning has been gradually implemented.

1.2.2 Beliefs and assumptions

My working experience as a librarian in a university strongly influenced my beliefs and assumptions about the digital library and its role in learning. In my view, university librarians have made continuous attempts, to the best of their ability, to accommodate and make use of ICT to manage, organize, and provide access to information services and resources. This is intended to satisfy users' information needs in the easiest, quickest, and most convenient manner. This view is shared by many researchers such as Johnson and Magusin (2005), Johnson, Trabelsi and Tin (2004) and Sharifabadi (2006). Examples of such attempts include, but are not confined to, the following: email and text or SMS (short message service) for alerting users; using an Instant Messenger for digital reference services; remote access to online databases and full-text scholarly articles, e-books, e-reserve and e-journals; full-text access to local digital resources; Radio Frequency Identification (RFID) application to facilitate borrowing, returning or tracing of library materials; and access to video on demand.

Many academic libraries, particularly in developed countries, have for the most part incorporated ICT into their operations, communication, and services provision. This becomes clear from a perusal of various academic libraries' homepages throughout the

world. Library communities, therefore, are experienced not only through their physical presence but also their digital one. With the availability of the Internet, libraries have become accessible from a distance, and their digital presence goes beyond any physical building or operating hours. In other words, academic libraries with digital services have the capability to deliver ubiquitous library services to the user communities they serve, anytime and from anywhere.

In my opinion, the digital library has not replaced the existing academic library but instead extended and augmented its services by offering resources and services that incorporate ICT, hence allowing their provision to be delivered anytime and anywhere. The digital library itself poses many challenges to academic librarians (such as technical, economic, social, and legal challenges), but I perceive it as important, useful, and significant. Digital library services in universities have greatly enhanced accessibility of information for teachers and students. Because digital library services are extensions of existing services, I believe their ability to reach library users anytime, anywhere is a phenomenon applicable to the blended learning environment as both share the same characteristics. I therefore developed the assumption that integrating digital library services would influence, contribute to, and enhance blended learning.

1.2.3 Malaysian higher education (HE) context

One of the goals of the Malaysian government's Vision 2020 nation-building agenda is for Malaysia to become an international hub for tertiary education in the Asian region. The Ministry of Higher Education (MOHE)'s national educational plan provides many directions and action plans for all HE institutions in Malaysia (MOHE, 2007, 2011b). This desire for Malaysia to become an education hub has led to the establishment of an increasing number of higher learning institutions in Malaysia which offer mainly face-to-face learning but also distance and online learning as well. The concept of lifelong learning further contributed to the above increase and was well supported by the MOHE. Distance education in Malaysia has incorporated online learning or e-learning into the education delivery system and some universities have begun offering blended, online and distance learning opportunities for Malaysian citizens to achieve higher academic qualifications. Examples include Universiti Sains Malaysia, Universiti Putra Malaysia, and Open University Malaysia (OUM) (Abdullah Sanusi & Mansor, 2002). According to the MOHE (2011a), there were 20 public universities, 23 private

universities, and 21 private college universities in Malaysia, as compared to 11 public and seven private universities in 2005 (Morshidi, 2006). The swift establishment of both public and private universities in the country will not only encourage the notion of lifelong learning among Malaysian citizens, but also promote continuing education among Malaysian professionals (MOHE, 2006).

e-learning has rapidly developed in Malaysia over the last few years due mainly to the independent efforts of a few universities. The MOHE is aware of this development and noted in a report that HE providers in the country were advised "to be prepared to provide services in a borderless world where technology enhanced institutions of HE reach an ever-growing number of students in both 'click universities' and 'brick and click universities'" (MOHE, 2006, p. 115). In the same report, the MOHE also acknowledged the increasing role of digital libraries or the "e-library" and called for the "merger of e-library services, e-learning services and computing services to facilitate collaboration and learning" (p. 116). In response to this call, this research examines the integration of digital library services into the blended learning environment within the context of Malaysian HE.

1.3 The research focus

Although there is extensive literature reporting on digital libraries and/or blended learning, there was a scarcity of research intertwining these two areas, particularly with regard to how digital libraries might enhance blended learning. In Malaysia, despite the MOHE's call for integration, research on these two areas is still limited. In this research, I have focused on two dimensions: digital library services and blended learning environments, and investigated the integration between these two areas. I give an overview of the research focus here and further elaborate on this in Chapter 3.

The term "digital library" has various definitions and it is used in the literature in different ways. There were two main perspectives: the digital library as content/system; and the digital library as organization/services (Borgman, 1999, 2007). These two perspectives require further elaboration (see Section 3.2) because this research focuses on the digital library as organization/services. As a university librarian, I perceived the digital library as organization (library organization) which provided services (university library services). Within the university context, digital library services were extended

library services (Marchionini, 2000) that utilize diverse, contemporary and advanced technologies in service provision and delivery, and make full use of the Internet to reach users beyond physical boundaries (Mathews, 2007).

There are a variety of terms synonymous with "digital library" used in the literature, such as "virtual library", "online library" or "hybrid library". However, I use the term "digital library" in this thesis and provide further conceptual elaboration on this topic in Section 3.2. I define the digital library in this thesis as,

> A form/concept of library organizations/services that provide remote and ubiquitous access to their contents, resources and services, that are selected, organized, stored, preserved and managed by specialised staff, who optimize technology usage, and combine an on-site collection of current and heavily used materials available in a variety of formats (print, electronic, etc.), with an electronic network which provide access to, and delivery from, external worldwide library and commercial information and knowledge sources.

There are various terms related to blended learning in the literature such as "hybrid learning" or "flexible learning", and further elaboration is given in Section 3.3. In brief, blended learning is a thoughtful fusion of traditional face-to-face learning and online learning (Garrison & Vaughan, 2008). The proportion of each type of learning environment varies from one university to another. Some universities have established mainly online learning supplemented by small proportions of face-to-face learning, while other universities offer greater face-to-face learning with a small proportion of online learning activities incorporated into it. Blended learning thus occurs along a continuum whereby at one end is a fully online learning environment and the other a fully face-to-face learning environment, and it also occurs within the context of on-campus and distance education settings (Stacey & Gerbic, 2007).

For the purposes of this thesis, the term "integration" has been interpreted as positioning library information services within emerging online learning environments (McLean & Lynch, 2004). The positioning process is worth exploring so that librarians can identify best practices in delivering digital library services in advanced technology era. The process could involve escalating the use of electronic databases and journals and raising library users' awareness of existing digital library services and resources (Cohen, 2001; Joint, 2006). The increased use could enhance learning and contribute towards knowledge discoveries and knowledge construction.

Based on the above, I use the following definitions (further conceptual discussion is available in Chapter 3):

Digital library – a form/concept of library organizations/services that provide remote and ubiquitous access to their contents, resources and services, that are selected, organized, stored, preserved and managed by specialised staff, who optimize technology usage, and combine an on-site collection of current and heavily used materials available in a variety of formats (print, electronic, etc.), with an electronic network which provide access to, and delivery from, external worldwide library and commercial information and knowledge sources.

Digital library services – these represent the core business of a digital library and are classified into two types: the provision of various customer and information services; and the provision of access to various kinds of library resources.

Blended learning – a fusion of face-to-face, online and self-paced learning.

Blended learning environment – a learning environment where both face-to-face and online learning are combined with self-learning.

Integration – positioning digital library services within emerging online and blended learning environments.

1.4 Research questions and rationale

This study aimed to holistically explore the integration of digital library services in blended learning environments within the context of a Malaysian HE. A holistic exploration was achieved through gaining understanding from various people and perspectives. In order to achieve this aim, two research questions were explored:

1. How do librarians integrate digital library services in blended learning environments?
2. How do teachers and students perceive and experience the integration of digital library services in blended learning environments?

Based on the above research questions, three perspectives – those of librarians, teachers and students respectively – were explored to holistically understand the phenomenon under investigation.

The rationale of this research rested on the fact that university libraries were expected to be the main source of information for academic communities, specifically teachers, researchers and students. However, as today's learners and teachers have easy and quick access to information from other sources than libraries, the status of libraries is debatable. Demand for traditional materials in physical libraries has remained and demand for digital resources is increasing. Many libraries have acquired digital resources since they are ubiquitously accessible over the Internet. Since the learning landscape in some HE institutions has evolved into blended learning, integration of digital library services in blended learning environments could enhance learning. However, a comprehensive literature review revealed a scarcity of research on the integration of digital library services (see Chapter 3.4).

Most studies on the relationship between the digital library services and blended learning have been conducted in places other than Malaysia. Malaysian research on the phenomenon under investigation has indicated a paucity of research (see e.g. Sufean, Hashim & Aziah, 2008; Poon, Low & Yong, 2004; Wong, 2006) and that most Malaysian research utilises a quantitative methodology. The novelty of this research lies in its offering a substantial account to fill this knowledge gap.

This research focused on a Malaysian HE perspective (see Chapter 2). It required critical observation and careful consideration in collecting data, discussing findings and drawing conclusions. I independently posited myself as an 'outsider' researcher and avoided any conflict of interest. I chose a qualitative case study methodology (see Chapter 5.3) and selected a university, namely Open University Malaysia (OUM), as the case (see Chapter 6), in order to gain a holistic understanding of phenomenon under investigation. I also drew on ideas from the third generation Activity Theory (see Chapter 4) to guide the research.

1.5 Overview of the thesis

1.5.1 Thesis structure

The thesis contains 10 chapters.

In *Chapter 1: Introduction*, I give an overview of the research background and motivation. I also articulate the intent and focus of this inquiry.

I present in *Chapter 2: Malaysian Context* the setting within which this study is located; that is, Malaysian HE and its blended learning development, as well as the role of academic libraries in supporting teaching and learning in the country.

In *Chapter 3: Concepts and Review of Literature*, I contextualise the concepts used in this research and conduct a review of the literature in two areas: the digital library and blended learning. I critically review the two major perspectives of the digital library, various terminologies and definitions, and the two types of services. I critique literature on both areas in order to demonstrate a gap in knowledge.

In *Chapter 4: Theoretical Framework*, I introduce activity theory (AT), explain its development and the growing interest in it, and critique the application of it in digital library research. I adopt elements of AT as my theoretical lens and interpretive analytic tool.

I then explain the design of the study in *Chapter 5: Research Design*, in which I elaborate on my decision to choose a qualitative case study methodology and adopt an "outsider" perspective for the data collection process. I also outline the data collection methods and data analysis strategies used and describe the steps taken to ensure the quality of the research.

The research findings are presented in four separate chapters. In *Chapter 6: Case Description*, I describe the research's bounded case in detail; that is OUM and its blended learning and digital library services. Various perspectives of librarians, teachers and students are respectively presented in *Chapter 7: Librarian Perspectives*; *Chapter 8: Teacher Perspectives*; and *Chapter 9: Student Perspectives*.

Finally, in *Chapter 10: Data Interpretation, Discussion and Conclusion* I summarize the research key findings, and share my reflections on the research journey, in particular theoretical and methodological reflections as well as my reflection on the research findings. I also discuss the major research findings, namely the digital divide and Library 2.0, which are interpreted as "tension" and "expansive learning" respectively using the terminology of AT. I also discuss the research's implications for academic libraries, blended learning in HE, and my growth as a researcher. Last but not least, I discuss the research's limitations and future research directions before making some concluding remarks.

1.5.2 Thesis style

I have used the American Psychological Association citation style with adjustments for Malay authors (see Singapore Polytechnic Library, 2010; University of Malaya Library, 2011). The adjustments pertain to the citing of people by their first name, which is common among Malays and Burmese. Hence, for Malay authors I use their first name instead of the family name in in-text citations and give their full name in the reference list. For example, I have cited "Norasieh (2010)" in the text and listed "Norasieh Md Amin" in the reference list. I chose this approach to avoid confusion over first names and family names which can occur when a Malay author has many names, such as Abdul Manaf Bohari or Tengku Mohd Azzman Shariffadeen Tengku Ibrahim. Moreover, there are variations in the spelling of some names, for example, Muhammad, Mohammed, Mohamed, Mohd, or Md, which all refer to the same name pronounced as "Muhammad". In this case, I have not standardised the names and instead followed the individual's spelling as a mark of respect.

The thesis has adopted a constructivist and interpretive epistemology, and consequently frequently uses the first person. Readers who are accustomed to works in the objective science tradition may be unfamiliar with this style. I have adopted this approach consciously with the intention of contextualizing my work and indicating how I drew my conclusions. This approach, according to Clear (2008), works in tandem with the interpretive research principles of contextualization and interaction between the researchers and the subjects under investigation.

CHAPTER 2: THE MALAYSIAN CONTEXT

2.1 Introduction

This research explored the integration of digital library services in blended learning environment from a Malaysian HE perspective. It is therefore essential to understand the Malaysian HE context well, and this chapter first outlines Malaysian HE and then discusses its evolving development from traditional face-to-face to blended learning. Finally, the changing landscape of Malaysian university libraries, from traditional to digital libraries, is outlined.

I begin with a brief introduction to Malaysia in terms of its location, population and the education system focusing on HE from the time after independence in 1957 until the present. I then discuss the changing learning environments in Malaysian HE institutions, including the incorporation of e-learning and blended learning in many institutions. The Vision 2020 nation-building agenda and the establishment of the Ministry of Higher Education (MOHE) are considered in relation to the changing learning environments in Malaysia, which aspires to be an education hub in the Asian region.

I next discuss university libraries in the country, including the early development of libraries in general and then focusing on university libraries. The increase of academic libraries has accompanied an increasing in the number of universities in the country. I then explain aspects of library evolution from physical to digital libraries such as software and database development; library portal/website development; technologies and web tools; reference services; ICT skills and competencies; and information literacy development.

2.2 Malaysia: An introduction

Malaysia is a country located in the centre of Southeast Asia. It is divided into 13 states and three Federal Territories which are separated by the South China Sea. Eleven states and two federal territories (Kuala Lumpur and Putrajaya) are in Peninsular Malaysia and two states and one federal territory (Labuan) are in East Malaysia (see Figure 1). In

Peninsular Malaysia, Pahang is the biggest state and Kuala Lipis is the central point of the peninsular.

Figure 1: Map of Malaysia (Source: Worldatlas, 2015)

Malaysia has 28.6 million people of various ethnic groups, including *bumiputra* or "sons of the soil", who are the Malays and indigenous people, and non-*bumiputra,* who are mainly Chinese and Indians. According to the 2010 cencus, the composition of the Malaysian population was 66.1% *bumiputra* (54.4% Malays and 11.7% non-Malays), 25% Chinese, 7.5% Indian, 1.4% others. The remaining 8.8% are non-Malaysian citizens who live in the country as students, professionals, or workforce labour (Department of Statistics Malaysia, 2010). This multi-ethnicity shapes the Malaysian environment socially, culturally, economically, and politically, and the learning environment reflects a concerted effort to serve the various ethnic groups.

2.2.1 The education system: An overview

Formal education in the country is categorized into five levels: preschool, primary school, secondary school, post-secondary or pre-university, and tertiary education. Bahasa Malaysia or the Malay language is the main medium of instruction in primary and secondary education, while English is taught as a second language, and Chinese and

Tamil as optional language. The medium of instruction in tertiary education varies from one institution to another but is typically Bahasa Malaysia and/or English. The federal government's development expenditure on education was budgeted at RM 10,827 million in 2009 (US$3.467 billion), which is equivalent to 21.9% of projected government expenditure (Europa World Plus, 2003–2011).

Malaysian formal education is currently overseen by the Ministry of Education (MOE). From 2004 until 2013, the ministry was separated into two: the MOE and the MOHE. The former was responsible for education from preschool until post-secondary school. Education is free at government-assisted schools for children between the ages of six and 18 years. The MOHE meanwhile was responsible for HE (pre-university and tertiary), including all education leading to the awarding of diplomas and degrees (undergraduate and graduate). HE is highly encouraged in Malaysia; hence, support for HE among citizens is available in terms of student loans and scholarships.

2.2.2 Development of HE

The early universities in Malaysia were established following the Universities and University Colleges Act 1969, except for the University of Malaya which was established in Kuala Lumpur in 1962. Four public universities were established from 1969 to 1975, another six in the 1980s and 1990s, and since 2000, nine more have opened their doors. In 2013, there were 20 public universities, with a few upgraded from university colleges or institutes, and each state has at least one university (MOHE, 2013). Private universities, on the other hand, were established following the Private Higher Education Act 1996, which began with the establishment of Multimedia University in 1996 and University Tun Abdul Razak, previously known as Unitar, in 1997. The number of private universities grew steadily in the early 2000s and extensively after 2005. In 2013, there were 23 private universities all over the country (MOHE, 2015).

Most universities in Malaysia offer both undergraduate and graduate programmes in various fields, covering both pure science and social science. Each university has their unique focus; for example, Universiti Sains Malaysia focuses on science-based fields including biology, chemical, mathematics, pharmacy and physics, as well as engineering and health science, and International Islamic University Malaysia focuses

on Islamic knowledge and its application in other fields including law, economics, engineering, medicine, ICT, and architecture. Various services and facilities are provided in universities, such as access to libraries, laboratories, computers, hostels, and so on, and most universities provide wireless access to the Internet within their campuses.

Many public and especially private universities are located in Klang Valley or Lembah Kelang, part of Greater Kuala Lumpur. Klang Valley includes the federal territories of Kuala Lumpur and the new administrative centre Putrajaya, as well as the neighbouring districts of Petaling, Gombak, Hulu Langat, Klang, Sepang and Nilai. It has a combined population of between 5 and 6 million people, the largest of Malaysia's regions (Selvaratham, Jeevamani, & Ramalingam, 2008). With almost one-sixth of the total Malaysian population, Klang Valley receives a great deal of economic, social, and educational development from the government. There are more than 15 universities located within Klang Valley.

Most public and private universities or higher learning institutions offered a mix of face-to-face and online learning to students (Mohamed Amin, 2011). The proportions differ from one university to another. Sufean, Hashim and Aziah (2008) found in their research on development agendas in Malaysian public universities that e-learning and blended learning were being implemented by universities to achieve quality instruction and learning. They also revealed that most universities regard the practice of having "comprehensive and advanced library services" to support their learning activities as highly significant (p. 17).

2.3 Blended learning in Malaysian HE

Prior to discussing the development of blended learning in Malaysia, it is important to note that the enormous expansion of public and private higher learning institutions in Malaysia over the past two decades is closely related to Malaysia's aspiration to be the education hub of the region. The journey towards achieving the inspiration began with Vision 2020, and the establishment of the MOHE in 2004 paved the way for the realization of this ambition.

2.3.1 Vision 2020: Malaysia as an education hub in the region

Vision 2020, as outlined by the fourth Malaysian prime minister Tun Dr Mahathir Mohammad in February 1991, embodied an ambition to turn Malaysia into a "fully developed country" by the year 2020. In particular, Tun Dr Mahathir (1991) envisaged an information-rich society:

> Malaysia has one of the best educational systems in the Third World ... Now, increasingly, knowledge will not only be the basis of power but also prosperity. Again we must keep up ... No effort must be spared in the creation of an information rich Malaysian society.

Since the Vision 2020 announcement in 1991, various efforts have been initiated by the government. The Multimedia Super Corridor and National Information Technology (IT) Agenda were initiated as ICT "strategic initiatives" to achieve the Vision. ICT is seen as a means to "accelerate information and knowledge development and consumption" (Tengku Mohd Azzman Sharefaddin, 2004, p. 6). The Multimedia Super Corridor has seven "flagship" projects. One of these, the "Smart School", was aimed to be the catalyst for educational transformation, moving away from memory-based learning to education that stimulates thinking, creativity and technology literacy to empower young learners to take responsibility for their lifelong learning (Malaysian Smart School, 1997; Mohammed Rashid & Mohd Nasir, 2003). The National IT Agenda was launched in 1996 to provide a foundation and framework for the utilization of ICT to transform Malaysia into a developed nation (Nor Edzan, 2008). It aimed to transform the nation into an information society, then into a knowledge society, and finally into a values-based knowledge society (NITC, 2009–2011). One of its strategic agendas was e-learning (Gazali, 2001).

The government recognised the potential of e-learning to build a knowledge society and realized the importance of ensuring that the infrastructure was adequate, providers were ready, educators were prepared, and students were receptive. This led to the formation of the National Consultative Council on E-Learning in 2003, comprising leaders of e-learning among higher learning institutions and the corporate sectors (Fitri Suraya, Zoraini Wati, & Zarina, 2005). One of the council's projects was the Malaysian Grid for Learning, which served as a national e-learning initiative to promote and support the lifelong learning agenda in Malaysia to accelerate the growth of knowledge society through the use of ICT (United Nations Development Programme, 2011). Multimedia

Super Corridor projects relating to HE were lacking, however. This led to criticism such as that by Vicziany and Marlia (2004), who commented that the National IT Agenda and the Malaysian Grid of Learning targeted Malaysians of every age, from kindergarten to adult learners and there was no focus on Malaysian HE. Major restructuring within the MOE led to the establishment of the MOHE in 2004 and subsequently increased e-learning efforts in universities.

2.3.2 The Ministry of Higher Education (MOHE)

The MOHE was established in March 2004 following a restructuring of the MOE. The MOHE's role was to create an encouraging higher learning environment that would produce graduates who were equipped with professional and/or vocational skills and competencies; who were innovative, espoused moral values, and who ultimately would contribute towards a value-based knowledge society as set out in Vision 2020. The MOHE focused education at polytechnics, community colleges, and universities, at both public and private higher learning institutions. It was expected to produce an excellent higher learning ecosystem in those institutions (MOHE, 2011a).

The MOHE established the Malaysian Qualification Agency to monitor courses offered by all public and private higher learning institutions. This role was previously played by the National Accreditation Board. The agency's approval must be sought by those institutions prior to commencing any course/programme. The government, through the agency, introduced a rating system known as SETARA to measure the performance of the undergraduate teaching and learning activities in universities and university colleges in Malaysia.

In order to achieve an excellent and sustainable HE hub by 2020, two important trends – the development of e-learning in higher learning institutions and the privatization of education (Asirvatham et al., 2004) – dominated the MOHE's strategies and action-plan. e-learning became one of the Critical Agenda Projects developed under *Pelan Strategik Pengajian Tinggi Negara*, translated as the National Higher Education Strategic Plan, implemented in August 2007 (MOHE, 2011b). From then on, e-learning activities in universities have received much attention. With regard to privatization of education, the MOHE has approved increasing numbers of private universities, and

nearly half of them (13 of 23) have been established since 2005, after the Private Higher Education Act 1996 was amended in 2003.

2.3.3 Blended learning in Malaysia

The formal education system in Malaysian higher learning institutions has gone through significant changes over the past few decades as it sought to respond to a changing policy environment which increasingly emphasized lifelong learning. The teaching and learning environment has evolved from face-to-face learning into distance, e-learning, online, and blended learning (see Section 3.3). Face-to-face learning was the norm in the country for many decades, as teachers and students met in a classroom and the practice remains in many universities until today. Distance learning began in the mid-1960s as a mixture of correspondence and face-to-face learning. Among the earliest institutions offering distance learning were Raffles College and Maktab Adabi (Yusuf & Sharifah Alwiah, 1999). Distance learning in universities was first introduced in 1971 when Universiti Sains Malaysia established its Centre for Off-Campus Studies. This university was the only local university to offer courses through distance learning until Universiti Teknologi Mara began introducing distance education in 1990. Later, other universities began offering distance education, including Universiti Kebangsaan Malaysia and Universiti Putra Malaysia (Abdulllah & Mansor, 2002). Most universities now offer distance education in order to provide opportunities for working adults to obtain a tertiary education. Through this type of education, working adults are able to undertake courses while remaining in full-time employment.

e-learning in Malaysia began in the early 1990s when face-to-face learning still predominated in the education system. Universiti Sains Malaysia and Universiti Teknologi Mara were among the first universities to establish e-learning initiatives in the early 1990s (Fitri Suraya et al., 2005; Rubiah & Jamilah, 2009). Multimedia University and UniRazak have made extensive use of e-learning since their establishment in 1996 and 1997, respectively (Rubiah & Jamilah, 2009). By early 2000, other universities were reported to be offering e-learning initiatives such as University Kebangsaan Malaysia, University Putra Malaysia, University Teknologi Malaysia and Universiti Malaysia Sabah (Mohamed Amin & Mohd Najib, 2010; Mohd Koharudin & Rozita, 2004). The move to include e-learning occurred because many universities were

optimistic that the use of e-learning could assist their teaching and learning processes (Rubiah & Jamilah, 2009).

Online learning has gradually spread to many universities in Malaysia (Mohamed Amin, 2011). Since blended learning is commonly regarded as a mixture of face-to-face and online learning, the proportions vary from one university to another. Many public universities such as Universiti Malaya, Universiti Kebangsaan Malaysia, Universiti Sains Malaysia, and International Islamic University Malaysia are predominantly face-to-face, while a number of private universities have more online learning than face-to-face learning. UniRazak is considered to be the first "virtual university" in the country. Open University Malaysia (OUM), established in 2000, was the first open and distance university that employed blended learning approaches which involved face-to-face tutorials, online learning and the use of print modules for self-pace learning (OUM, 2011b). Online learning as well as open and distance learning had a huge growth not only in Malaysia but also in Asia. Jung, Wong and Belawati (2013) identify about 70 providers of open and distance learning providers in Asia.

e-learning development in Malaysian universities was initially not a centralized effort and individual universities made their efforts independently. Initiatives to implement e-learning intensified when e-learning became a Critical Agenda Project under the MOHE. The Council of the Malaysian Public Higher Learning Institutions e-Learning Coordinators was established in 2007 to assist the MOHE in ensuring the success of e-learning initiatives. The council assisted the ministry in developing *Dasar e-Pembelajaran Negara*, translated as the National e-Learning Policy, which was launched in April 2011 (MOHE, 2011b). The policy stated that higher learning institutions in Malaysia had to use either "in total" or "blended learning" e-learning approaches (Mohamed Amin & Mohd Najib, 2010, p. 11).

The extent of e-learning development in Malaysia was recently established in an in-depth research report of e-learning status, trends and challenges in Malaysian higher learning institutions (Mohamed Amin, 2011). Over 10,000 participants consisting of e-learning administrators, lecturers and students from 30 higher learning institutions (20 public and 7 private higher learning institutions and three polytechnics) participated in the survey. The report found the following:

- by end of 2010, each participating institutions had a learning management system (LMS) and some form of e-learning training to lecturers, students and staff;
- most institutions have e-learning policy and a dedicated unit/centre/department to manage e-learning;
- half of the institutions had a dedicated unit/centre to manage e-content development;
- almost half had quality guidelines for e-learning;
- eleven out of the 30 institutions offered more than 50% of courses online; and
- only four institutions integrated their LMS with the library information system.

Mohamed Amin (2011) also reported that many higher learning institutions use open source software for their LMS, specifically Moodle due to its various functionalities and capabilities. The software allows integration with other systems including the library system. An example of a library system being integrated into a LMS was included in the report. Universiti Teknologi Malaysia integrated LMS with other systems, including the digital library (Figure 2). In this example, the digital library is among the components of the LMS.
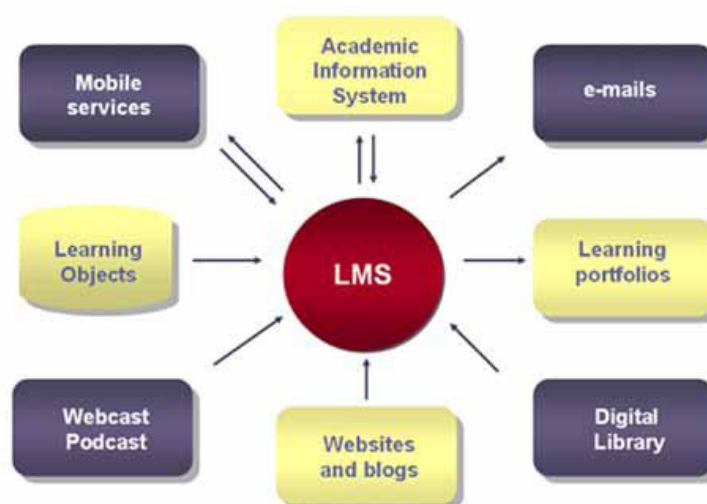
Figure 2: An example of a LMS being integrated with other systems: the case of Universiti Teknologi Malaysia (Mohamed Noor, Hanizam, & Jamalludin, 2010, p. 138)

Although Muhammad Amin's (2011) research contributed tremendously towards understanding the current status, trends, and challenges of e-learning in Malaysia, the research did not include librarians as participants, thus their voice was lacking in the report. We therefore have a little insight into librarians' role and contribution to e-learning and blended learning developments in Malaysian universities.

The privatization of HE in Malaysia provided options for citizens to gain paper qualifications. However, the quality of private higher learning institutions has been in doubt because some of them were established by business and political figures/organizations. There are around 500 private higher learning institutions in total (23 universities, 21 college universities, over 400 colleges and five overseas university branches) (MOHE, 2015). The MOHE encountered difficulties in ensuring private HE institutions' "profit-driven" orientations did not jeopardize the quality of their education. According to Wilkinson and Ishak (2005), private higher learning institutions "are likely to be less concerned with maximising the quality of education compared with the public universities since their focus is on making profits" (p. 381). Moreover, many private universities in Malaysia provide more blended learning than face-to-face learning to attract working professionals seeking paper qualifications.

Although the MOHE recognised the increasing role of e-learning in higher learning institutions and called for the integration of e-learning and digital library initiatives (MOHE, 2006), no research has been conducted on the integration of the digital library in such environments or the role of the digital library. This research aims to answer the MOHE's call for the integration and is driven by my motivation to explore digital library services in a blended learning environment. I next provide an overview of university libraries in Malaysia and how they are "becoming digital".

2.4 University libraries in Malaysia

An overview of Malaysian university libraries' development will allow the reader to develop an understanding of the changing landscape of libraries in the country. Libraries progressed slowly after Malaysian independence in 1957, but expanded greatly in the 1990s, in particular university libraries in line with ICT's progression in the country and the changes in higher learning institutions. This section provides an

overview of library development in Malaysia, focusing on university libraries and the evolution from traditional face-to-face libraries into digital libraries.

2.4.1 Early development of libraries in Malaysia

The planned development of libraries in the country began in the 1960s under the initiatives of the Malaysian Library Association, which submitted to the government the *Blueprint for Public Library Development in Malaysia*. The blueprint was prepared by Hedwig Anuar, the director of the Singapore National Library (Martin, 1974). It states that the role of the National Library of Malaysia is "to make available for the use of present and future generations a national collection of library resources; to facilitate nationwide access to library resources available within the country and abroad; [and] to provide leadership on matters pertaining to libraries" (Wedgeworth, 1993, p. 533). Following the establishment of many more universities since the 1980s, the National Library also established strong cooperation with university libraries through a forum known as Persidangan Perpustakaan Universiti dan Perpustakaan Negara Malaysia (PERPUN) or Conference of Academic Libraries & National Library of Malaysia (PERPUN, 2010).

The PERPUN forum has a digital focus and facilitates collaboration on matters related to "the creation of electronic libraries in educational institutions, latest electronic information services between academic libraries in Malaysia and cooperative material procurement schemes" (Perpustakaan Negara Malaysia, 2011), as well as the 'subscription of databases and publication delivery services between Malaysian Academic Libraries' (PERPUN, 2010). Since 2005, PERPUN has been actively involved in projects such as Malaysian Theses Online and the Union List of Serials, which are subscribed to by both public and private universities. The Malaysian Thesis Online project, in my view, has allowed Malaysian researchers to become aware of and appreciate scholarly publications produced by Malaysian researchers. The world can also access those publications, and some are available full-text.

2.4.2 University libraries in focus

Development of university libraries in Malaysia over the past three decades has been enormous. The number of university libraries has increased as the number of

universities has increased. University libraries are better funded and staffed than other libraries in the country (Wedgeworth, 1993), allowing rapid changes to occur, starting with library automation in the early 1980s. Many university libraries moved from card catalogues to machine-readable catalogues and later to online public access catalogues. The Malaysian Machine-Readable Catalogue project began in the late 1970s (Lim, 1980).

In the 1990s, the number of libraries becoming fully automated dramatically increased due to the introduction of ICT in the country. For example, as reported by Raja Abdullah and Mohd Hanafiah (1996), 16 academic libraries were automated in 1994. A year later, that number had increased to 30 libraries. By the 1990s, many libraries in the country were actively involved in library automation. University libraries in particular began to develop applications for automating the purchase, cataloguing and circulation of library materials, thus leading to the development of an integrated library management system (Raja Abdullah & Mohd Hanafiah, 1996). Many libraries used turn-key integrated systems, while some libraries used in-house library systems such as the Computerized Library System or *Sistem Perpustakaan Berkomputer* (Raja Abdullah & Nor Aziah, 1992).

The implementation of quality management and the creation of library standards/policies/guidelines was also a significant development among libraries in the country. As libraries play a vital role in HE, acquiring quality standards such as ISO 9000 was a trend among university libraries. Many libraries gained ISO certification in the 1990s. Moreover, the Malaysian Qualification Agency (MQA) has also produced guidelines that state all university libraries "must have adequate and up-to-date reference materials and qualified staff that meet the needs of the programme and research among academic staff and students" (MQA, 2008, p. 29). Standards for libraries of private colleges and university colleges have also been prepared by PERPUN to ensure private universities provide sufficient resources and services and implement quality management and related services.

The emergence of Library and Information Science schools in Malaysia also marked the progress of libraries in the country. Prior to 1992, only Universiti Teknologi Mara offered library education at the diploma and certificate levels (Abdoulaye, 2004). In 1992, the International Islamic University Malaysia introduced their Master's in Library

Science program, and Universiti Malaya and Universiti Kebangsaan Malaysia followed in 1995 (Nor Edzan & Abrizah, 2003). Universiti Teknologi Mara in particular provided the training for library and information science professionals in Malaysia with a high student intake, many academic staff, and a variety of education levels (from diploma to PhD studies) (Adnan, Norhayati & Wan Nor Haliza, 2006). Its Faculty of Information Studies has incorporated many IT subjects in their curriculum in order to equip future librarians with knowledge and skills needed in the "digital era" (Laili & Mad Khir Johari, 2004). These changes in Library and Information Science schools reflect the changing landscape in which university libraries are "becoming digital"; I turn to this transition next.

2.4.3 Going digital: University libraries beyond physical boundaries

The digital evolution of university libraries in Malaysia has been a gradual process. In most cases, the physical libraries have remained and continue to expand. However, the digital presence of university libraries has gradually increased along with the development of digital media, electronic resources and especially the Internet. Based on my professional experiences and the literature review conducted for this study, the major aspects of this transformation are:

1) *Electronic resources and databases development*

The development of electronic resources and databases in libraries began with the development of media resources (Johnson & Magusin, 2005). Initially, information resources were kept in printed media such as books and journals. Starting with audio-visual, electronic resources began to accumulate with the invention of floppy disks and diskettes, and later CD-ROMs. Many printed materials became available in electronic form. With the emergence of the Internet, many electronic resources were located in separate information warehouses and access was provided through the network for libraries that subscribe to or purchase them.

Electronic publications increasingly grew among database providers and university libraries became constant customers (Jeng, 2005; Lang, 1998). Many libraries changed their purchasing policies. Most libraries continued to purchase physical resources due to continuous demand for physical materials from users. At the same time libraries

purchased or subscribed to electronic resources to provide simultaneous access to multiple users, to save physical space, and/or to provide full-text resources to users from the comfort of their home. However, there are important issues such as the preservation of digital resources, digital storage, copyright and budget, and librarians have to make decisions which suit their resources and their customers' information needs (Johnson & Magusin, 2005).

Academic libraries in Malaysia share resources with one another. For example, RM 1.4 million (approx. US$445,000) was spent by MOE in 2002 and RM 1.9 million (approx. US$ 606,000) in 2003 to purchase three databases (ProQuest, EBSCOHost and Science Direct) to be shared among 13 PERPUN member universities (Kaur, Kiran, & Singh, n.d.). This represents a huge increase in expenditure on electronic resources as university libraries increased their electronic resources.

In-house electronic resources or institutional repositories were developed because university libraries realized the importance of making available the increasing resources produced by their respective universities in digital format. Many libraries digitized and developed repository resources which normally used open software and were made them available via their websites, either as bibliographic citation or links to full text. Subsequently, their digital presence is expanding. Universiti Kebangsaan Malaysia, for example, established its institutional repository in 2006 using Eprint and by July 2011 it had 23,954 academic works of various kinds such as books, book chapters, journal articles, proceedings, seminar papers, etc. published between 1991 until 2011 (Harith Faruqi, Azmah, Noor Farhana, & Zanariah, 2011). International Islamic University Malaysia has developed what it calls Digital Service which includes resources produced by or related to the university including university publications, news about the university, examination papers, academic staff publications, and special collections such as the Islamic Law and Islamic Economics collections (IIUM Library, 2011).

The role of PERPUN in electronic resources development in the country is significant. PERPUN (2010) has completed a number of projects:

- *Malaysian Theses Online*: provides bibliographic information of all thesis produced by participating Malaysian universities, covering a wide range of subjects.

- *E-Repository*: provides links to all institutional repositories of Malaysian universities.
- *Union List of Serials*: a portal that list the titles of all serial publications subscribed by all academic libraries in Malaysia.
- *Malaysian Gateway Internet Resources*: provides links to various Internet resources related to Malaysia.

The increase of electronic resources made available by Malaysian university libraries has increased their digital presence, as most of the resources may be accessed by their library users anytime, anywhere.

2) Library websites/portal development

University libraries used to be associated with users who visited the physical buildings. However, this has changed with the introduction of websites and web portals. According to Kaur (2006), during the initial emergence of Internet, university libraries in Malaysia began creating static websites to inform users about libraries in general, their collections, services and facilities. Then libraries began to incorporate web-based online public access catalogues into their websites. Subsequently, library systems evolved into web-based library systems whereby content management systems were integrated into the library systems, thus expanding library services. Studies by Kaur (2000) and Lee and Teh (2001) indicate that most university libraries in the country were fully automated by the early 2000s, providing access to web-based catalogues, online databases and various electronic resources via their respective websites.

Library websites allow the provision of 24/7 library access, overcoming the physical limitations of library operating hours. Since websites allow users to access library information and retrieve resources, many libraries in Malaysia have created a separate managerial division to oversee library systems, website and IT-related matters. They also organize training to upgrade librarians' IT knowledge and skills. Some libraries employ computer and IT professionals to be part of the library team. Furthermore, Library and Information Science schools such as those in Universiti Teknologi Mara and Universiti Malaya have incorporated IT and website development courses in their library curriculum (Nor Edzan & Abrizah, 2003; Laili & Mad Khir Johari, 2004) in

order to meet the changing nature of contemporary librarians, who need to know how to establish a digital presence and to market library resources and services.

3) Use of technologies and web tools

Librarians use technologies as tools to fulfil the information needs of users in the quickest and most convenient way possible. Hence, they become fast adopters of technology, both hardware and software, as well as telecommunications technology related to libraries. The increasing use of radio frequency identification and self-check machines among libraries in Malaysia, for example, is due to the significant number of library materials circulated among university communities. Although electronic resources are increasing, libraries typically have a large number of computer terminals with Internet access within library premises, sometimes with printing and scanning services.

Many libraries in Malaysia have adopted at least one of web tools/applications collectively known as Library 2.0, such as Facebook, Twitter, blog tools, SlideShare and YouTube. This is clearly evident from a perusal of their websites. I will explain the Library 2.0 concept in detail in Section 3.3. According to PERPUN (2010), many university libraries use Facebook and some of them use blogs. Table 1 illustrates the use of Blog by some libraries.

Table 1: Some Malaysian libraries' blogs and their entries/hits

University	Blog Name	Began	No. of entries		No. of hits		Blog tool
			Oct. 2011	Aug. 2014	Oct. 2011	Aug. 2014	
University Malaya	UM Library Weblog	Aug. 2008	15	36	23,532	37873	WordPress
University of Technology Mara	PTAR Blog	Nov. 2008	193	360	–	156177	Blogger
OUM	OUM Library Blog	Jan. 2009	15	-	–	–	Wpzoom
Universiti Sains Malaysia	Jom Baca @ PHS	May 2009	24	63	13,873	35,907	WordPress
	Skuad Pelanggan PHS	March 2011	7	–	3,055	5,063	WordPress

According to Rizalawati Ayu and Abrizah (2011), Facebook is a popular among Malaysian libraries where it is commonly used as a platform for library promotion and communication with users. They found that some libraries such as University Malaya, International Islamic University Malaysia and OUM were "skaters" or those who were in the "strong position of using all Facebook functionalities" (Rizalawati Ayu & Abrizah, 2011, p. 9). They suggest that Facebook allows libraries to market and create awareness of library services to library users. Library 2.0, in my view, has actually enabled librarians to reach and interact with their users beyond the physical library building. The penetration of both the Internet and Facebook in Malaysia is increasing, with Internet penetration reaching 60.7% of the population and Facebook penetration 46.6% in 2012 (Internet World Statistics, 2014).

4) *The effective communication for reference and loan services*

With the emergence of the Internet and Library 2.0, libraries and their users communicate with one another by using means other than face-to-face consultation, such as telephone, emails, electronic forms, text-messaging, online chatting and audio/video conferencing. Reference services in particular have evolved to include digital reference services whereby "asynchronous transactions (e-mails, web forms and 'AskALibrarian services') and synchronous transactions (text-based chat, video-conferencing or web-cam services and 'digital reference robots')" (Wan Abdul Kadir & Singh, 2005, p. 8) permit reference services to reach remote users in both real-time and delayed communication. A number of libraries offer online chatting (for example Universiti Sains Malaysia and OUM) to support reference services. In other words, both synchronous and asynchronous communication techniques are used by libraries in Malaysia (Norasieh & Fadzilah, 2011).

In addition, loan services have been enhanced by online requests/renewals/recalls. Users receive library notifications (such as item overdue or availability of requested items for pick-up) via phone calls, emails, and even text messages. Universiti Utara Malaysia, for example, has developed a Mobile Based Library Loan Services prototype to enable library users to reserve and renew books via mobile devices (Alzaza & Abdul Nasir, 2007). Furthermore, interlibrary loan and document delivery services are made easy through online forms and the delivery of full-text articles directly to requesters' email.

5) ICT skills and competencies for information professionals

As library users increasingly become computer and Internet savvy and ICT becomes indispensable in teaching and learning in HE institutions, librarians must have the skills and competencies to make library resources easily accessible to users. Several Malaysian studies have identified competencies which librarians need in the digital age. Ahmad Bakeri (2005) investigated IT competencies in Malaysian academic libraries and identified the following competencies as important for information professionals: IT basics, word-processing, email, Internet and intranet, graphics, presentation, publishing, spreadsheet and project management, databases, system maintenance, web design, and system analysis and programming. Raja Abdullah (2004) identified five categories of competencies needed by information professionals in the digital era: legal, organizational, methodological, IT, and system design.

The changes in the curriculum for the Master's in Library and Information Science programmes of University of Technology Mara and University Malaya indicate the digital shift of libraries and the need to prepare future librarians with ICT skills and competencies. At University Malaya, for example, "Technologies for Information Management" became a core course in 2000 to replace "Computer Applications in LIS". Elective courses such as "Digital Libraries", "Multimedia System Development", and "Electronic Publishing" indicate the current need for librarians to be digitally savvy and to keep abreast with ICT advancement (Nor Edzan & Abrizah, 2003).

6) The information literacy development

Information literacy programmes in Malaysian university libraries, such as user education and library skills workshops, tutorials on specific databases, and library orientations to teach users to locate, retrieve, evaluate and effectively use information, have gradually incorporated ICT into their programme content and delivery methods. Basri (2003) reports that in the mid-1990s library users favoured face-to-face information literacy programmes and this was followed by computer-assisted instruction. By the early 2000s, web-based tutorials began to be implemented (Sakinah, 2005) in many university libraries. According to Martin (2008), major parts of information literacy programmes' content are related to the needs for today's students to be digitally literate. The government's concern for information literacy in HE

institutions (Mohd Sharif, Nor Edzan & Zainab, 2005) is reflected in the focus of university libraries on teaching users to locate, retrieve, evaluate and effectively use information.

Based on the above six aspects, in my view, most university libraries in Malaysia may be considered as "hybrid" libraries (Rusbridge, 1998) because their physical presence remains and expands while simultaneously their digital services gradually increase. Libraries have increasingly included digital services and their resources can now be accessed ubiquitously by users. Although very few libraries call themselves a digital library, most university libraries in Malaysia are "becoming digital" as their digital presence significantly grows.

The transformation into a digital library is not an easy journey. A plethora of challenges and issues exist along the way, such as those reported by Malaysian studies ranging from budget constraints, management support, staff skills and competencies, usability, publicity and marketing strategy, copyright and legal issues, standards, infrastructure, hardware and software, and access and preservation issues (Harith Faruqi et al., 2011; Raja Abdullah & Mohd Hanafiah, 1996; Zahidi, 2010). However, attempts to stay relevant to university teaching and learning, to create best practice, and to be innovative continue in order for librarians to serve users as conveniently as possible (Sharifabadi, 2000).

Research on Malaysian digital libraries has been increasing over the last decade (see e.g. Abdul Manaf & Amer, 2010; Abrizah & Zainab, 2007; Arinawati & Habsah, 2010; Nor Edzan & Abrizah, 2004; Masnizah & Zawiyah, 2003; Norasiah, 2010; Wan Abdul Kadir & Singh, 2005). However, no study exists on the integration of digital library services in blended learning environment in Malaysian HE. As blended learning is becoming a practice in many HE institutions in Malaysia (Mohamed Amin, 2011), this research is timely in responding to the MOHE's (2006) call for an integration of "e-library services, e-learning services and computing services to facilitate collaboration and learning" (p. 116).

2.5 Chapter summary

This chapter has discussed the context of this study; that is, the development of blended learning and digital libraries in Malaysian universities. The advancement of ICT has transformed the learning environment in HE. With Vision 2020 and government efforts to enhance HE in the country to becoming an educational hub in the region, the presence of blended and ICT-mediated has greatly increased. Simultaneously, academic libraries in Malaysia have transformed into "digital libraries" offering augmented digital services and incorporating ICT in the provision of library services to users. This is evident from the above discussion of the major aspects in the transformation.

It is important to note that the terms "blended learning" and "digital library" have various meanings and are understood in different ways. In next chapter, I contextualise the terms and concepts used in this research, present a review of the literature on both digital libraries and blended learning, and demonstrate the knowledge gap that this research is designed to fill.

CHAPTER 3: LITERATURE REVIEW

3.1 Introduction

The purpose of this research was to explore various perspectives on the integration of digital library services in blended learning environments in Malaysian HE. Specifically, I sought to understand the perspectives of both providers (librarians) and users (teachers and students) of digital library services in HE. This study was informed by a range of ideas and previous research on digital libraries, digital library services, blended learning, and their integration. This chapter provides a substantial literature review, firstly in relation to the terms and concepts which underpin the research, and secondly in relation to current empirical research on both digital library services and blended learning environments, in order to demonstrate the knowledge gap this research is designed to fill.

The chapter is divided into three sections. The first section analyses the term "digital library". It begins with a brief historical overview, presents two perspectives on the digital library, and then gives my definition based on the literature review and my perspective as a librarian. My definition sees the digital library as services/organizations rather than system/content. I then compare traditional and digital libraries and discuss key aspects of digital libraries, the types of services, the challenges involved, and the current trends among university libraries.

In the second section, I conceptualise "blended learning" and examine various perspectives before presenting my own. I also discuss certain trends and issues in HE and the implications for library services in blended learning environments.

The last section analyses current empirical research on both digital library services and blended learning environments and gives particular attention to Malaysian research. My analysis demonstrates the scarcity of Malaysian research on the integration of digital library services in blended learning environments and it is this knowledge gap this research aims to fill.

3.2 Positioning digital library services

The concept of libraries as systems for storing knowledge arose hundreds of years ago (Lerner, 1998). However, the concept of having a technology-driven system (using machines) whereby humanity's knowledge could be stored, searched and displayed was first developed by Bush (1945), who introduced the "Memex", a mechanized system based on microfilm technology. This concept was further advanced by Licklider (1965), who envisaged a computer-based library system or "Pro-cognitive System" which transmitted information "without transporting materials" and "not only present[s] information to people but also process[es] it for them". His system was "a meld of library and computer" (p. 6).

Librarians were early adopters of personal computers when they began to emerge in the 1970s (Johnson & Magusin, 2005). The development of computer technology during this time has impacted almost all aspects of the library profession, including the ways in which librarians acquire, organize and manage library resources and the ways in which library services are delivered to customers. Librarians have been "digital" for some time, but it was not until the 1990s that the concept of digital libraries began to receive significant attention. The term 'digital library' was first used in print in 1988 in a report by the U.S. Corporation for National Research Initiatives (Kahn & Cerf, 1988). The report uses the term to refer to "a seamless blend" of archives with temporary information and knowledge, "connected into a rich network of public, personal, commercial, organizational, specialized and national digital libraries" (p. 3).

3.2.1 Perspectives and definitions

There is no single definition of the term "digital library". Synonymous terms include "virtual library", "library without walls", "electronic library", "ubiquitous library", "hybrid library", "brick and click library", "cyberlibrary", "cybrary" and "ebrary", and there are other related terms such as "library gateway" and "portal". Attempts to define it vary according to researchers' backgrounds, disciplines and professional expertise, and a plethora of definitions therefore exist. The literature outlines two main perspectives and in many instances, authors refer to Borgman (1999, 2000) to explain these perspectives (e.g. Johnson & Magusin, 2005; Rowlands & Bawden,1999; Saracevic, 2000].

The first perspective has a technical focus, and is put forward primarily by digital library researchers from computer science, information systems and computer engineering backgrounds. The emphasis is on digital libraries as content collected on behalf of user communities. As sets of electronic resources and associated technical capabilities for creating, searching, and using information, digital libraries are extensions and enhancements of information storage and retrieval systems that manipulate digital data in any medium (text, images, sounds, and static or dynamic images) and exist in distributed networks. The content includes data, metadata that describe various aspects of the data (e.g. representation, creator, owner, reproduction rights), and metadata consisting of links or relationships to other data or metadata, whether internal or external to the digital library (Borgman, 2007).

A second perspective focuses on digital libraries as institutions/services and addresses the practical challenge of transforming library institutions (Borgman, 2007). As institutions/services collected and organized by and for a community of users to support their information needs, digital libraries are an extension, enhancement and integration of a variety of information institutions such as physical places where resources are selected, organized, preserved, and accessed in support of a user community's information needs. These information institutions include not only libraries but also other institutions such as museums, archives, schools, laboratories, etc. Borgman (2007) also mentions a third perspective – digital libraries as websites and databases – but I have disregarded this in this research since it very much resembles the first perspective. For her, a digital library is "an extension, enhancement, and integration both of information retrieval systems and of multiple information institutions ... the scope of digital libraries' capabilities includes not only information retrieval but also creating and using information" (p. 48).

The range of definitions for 'digital library' is illustrated in Table 2. Those set in italics are congruent with the perspective that perceives the digital library as services/organizations. My analysis of these definitions identified that more research has focused on the system/content perspective. I acknowledge this situation but emphasize there are other important aspects of the digital library, particularly when a digital library is viewed from a holistic point of view. These aspects will be discussed in the next section.

Table 2: Digital library definitions.

Source	Definitions
Garrett (1991)	A comprehensive electronic "highway" which would link information to the widespread community of users.
Gapen (1993)	*The concept of remote access to the contents and services of libraries and other information resources, combining an on-site collection of current and heavily used materials in both print and electronic form, with an electronic network which provide access to, and delivery from, external worldwide library and commercial information and knowledge sources.*
Lynch and Molina (1995)	A system that provides a community of users with coherent access to a large organized repository of information and knowledge.
Lesk (1997)	*Organized collections of digital information. They combine the structuring and gathering of information, which libraries and archives have always done, with the digital representation that computers have made possible*
Kuny and Cleveland (1998)	*Include a collection of both digital and non-digital objects and include all the process and services – collection development and management, subject analysis, index creation, reference work and preservation – that are the backbone and nervous system of contemporary libraries.*
Leiner (1998)	Collections of information objects and services that support users in dealing with information objects, and the organization and presentation of those objects, available directly or indirectly, via electronic/digital means.
Lang (1998)	The use of digital technologies to acquire, store, preserve and provide access to information and materials originally published in digital form or digitized from existing print, audio-visual and other forms.
Digital Library Federation (1998)	*Organizations that provide the resources, including the specialised staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity or, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community/set of communities.*
Chowdhury and Chowdhury (1999, 2002)	*An assemblage of digital computing, storage and communications machinery together with the content and software needed to reproduce, emulate and extend the services provided by conventional libraries based on paper and other material means of collecting, cataloguing, finding and disseminating information. A full service digital library must accomplish all the essential services of traditional libraries and also exploit the well-known advantages of digital storage, searching and communication.*
Arms (2000)	A managed collection of information, with associated services, where the information is stored in digital formats and assessable over a network.
Marchionini (2000)	*Extension and augmentation of physical libraries.*
Bargellini and Bordoni (2001)	The creation and management of electronic information sources, the movement of information across global networks and the effective use of this information by a wide range of users.
Witten and Bainbridge (2003)	A focused collection of digital objects, including text, video, and audio, along with methods for access and retrieval, and for selection, organization and maintenance of the collection.

Masnizah and Zawiyah (2003)	*A vast and organised collection on digital information in various form (combination of text, graphic, audio and video) which allows timeless and borderless access through network with optimum use of information technology.*
Secker (2004)	*Collections of information and materials originally published in digital form or digitized from existing print, audio-visual and other forms by using digital technologies, that enable any citizen to access all human knowledge anytime and anywhere, in a friendly, multi-model, efficient, and effective way, by overcoming barriers of distance, language, and culture and by using multiple Internet-connected devices.*
McLean and Lynch (2004)	One of the components of the broader information environment which include records management, publishing, and scientific and scholarly data management.
Jeng (2005)	*An organized and managed collection of digital information; are accessible over a network; and may include service.*
Candela et al. (2006)	Systems that are very heterogeneous in scope and provide very different functionality. These systems span from digital object and metadata repositories, reference-linking systems, archives, and content administration systems (mainly developed by industry), to complex systems that integrate advanced digital library services (mainly developed in research environments).
Henderson (2006)	Library and information services delivered via the Internet.
Sharifabadi (2006)	A federation of library services and collections that function together to create a digital learning community
Cabrerizo, López-Gijón, Ruíz and Herrera-Viedma (2010)	Information collections that have associated services delivered to user communities using a variety of technologies. The information collections can be scientific, business, or personal data, and can be represented as digital text, image, audio, video, or other media.
Abd Latif, Adnan and Zamalia (2011)	Electronic collections which are much richer in content and more capable in functionality than databases or information retrieval system.
Stern (2014)	Digital library is not a single entity and requires technology to link other resources. The linkage between digital libraries and information services are transparent to the end users. Universal access to digital libraries and information services is a goal. Digital library collections are not limited to document surrogates, they extend to digital artifacts that cannot be be represented or distributed in printed format.

I constructed my own definition based on my experience as a university librarian, and the definitions listed in Table 2, especially those of Gapen (1993), Jeng (2005) and the Digital Library Federation (1998):

A digital library is a form or concept of library organizations/services that provide remote and ubiquitous access to their contents, resources and services, that are selected, organised, stored, preserved and managed by specialised staff, who optimize technology usage, and combine an on-site collection of current and heavily used materials available in a variety of formats (print, electronic, etc.), with an electronic network which provides access to, and delivery from, external worldwide library and commercial information and knowledge sources.

My definition is congruent with those of researchers who have adopted the services/organization perspective.

The library concept has gone through various transformations throughout the centuries. Conventional libraries accumulate and maintain printed and non-printed materials which are not easily accessible. They have physical boundaries and are only accessible within library operation hours. Table 3 presents a comparison of traditional and digital libraries. In my view, a digital library has greater potential to facilitate learning, as users can fulfil their information needs anytime, anywhere.

Table 3: Comparing traditional and digital libraries

Aspects of comparison	Traditional libraries	Digital libraries
Physical boundaries	Specific space/building	Not specific
Collections/resources	All types, printed, audio visual and digital resources	Mostly digital but also include other types of resources
Access to library resources	Limited to library opening hours	Ubiquitous (anytime, anywhere). They bring library to users
Cost	Expensive (material, building, human resources, management, etc.)	More expensive in the beginning but lower long-term cost
Current of information	Update consume time and resources	Easier to update
Searching, browsing and retrieval	Manual	Use computer, i.e. enhanced searching, browsing and retrieval

Source: Arms (2000).

Access is a significant aspect of the digital library but there are other aspects which simultaneously contribute towards its improved functioning, which are discussed below.

3.2.2 Key aspects of a digital library

The following key aspects have been arrived at based on a synthesis of ideas from authors such as Anderson and Maxwell (2004), Borgman (1999), Herold (2004), Ochs and Saylo (2004), Sharifabadi (2006), Secker (2004) and Tedd and Large (2005), and other authors listed in Table 2. The seven key aspects shown in Figure 3 are constructed from a holistic and pragmatic standpoint, viewing the digital library as a whole. This is in alignment with my services/organization perspective on the digital library.

Figure 3: Seven key aspects of a digital library

1) *The purposes of the digital library.*

Each digital library is created to serve specific purposes (or objectives/aims). Purposes include: to provide remote access of on-site collection of current and heavily used materials in both printed and digital form (Gapen, 1993); to offer intellectual access, preserve the integrity of digital contents and ensure their persistence over time (Digital Library Federation, 1998); and to provide better delivery of information than was possible in the past (Arms, 2000). The digital library does not replace existing physical collections, but enhances or augments the usability and accessibility of information to meet users' information needs (Marchionini, 2000).

2) Role of information professionals and librarians.

A digital library is created by information professionals, librarians, specialised staff, and experts of many disciplines using the technology (hardware and software) to enable collections of information to be stored in digital formats and be retrieved over networks (Arms, 2000; Digital Library Federation, 1998). These people can be from outside the organization/library when digital library projects are outsourced or they can be electronic publishing companies. They normally follow certain steps, standards and procedures in order to select, structure, organize and distribute digital resources (Digital Library Federation, 1998); and make them available to users and archive digital contents so that purposes of creation are achieved (Arms, 2000). Their work involves associated areas such as managing library resources, budget, storage and preservation, marketing, and carrying out planning.

3) A digitization process.

Technically, the process involves attaching or uploading contents that are readily available in digital format to the library homepage/website, and digitizing contents from text/printed materials using certain software/hardware and later uploading them. The digitizing of contents is made possible through the availability of scanners and optical character recognition software (Anderson & Maxwell, 2004). The process is preceded by a selection process of identifying appropriate contents which is done based on users' demand for the information, the importance and appropriateness of contents to be preserved in digital format, and the need to abide by the copyright law. Contents are categorized and managed in a manner that provides easy retrieval (Arms, 2000) and this normally involves the creation of contents typology which is usually supported by features of the software used in the digitization process.

4) Contents of the digital library.

The digital library contents or objects vary according to the institutions it serves. They include data, metadata that describe various aspects of the data, and metadata that consist of links or relationship to other data or metadata, whether internal or external to the digital library (Borgman, 1999, 2000). They come in various formats including text, audio, video and image, and include various types of collections (such as e-books, e-journals, databases and journal indexes, scholarly commons, course reserved materials

and online databases). The digital library also provides various services such as loans, library catalogue, inter-library loan and document delivery, information literacy, and reference services (Borgman, 2000). In the case of electronic resources made available by commercial providers or database developers, the contents are normally categorized according to subject areas. Libraries normally choose contents which suit their institution courses/programmes and information needs (Rawland & Bawden, 1999).

5) *Access to the digital library*.

Access is vital so backup servers are normally created to enable 24/7 accessibility to contents. The digital library is accessed via the library homepage or website. Access is possible via system/s equipped with searching interfaces and retrieval features following certain standards, specifications and access management. Internally developed digital resources are locally kept by libraries, while resources provided by external providers are governed by authentication (Johnson & Magusin, 2005).

6) *Users accessing the digital library*.

Most digital libraries exercise usage control and authentication such as ID control using a proxy server for a defined community of users. Access is normally enabled by a login and password and off-campus access is controlled using an authentication system. Few libraries allow general users to access digital contents. A common practice is a combination of allowing general users to access some part of the services and resources, and exercising usage control over specific digital objects. This practice is mainly governed by copyright issues and library policies (Borgman, 2000, Johnson & Magusin, 2005).

7) *Usage of the digital library*.

Usage of the digital library contents is monitored and evaluated from time to time. Evaluation is significant because it allows continuous improvement and identification of best practices, and ensures the budget for the library will remain or increase (Marchionini, 2000; Saracevic, 2000). A special purpose committee may be formed to evaluate digital library usage, using the previous six components as a point of reference in the process.

The identification of above key aspects of digital libraries revealed niches or areas to be investigated by this research. I discuss next two classifications of digital library services.

3.2.3 Classification of services

The term "services" in "digital library services" requires further clarification. I use this term because most academic libraries have now augmented their services to include digital library services (Johnson & Magusin, 2005; Marchionini, 2000). While the abovementioned seven key aspects provide a holistic view of the digital library, digital library services represent the core business of a digital library, which is the provision of services. I classify digital library services into two types: the provision of various customer and information services; and the provision of access to various kinds of library resources.

Figure 4 illustrates the augmentation process from the traditional to the current state of services. The arrows in indicate the direction of the augmentation or development process.

The first type of service, the provision of various customer and information services, includes but is not limited to the Online Public Access Catalogue (OPAC), loan services, interlibrary loan and document delivery services, information literacy and user education, and reference services. The second type of service, provision of access to various kinds of library resources available in physical or digital formats, includes but is not limited to e-books, online journals and databases, a local repository, electronic and Internet resources, course reserve materials, audio-visual materials, etc.

1. Delivery of various customer and information services

Catalogue card

Automated Machine Readable Catalogue (MARC)

Online Public Access Catalogue (OPAC)

Loan Services (borrowing, returning & recall)

Continue with IT applications such as txt and email alert, self checkout machines, automatic check-in on drop-off service, etc.

Interlibrary loans and document delivery services

Continue with faster process, e.g. Request via email & online form; services available via cooperation among academic libraries or corporate agencies such as Infotrieve Australia

Information Literacy

Continue with emerging other types of literacy such as computer literacy, internet literacy or digital literacy. Online tutorial co-exist with f2f info literacy workshop

Reference services

Continue with advanced application of technology such as online chatting, online forms, email, etc. allowing synchronous and asynchronous interaction. 'Digital reference services' emerge

2. Access to various library resources available in physical and/or digital format and accessible in the library and/or over the Internet

Books

E-books

Audio visual

Video on demand

Journal and serials

Online journals and databases

Course reserve

Digitized and available online

Institution repository

Digitized and available online

Electronic resources emerge

Internet resources emerge

Figure 4: Two types of digital library services

3.2.4 Challenges and issues of providing digital library services

Digital library services are not simply about access to and use of information (Greenstein, 2000). They involve the full range of administrative, business, and curatorial functions required by the library to manage, administer, monitor engagement with, and ensure fair use of its collections whether in digital or non-digital formats located locally or off-site. Greenstein (2000) identifies five main challenges of providing digital library services, namely: *architectural and systems challenges*, which involve technical and technological changes and expertise to find appropriate core systems components (e.g. search and retrieval tools, user interface, and user authentication); (b) *standard and best practices*, which are needed to guide decisions and evaluations for continuous improvement; (c) *collection development*, which involves cost, process of digitization when applicable, copyright and licensing issues, system requirements, hardware/software/networking requirement, and availability of user support system; (d) *penetrating and mobilizing user communities*; and (e) *long-term access to digital information*.

Duncan and Ekmekcioglu (2003) add three other challenges, namely: (a) the integration of systems and the issue of interoperability; ineffective guidelines and standards in areas such as authentication, security, intellectual property and copyright; (b) institutional structure and attitudes towards the management of change in the education sector; and (c) poor collaboration and liaison between librarians, academics, IT departments and learners. This research has the potential to determine whether those challenges exist in integrating digital library services in blended learning environments, and if they do, why and how this happens. It may also identify other possible challenges and possibly provide solutions to existing challenges.

Despite those challenges, several important issues worth exploring include users' information needs and expectations in digital environments (Bawden, 2006), technical and strategic issues associated with interoperability, content management and digital resources development (Chowdhury & Chowdhury, 2002, Markland, 2003), marketing of digital library services (Henderson, 2006), as well as human and organizational issues (McLean & Lynch, 2004). With regards to user information needs and expectations in digital environments, researchers suggest the following: comprehensiveness (include everything); accessible (everything immediately available);

immediate gratification (speed of response); seamless; ease of use (single interface); and multiple formats (text, images, sound, etc.) (Brophy & Bawden, 2005; Fast & Campbell, 2004; Griffiths & Brophy, 2005; Novotny, 2004, Xia, 2003).

3.3 Blended learning environment

A plethora of perspectives exists on what and how people blend to create blended learning environments and there is no consensus about its definition. One of the most widely adopted methods involves a combination of face-to-face learning with online or technology mediated learning (Graham & Dziuban, 2008; Stacey & Gerbic, 2009a). Various related terms exist, including e-learning, online learning, virtual learning, flexible learning, open, and distance learning, and these closely interrelate with one another. In this thesis I use the term "blended learning" and defined it as "a thoughtful fusion of face-to-face, online, and self-paced learning". From my analysis, similarities and differences between those terms occur on several dimensions including the pace, time and location of the learning, the media/technologies used in learning transactions, and learners' fidelity and autonomy towards learning. A brief discussion of the various terms found in the literature follows.

3.3.1 Concept

The concept of blended learning is viewed differently by different researchers. Blended learning, according to Garrison, Kanuka and Hawes (2003), is a blend of traditional teaching approaches (i.e., face-to-face classroom learning activities) and learning technologies (i.e., Internet information and communication technology), resulting in a reduction of seat time. According to Garrison and Cleveland-Innes (2005), a "hybrid course" or blended learning is "a combination of face-to-face instruction with technology-mediated instruction" which highlights "the ongoing convergence of two archetypal learning environments: the face-to-face environment with the distributed (or technology-mediated) environment" (p. 375). A significant portion of learning activities has been moved online, and time traditionally spent in the classroom has been reduced but not eliminated. The goal of these blended or hybrid courses is to join the best features of in-class teaching with the best features of online learning to promote active, self-directed learning opportunities for students with added flexibility (Garrison &

Cleveland-Innes, 2005; Vaughan, 2007). As a result, asynchronous media such as email, forums, blogs or wikis are deployed in conjunction with synchronous technologies, commonly text chat or audio (MacDonald, 2008). Heinze (2008) coined the term "blended e-learning" which he used to refer to "the learning which takes place through a combination of face-to-face facilitated learning, e-learning and self-study, and which is designed, delivered and developed with a focus on the learning context: the learner, the programme constraints and the pedagogic beliefs" (p. 266).

Online learning, e-learning or virtual learning is an important part in blended learning. Beamish et al. (2002) define e-learning is as "a wide set of applications and processes, allied to training and learning, that includes computer-based learning, online learning, virtual classrooms and digital collaboration [which are] delivered by a variety of electronic media including the intranet, Internet, interactive TV and satellite" (p. 105). Homan and Macpherson (2005) and Sambrook (2005) see e-learning as any learning activity supported by ICT. It covers "any learning materials from CD ROMs on stand-alone PCs to intranet/Internet networked systems with down-loadable and interactive materials" (Homan & Macpherson, 2005, p. 76). Ally (2004) defines online learning as "the use of the Internet to access learning materials; to interact with the content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience" (p. 17). Secker (2004) meanwhile uses "virtual learning" to denote learning environments consisting of hardware, software and personnel; a multifaceted learning programme that utilizes distance learning, interactive cable TV, and the Internet to connect learning environments to homes, places of work, and the community at large.

Another term, "open and distance learning", is also related since blended learning occurs both in-campus and off-campus learning environments. For a broader discussion on the history of open and distance learning, please see Evan (1994), Moore and Kearsley (1996, 2011), Perraton (2005) and Simpson (2013). UNESCO (2014) defines "distance learning" as any educational process in which all or most of the teaching is conducted by someone removed in space and/or time from the learner, with the effect that all or most of the communication between teachers and learners is through an artificial medium, either electronic or print. In addition, open education is mediated by electronic or printed technology with policies of open admission, and freedom of

selection of what, when and where to learn. The Commonwealth of Learning (n.d.) suggested that open and distance learning embraces any or all of the following:

Open learning: policies and practices that permit entry to learning with no or minimum barriers with respect to age, gender, or time constraints and with recognition of prior learning. These policies need not be part of a distance education system but are complementary to it.

Distance education: the delivery of learning or training to those who are separated mostly by time and space from those who are teaching or training. The teaching is done with a variety of "mediating processes" used to transmit content, to provide tuition and to conduct assessment or measure outcomes.

Flexible learning: the provision of learning opportunities that can be accessed at any place and time. Flexible learning relates more to the scheduling of activities than to any particular delivery mode.

Online learning and e-learning: terms that have emerged to describe the application of ICT to enhance distance education, implement open learning policies, make learning activities more flexible and enable those learning activities to be distributed among many learning venues.

Virtual education: includes aspects of both online and e-learning but goes somewhat further. While it is largely web-centric it does not necessarily limit itself to learners outside a conventional classroom. It uses multimedia and besides delivering content, also enables a high level of interaction among learners, content, teachers, peers, and administration both synchronously and asynchronously.

My reflection on the existing practices in many universities identified blended learning as one of the emerging trends in HE and this view is supported by researchers such as Garrison and Vaughan (2008), Graham (2009), and Stacey and Gerbic (2009a). Universities may not necessarily call their programme or approach blended learning, but they are nevertheless conceptually practising it. This conceptual flexibility has led to wide variation in practice, with blended learning occurring across a continuum which

ranges from conventional fully face-to-face learning at one end to fully online at the other end, as illustrated in Figure 5. Blended learning lies between the two extremes.
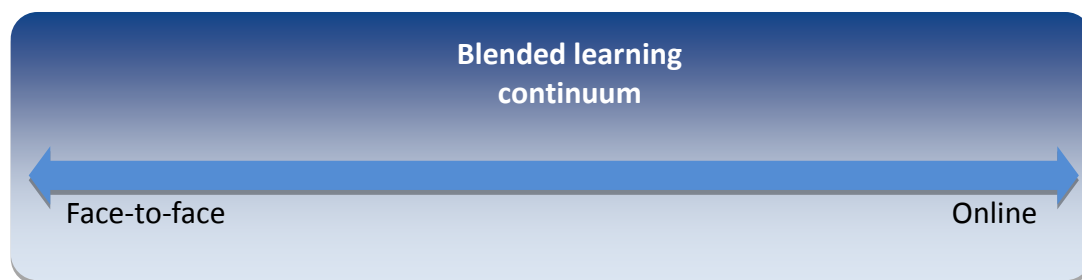
Figure 5: The blended learning continuum: from fully face-to-face to fully online learning

With the advent of ICT, the landscape of learning environment is changing with online learning being increasingly introduced in many universities, particularly for distance students, while traditional face-to-face learning remains. Many researchers (e.g., Garrison & Vaughan, 2008; Graham, 2009; Stacey & Gerbic, 2009b) emphasize the importance of making the best of both environments, understanding their strengths and weaknesses and making meaningful connections between them. Simultaneously, researchers also note the importance of considering different settings and learning contexts, such as the discipline and its learning outcomes, the institutional and community context, the programme constraints and the pedagogic beliefs and the student needs and expectations (Heinze, 2008; Stacey & Gerbic, 2009a). The various practices of blended learning have contributed to a wide range of research on the subject, but this research tends to focus on the integration of digital library services in which blended learning is the learning environment. To restate my working definition of blended learning in this thesis, I see it as a learning environment where both face-to-face and online learning are thoughtfully combined with self-learning to achieve desired learning outcome.

3.3.2 Integration

The term "integration" in this thesis implies the position of digital library services in blended learning environment. Integrating or positioning library information services within emerging online learning environments (McLean & Lynch, 2004) facilitates the escalating use of electronic library resources and raises library users' awareness of

existing digital library services and resources (Cohen, 2001; Joint, 2006). Integration involves processes, activities and librarians' decision making. Many researchers (e.g., Brophy, Markland & Jones, 2003; Markland, 2003; Markland & Kemp, 2004) have suggested that the initiatives to integrate digital libraries and blended learning environments seem to come mainly from the library community. Nowadays, most librarians see the advantages of being digital and recognise that integration will enhance learning in general (not only blended learning) by contributing towards knowledge discoveries and knowledge production. Thus integration is worth exploring so that librarians can identify best practices in delivering digital library services.

3.3.3 Trends and issues in academic libraries

The literature review identified two trends closely related to digital library in HE, namely Library 2.0 and blended librarianship. They relate to learning in general but are closely connected to blended learning.

The Library 2.0 concept was coined by Casey (2005) and has received a great deal of attention from the library world. This term emerged at the same time as Web 2.0 (Wallis, 2007), another term for which the definition is still debated (Curran, Murray, Norrby, & Christian, 2006). Credited to O'Reilly (2005), the term Web 2.0 basically refers to the second generation of the web development and design, utilizing dynamic web tools and applications such as blogs, wikis, mashup, folksonomy, tagging, etc., which allows people to communicate, collaborate and share information online. This has led to the evolution of web-based communities, social networking, and video-sharing sites (Courney, 2007). The essence of Web 2.0 is "interoperability" and "collaboration" (Maslov, Mikael, & Leggett, 2009).

"Web 2.0" has become a buzzword, with people adding "2.0" to a diverse range of terms, such as Business 2.0, Health 2.0, Science 2.0, etc. Many libraries have adopted Library 2.0 to foster positive change. According to Casey and Savastinuk (2006), Library 2.0 is a model for library services that encourages constant and purposeful change, invites user collaboration in creating both the physical and digital services they want, and is supported by consistently evaluating services. Crawford (2006) adds that Library 2.0 guides libraries in their effort to win new users while at the same time acknowledging that current service offerings are insufficient and inflexible, possibility

due to physical technological limitations. There are four principles of Library 2.0 according to Black (2007, p. 10): "the library is everywhere; the library has no barriers; the library invites participation; and the library uses flexible best-of-breed systems". Though the Library 2.0 concept originates from the public library domain (Crawford, 2006), some university libraries are currently applying the concept in an attempt to bring about positive changes and provide better services to users.

The second trend, blended librarianship, emerged in 2003 in the United States and strongly connects academic libraries with teaching and learning. Based on the "Blended Learning Manifesto" (Bell & Shank, 2004), the idea of the blended librarian was founded on the observation that academic librarianship was at a critical professional juncture. This has been reflected in three important trends: (a) ubiquitous courseware systems (whereby academic staff create research resources that may not include the library); (b) Google and other search engines (hence, library users can reach information without the assistance of libraries); and (c) the transformation of scholarly publishing (whereby scholars have new avenues to make their research available directly to readers, hence, readers may not need libraries to find scholarly literature). The future of academic librarianship depends on librarians' collective ability to provide value by integrating services and practices into the teaching and learning process. The envisioned blended librarianship framework largely depends upon librarians' ability to collaborate with academic staff but also with other campus information and instructional technologists.

Bell and Shank (2007) define a blended librarian as "an academic librarian who combines the traditional skill set of librarianship with the technologist's hardware/software skills, and the instructional or educational designer's ability to apply technology appropriately in the teaching-learning process" (p. 8). The principles of blended librarianship outlined by Bell and Shank (2007) basically advocate the idea of academic librarians bringing proactive and innovative changes to successfully deliver library services, continuously improving information literacy and library instructions to facilitate the teaching/learning process, and collaborating with instructional designers, academic staff and campus leaders.

The main framework of blended librarianship is design thinking; that is, creating a catalyst for innovation (Brown, 2005). The changing academic library environment

requires librarians who can innovate and implement new services. On top of having the principal skills (traditional library skills), librarians have integrated other skills in order to improve their ability to support and connect to academic staff, improve the quality of their own instruction, and reach out to students by designing ways of integrating the library into their learning spaces (Brown, 2005). Applying Farson's (2005) intersection between design and management, librarians can direct organizational change. Blended librarians use technology tools and techniques to create the structures that support student learning in all possible campus spaces, physical and virtual (Bell & Shank, 2007).

The above two trends – blended librarianship and Library 2.0 – have strongly connected libraries and learning. Blended librarianship offers a vision for academic libraries to remain relevant in changing learning environments through designing ways of integrating the library into the teaching/learning spaces, while Library 2.0 offers tools to communicate with users and bring positive changes to academic libraries.

Libraries of institutions which offer blended learning must ensure access to their digital resources and services (Currier, 2002) while simultaneously maintaining on-site resources and services. There is a plethora of issues and challenges around positioning digital library services in the changing learning environment. The learning environment has increasingly moved towards online learning and simultaneously maintaining face-to-face learning. One such issue is the so-called digital divide. The term "digital divide", according to Hawkins (2005), was coined in 1995 by the U.S. National Telecommunications and Information Administration to describe the social division between those involved in using ICT and those not. The Organisation for Economic Co-operation and Development (OECD) defines it as differences between individuals, households, companies, or region related to the access to and usage of ICT (OECD, 2001). Many researchers (such as Hawkin, 2005; Mansell, 2002; Rideout, 2002; Selwyn, 2003; Warshauer, 2003) highlight the significance of access to ICT together with information literacy for establishing an information society.

3.4 The research gap

My review of literature revealed that there was a scarcity of empirical research on the integration of digital library services in blended learning environments from the

perspective on digital libraries as organizations/services. Most studies from this perspective have been conducted in the United Kingdom. I now discuss two studies which have explored the close link between the digital libraries and blended learning environments.

The first example is a 6-month qualitative research project called INveStigating Portals for Information Resources and Learning (INSPIRAL). The research was conducted in the United Kingdom to analyse the non-technical challenges involved in linking virtual learning environments with digital libraries. Although this research investigated virtual learning environments, the findings are relevant to blended learning as well. The lead researcher Currier (2002) identified the following non-technical challenges: resources, institutional infrastructure and politics, staff development, teaching and learning, content, and access. He highlighted the following digital library services as important for learning in a virtual learning environment:

- seamless one-stop access including seamlessness in the learning environment and the library environment at any point of the virtual learning environments, and seamlessness within one user's portal across different courses, department and even institutions;
- library functions available online, including reference enquiry services, interlibrary loans, checking user records, paying fines, accessing all catalogues and databases; and
- flexibility for teachers to use information recourses from anywhere and to embed their own pedagogical approach rather than having it dictated by the system.

The other example is a research study by Roberts and Davey (2002) who investigated the integration between the virtual learning environment and the digital library in a blended programme at Edge Hill College of Higher Education in the United Kingdom. This study found that embedding resources within the learning environment raised concerns which were expressed as a "spoon-feeding attitude" and "narrowly focused" research by students. The researchers also discovered the following integration challenges: institutional commitment and direction; strong central learning support services; close collaboration between information staff and the academics; commitment to learning and teaching developments and not just technical development; strategic positioning of information services within a blended learning environment; issues

concerning authentication and seamlessness to electronic resources; and staff skills and role development.

Outside of the above studies, researchers have barely explored the integration of digital library services in blended learning environments. As noted earlier, many researchers have approached the digital library from a contents/systems perspective. Marshal, Chen, Shen and Fox (2006), for example, recognise digital libraries as one of tools that support e-learning, but chose to focus their research on developing an information system based on concept mapping.

Malaysian research on the integration of digital library services in blended learning environment is limited and there appears to be no study so far on this topic in Malaysia. Studies on blended learning have been conducted in areas other than the digital library and have included topics such as e-learning trends and challenges (Mohamed Amin, 2011; Mohamed Amin & Mohd Najib, 2010), synchronous and asynchronous collaboration (Fauziah, Hanafi, Rozhan, & Hisham, 2004; Koo, 2008; Syed Othman, Atan, & Guan, 2005); learning style, study skills and approaches (Saw et al., 1999; Thang, 2003, 2005); and knowledge construction and cognitive strategies (Nor Aziah & Haziah, 2005; Sam & Lee, 2008). None of these have referred to the role of the library and this situation justifies the conducting of this research.

In contrast, studies on the Malaysian digital libraries focus on areas other than blended learning, such as digital library initiatives in Malaysia (Norasiah, 2010); digital reference services (Wan Abdul Kadir & Singh, 2009); digital library development and evaluation (Abrizah & Zainab, 2007); information literacy (Wong, 2007); development of specific digital collections (Sharifah, 2006); and conceptual frameworks of the digital library (Masnizah & Zawiyah, 2003). Again, these studies do not refer to any learning environment or make any connection between the digital library and teaching and learning activities in HE. Moreover, most Malaysian research on blended learning and/or the digital library has utilized quantitative methodologies and this reality was instrumental in my choice of a qualitative methodology for this study (see Sections 5.2–5.3).

I was able to find no Malaysian research on the integration of digital library services in blended learning environment, but three studies had findings partly related to both

concepts. Sufean, Hashim & Aziah (2008) found that blended learning was an important agenda among public universities in Malaysia and that having advanced library services (resources and facilities) to support their teaching/learning activities was considered significant. Poon, Low and Yong (2004) meanwhile discovered one of the factors influencing the effectiveness of the online learning process is the availability of a digital library which is accessible anytime, anywhere. Wong (2006) found a significant difference between full-time students and working adults in a number of variables including the digital library, and discovered that one of the reasons working adults appreciate e-learning more than full-time students is the convenient "access to learning materials" from the digital library (p. 81). These studies used quantitative methodologies utilizing a survey as the main data collection method. They indicated some relationship between the digital library and blended learning but deeper understanding is needed to fully explicate this relationship. This research could pave the way towards understanding the intertwining relationship between the digital library and blended learning.

3.5 Chapter summary

This chapter has explained my conceptual understanding of the digital library and its roles in blended learning environments. The focus on the digital library from the organization/services perspective has led to limited research on digital library services in blended learning environments and this chapter has demonstrated the research gap in this area. In order to explore the integration of digital library services in blended learning environments, a theoretical framework was chosen to guide the research design, specifically third-generation activity theory, which held the potential to inform this research by introducing the idea of networked activity systems and the notion of "expansive learning". The next chapter discusses this theory and its application in this research.

CHAPTER 4: THEORETICAL FRAMEWORK

4.1 Introduction

The previous chapters have introduced the research context, discussed the concepts of digital library services and blended learning environments, and demonstrated the research gap this study addresses. This research could have been informed by several theoretical lenses. A theory is "a supposition or a system of ideas intended to explain something" (Oxford Dictionary, 2013). After considering several theories I decided that third-generation activity theory (AT) held the best potential to explain the phenomenon under investigation. This theory has been used by many researchers and it has gone through several phases of development.

This chapter introduces the research theoretical framework and discusses how it guided this research. In doing so, I first briefly introduce AT, its development, and the growing interest in it among research communities. I later explain the application of the theory in this research, first as a preliminary guide to frame the study with a theoretical perspective and second as an interpretive tool. I finally discuss the criticisms of AT as a theoretical lens.

4.2 Activity theory (AT)

AT is perceived as a theoretical framework for analysing human activities and practices as developmental processes within individual and social cultural contexts (Mwanza, 2001). It has its historical origins in classical German philosophy, in the writings of Marx and Engels, and in the Soviet cultural-historical psychology of Vygotsky, Leont'ev and Luria in the 1920s (Engeström, 1999a). The theory has undergone several phases of development but initially suggested that human activity is composed of three components: a person or a group engaged in the activity (a *subject*); the objective/motive of the activity (an *object*); and mediating material or psychological instruments (*tool*) (Engeström, 2001). The concept of tool mediation was expanded to include the notion of human activity by Leont'ev (1978), and has resulted in the incorporation of three other components of human activity, namely "norm, policies or regulations" (*rules*), "socio-cultural context" (*community*), and "roles and relationship

within the community" (*division of labour*) (Engeström, 2001; see also Schaffer, Reyes, Kim & Collins, 2010). Further expansion has involved the idea of cultural diversity, networks of activities (Russell, 1997), and tensions within and/or among components of an activity system or between two activity systems (Engeström, Miettinen, & Punamaki, 1999). In the following subsections I describe the growing interest in the theory, its development, and explain each component of an activity system, before outlining how the theory has been used in this research.

4.2.1 Growing interest in AT

Some researchers perceive AT as a comprehensive framework for analysing human practices and learning (e.g., Sawchuk, Duarte, & Elhammoumi, 2006). A growing international research community has developed around AT and analyses of its intellectual origins are now available in the work of several scholarly domains, including cultural psychology (Ratner, 2002, 2006) and human–computer interaction (Kaptelinin & Nardi, 2006; Kuutti, 1996).

In education, AT is increasingly being applied to aspects of technology-supported learning because of its emphasis on the mediation of tools and social factors on learning as a human activity (Joyes, 2006). The theory has contributed to a growing body of knowledge on various aspects of ICT-facilitated learning such as sustainable e-learning and professional development (Robertson, 2008); metaphors for digital technologies and pedagogy (Stevenson, 2008); e-teaching in virtual high school classrooms (Murphy & Manzanares, 2007, 2008); online collaborative behaviour and distributed learning (Russell, 2002); computer-supported cooperative work and collaborative learning (Collins, Shukla, & Redmiles, 2002; Zurita & Nussbaum, 2007); and e-learning design (Jonassen & Rohrer-Murphy, 1999).

The use of AT in library research is limited, however. Examples include research on modelling library school programmes and practices (Meyers, 2007); digital library evaluation (Spasser, 2002); and information-seeking behaviour (Allen, Karanasios, & Slavova, 2011; Hjørland, 1997; Spasser, 1999, 2002; Wilson, 2006; Xu & Liu, 2007). Wilson (2006) suggests that the adoption of an AT framework allows researchers to identify relationship between the cultural-historical setting of an activity and the external environment in both micro and macro contexts. Spasser (1999), who views the

digital library from a system/content perspective – a different perspective than the one adopted in this research – has suggested that AT is "a promising new approach to information" because the theory "represents a conceptual framework with wide-ranging applicability throughout the inherently pluri-disciplinary field of information science" (p. 1136). He adds that AT "supplies a conceptually and substantially rich vocabulary for explanatory reasoning about technologically social practices such as digital library use" (Spasser, 2002, p. 81). Hence, utilizing the theory in this research to explore the integration of digital library services in a blended learning environment might open a new perspective on the existing knowledge on applying AT. Furthermore, library research using AT makes use of varied methods such qualitative intervention studies (Meyers, 2007) and experimental simulations (Xu & Liu, 2007). My rationale for drawing ideas from AT is explained in more details in next section 4.3.

4.2.2 Development of AT

As noted above, AT has undergone several phases of development and many authors state that the theory has evolved across three generations (Daniels, 2001, p. 34; Engeström, 1999a; Kang & Gyorke, 2008; Robertson, 2008; Roth & Lee, 2007). The first generation drew heavily from Lev Vygotsky's concept of mediation (see Figure 6). Vygotsky attempted to unify behavioural science with Marx's theory of society by adapting the concept of mediation from Marx's dialectical and historical materialism. Instead of a behaviourist model of individual stimulus and response, Vygotsky viewed human development as based on a series of interactions with one's social and cultural contexts which are mediated by tools and signs (Kang & Gyorke, 2008). Vygotsky however never claimed he was the founder of AT. His students, especially Alexei Leont'ev, developed his idea of tool mediation by distinguishing collective activity and individual activity and introducing the notion of activity, action and operation as a hierarchical structure of activity (Daniels, 2001). This is illustrated in Figure 7.
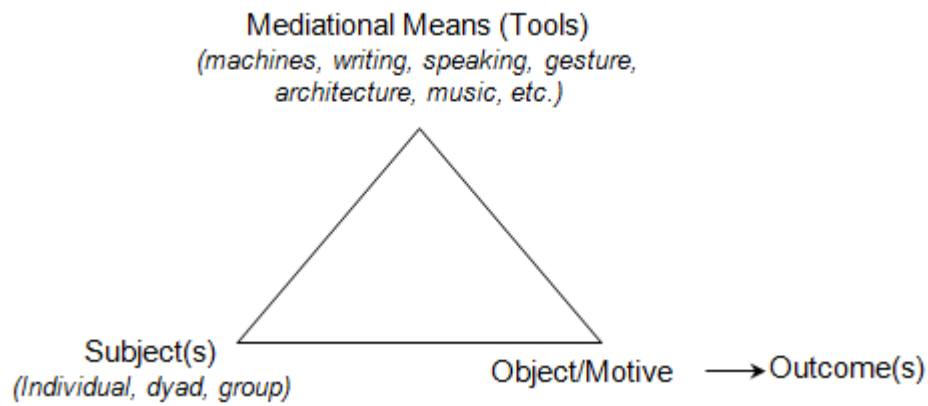
Figure 6: First-generation AT model (Daniels, 2001, p. 86)
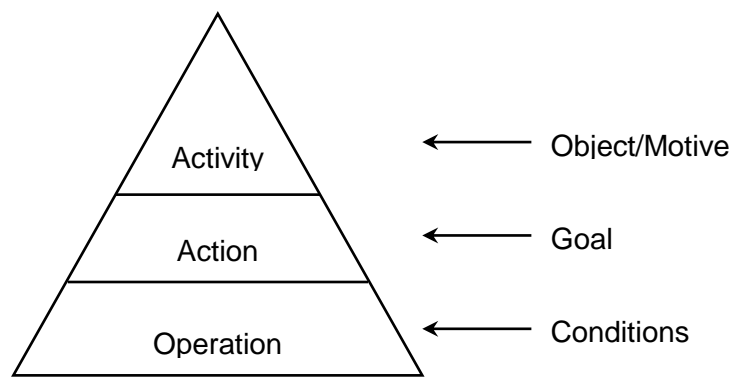
Figure 7: The hierarchical structure of activity, as introduced by Leont'ev (Daniels, 2001, p. 87).

Leont'ev illustrated the hierarchical structure of activity through the following example:

> When members of a tribe are hunting, they individually have separate goals and they are in charge of diverse actions. Some are frightening a herd of animals towards other hunters who kill the game, and other members have other tasks. These actions have immediate goals, but the real motive is beyond hunting. Together these people aim to obtaining food and clothing – at staying alive. To understand why separate actions are meaningful one needs to understand the motive behind the whole activity. Activity is guided by a motive. (Leont'ev, 1978, pp. 62–63, quoted in Daniels, 2001)

The amalgamation of societal, cultural and historical dimensions into human mental functioning, as proposed by Leont'ev, led to second-generation AT (Roth & Lee, 2007). The original triangular representation of activity was extended to include the "examination of systems of activity at the macro level of the collective and the community in preference to a micro level concentration on the individual actor or agent operating with tools" (Daniels, 2001, p. 89). A new model of activity systems (see

Figure 8) was introduced by Engeström (1987) to incorporate the full range of human activities which reflected both collective (socio-cultural) and individual features of human activity, and incorporated additional components of human activity: rules, community and division of labour.
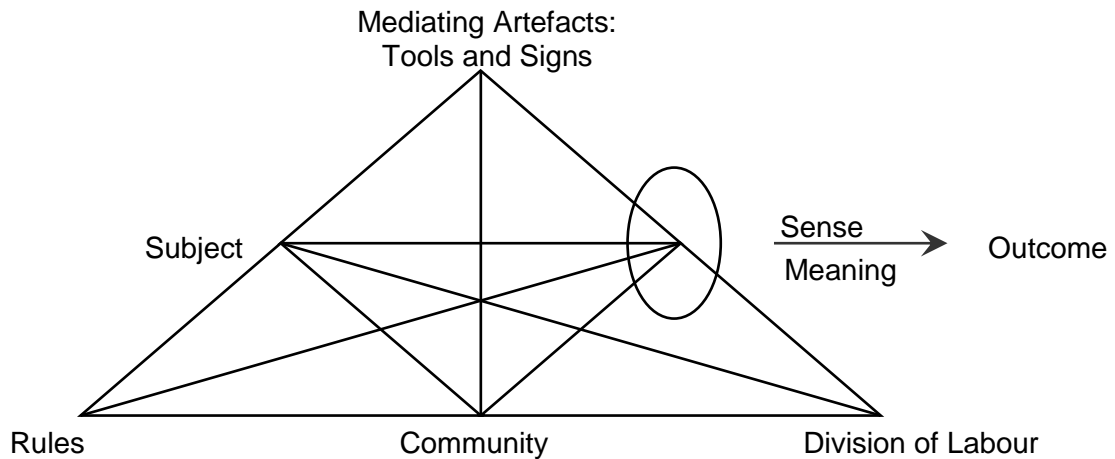
Figure 8: The structure of a human activity system (Engeström, 1987, p. 78)

Third-generation AT, as proposed by Engeström approximately 20 years ago, is characterized by "networks of interacting activity systems" and the idea of "contradictions" and "expansive cycles" (Engeström, 1999a, 1999c, 2001). This generation of the theory is illustrated in Figure 9. Engeström, according to Daniels (2001), strives to develop conceptual tools to "understand dialogue, multiple perspectives and networks of interacting activity systems" and hence, joint activity, not individual activity, is seen as the unit of analysis for the theory. The notion of networks of activity within which contradictions and struggles occur within the activity or between various activity systems calls for "an analysis of power and control within developing systems" (p. 91).
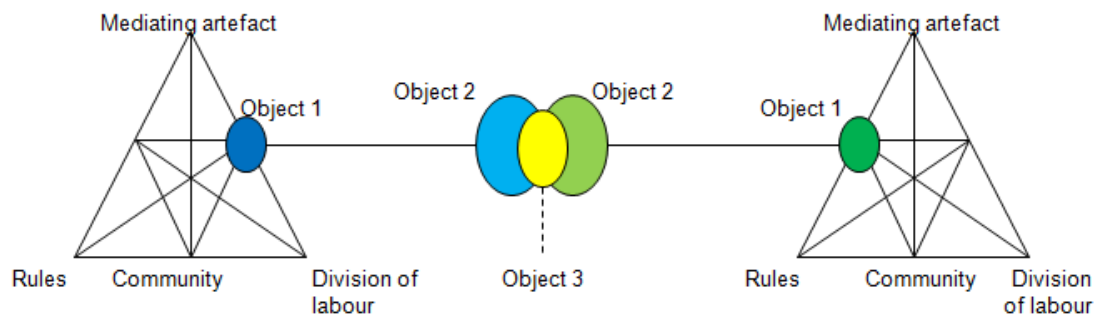
Figure 9: Two interacting activity systems as a minimal model for third-generation AT (Engeström, 2001, p. 136)

Contradictions or "historically accumulating structural tensions within and between activity systems" (Engeström, 2001, p. 137) manifest themselves as "problems, ruptures, breakdowns, clashes" (Kuutti, 1996, p. 34) and may arise in various ways. There are three kinds of tensions, for example: *primary*, *secondary* and *tertiary*. A primary tension may arise in any of the elements; a secondary tension may develop between elements; and a tertiary tension may develop between two or more activity systems (Engeström, 1987).

In third-generation AT, contradictions "generate disturbances and conflicts but also innovative attempts to change the activity" (Murphy & Manzanares, 2007, p. 1063). Engeström (1991) describes the practice, which he calls "expansive learning", of using contradictions to serve as a springboard for changing activity systems. Rather than seeing contradictions as adverse consequences, they are seen as providing a potential driving force for innovation and improvement of practices and services. Cole and Engeström (1993) assert that an "expansive cycle" or developmental process that involves both the "internalization of a given culture of practice and the creation of novel artefacts and pattern of interaction" and externalization of implementing a new model for the activity is "equivalent to travelling through the zone of proximal development (pp. 40–41).

4.2.3 Components of an activity system

There are six components of an activity system in third-generation AT: subject, objective, tools, rules, community and division of labour. These components are

described and explained by Schaffer et al. (2010) and Mwanza (2001) and are illustrated in Table 4.

Table 4: Activity system components

Component	Description by Schaffer et al. (2010)	Explanation by Mwanza (2001)
1. Subject	The individual or group of people involved in the activity.	The "subject" component portrays both the individual and social nature of human activity as reflected through collaborations and consultations in order to satisfy a shared objective. The subject's relationship with the object/objective of activity is mediated through the use of tools
2. Object	Tangible or intangible product acted on by the subjects during the activity which could transform as the activity unfolds.	The "object" component reflects the motivational or purposeful nature of human activity that allows humans to control their own behaviour. Human activity is targeted towards the satisfaction of identified objectives.
3. Tools	Anything from a physical object to a mental map or model used in the transformation process.	The "tools" component reflects the meditational aspects of human activity through the use of both physical and conceptual tools. Physical tools are used to handle or manipulate objects whilst conceptual tools are used to influence behaviour in one way or another.
4. Community	The socio-cultural context in which the activity takes place.	The "community" component puts the analysis of the activity being investigated into the social and cultural context of the environment in which the subject operates. This notion reaffirms the suitability of the theory to the study of human practices in an organization.
5. Rules	Implicit and explicit norms, policies or regulations of the community that constraint the activity.	The "rules" component highlights the fact that within a community of actors, there are bounds to be rules and regulations that affect in one way or another the means by which activity is carries out. These rules may either explicit or implicit.
6. Division of labour	Horizontal and vertical roles and relationships within the community that affect task division.	Refer to the allocation of responsibilities and variations in job roles of the subjects as they carry out activity in the community.

Note: based on the above components, I identified components of the activity system in this research which are illustrated in Table 5.

4.3 AT in this research

The process of choosing a suitable theoretical framework went through several phases. Sharing my experience of the selection process will allow the reader to fully understand

the reasons for my choice. I selected third-generation AT after considering three other theories (see section 4.3.1). I chose AT because I was able to map components of the activity system of integrating a digital library into a blended learning environment. My understanding of the activity system evolved as the research progressed, which led to the research design ultimately incorporating two activity systems instead of one (see Section 6.4.3).

Further exploration of AT led to the discovery that there was no specific methodology for applying AT to study a real-context phenomenon. Hence, significant ideas from the theory were adopted for this research which served first as a preliminary guide prior to fieldwork, and later as interpretive tools for the research findings. Due to the complexity of any activity system, this theoretical perspective should be limited to these two purposes, not as a rigid framework that governs the entire research project.

4.3.1 Looking for appropriate theories

Prior to choosing AT as the research's theoretical lens, I considered three other theories: the model of online learning interaction (Anderson, 2004), transactional distance theory (Moore & Anderson, 2003; Moore & Kearsley, 1996), and Ranganathan's Five Laws of Library Science (Gorman, 2000; Ranganathan, 1931). I summarize these below and give the justification for not applying them in this research.

I initially considered the model of online learning interaction introduced by Anderson (2004). The model focuses on the interactions between student, teacher and contents in online learning environment and their interconnections. The digital library is part of the contents when students are involved in independent study and teachers develop structured learning resources. However, I was not able to apply ideas from the model to understand the integration of digital library or important aspects of my study, such as Library 2.0, which can serve as a tool or artefact in digital library services.

I also considered the transactional distance theory (Moore & Kearsley, 1996), which encompasses the following three constructs: dialogue or "communication", structure or "curricular"; and learner autonomy or "the roles of learners" (Moore & Anderson, 2003, p. 90). The concept of mediation exists through dialogue which is similar to tools/artefacts in AT. Examples of tools in dialogue are language and media. These

three constructs however were limited for guiding my exploration in that they did not help me understand the different aspects of or the intertwining relationship between digital library services and blended learning. As suggested by Kang and Gyorke (2008, p. 207), transactional distance theory ignores the social-cultural aspects of learners and "has failed clearly to incorporate the concept of social learning that has been identified as a critical feature of today's practice". AT, by contrast, introduces "rules" to cover cultural norms that exist within any activity system.

Another theory under consideration was Ranganathan's Five Laws of Library Science, which provide five basic principles of librarianship. The laws are as follows: books are for use; every reader his book; every book its reader; save the time of the reader; and the library is a growing organism (Ranganathan, 1931). I found the laws to still be relevant to information professionals as the notion "book" and "reader" can be extended beyond their literal meaning. Sowards (1997) suggested that the notion "book" is equivalent to any media that contains "information" while "reader" is any "user" of the information. The issue of access in digital library services seems applicable to "sav[ing] the time of the reader" and the technological aspect of the library as an "organism" may lead libraries to adopt "proactive planning" that would greatly assist in producing a better model for a new and modern library (Yucht, 2001). However, I perceived the laws as too simple and inadequate to address the gamut of technological and organizational aspects of libraries, as well as the diversified social-cultural aspects of library users in today's evolving learning environment.

Based on my knowledge and understanding on the above theories, I perceived them as insufficient for guiding my exploration into the integration of digital library services in blended learning environment and for incorporating aspects such as Library 2.0 and the changing role of librarians.

4.3.2 Applying AT in this research

AT offered some important ideas that I used to guide my preliminary research exploration. The theory informed me that in order to understand the integration of digital library services in blended learning environment, components of the activity system needed to be identified (Mwanza, 2001). Schaffer et al. (2010) and Mwanza (2001) have identified the components (see Table 4) and this helped me attain an

understanding of the activity system that I was about to explore. I then constructed the activity system components and these are summarized in Table 5. These components were based on my preliminary understanding which evolved as the research progressed.

Table 5: Adaptation of activity system components for this research

Component	Mwanza's (2001) questions when applying AT	Adaptation for my research*
1. Subject	What sort of activity am I interested in? (Activity) Who is involved in carrying out this activity? (Subject)	Integrating digital library services in blended learning environment. Librarians.
2. Object	Why is this activity taking place?	Digital library services meet the changing demands for information in blended learning environment.
3. Tools	By what means are the subjects carrying out this activity?	Network, Internet, Library 2.0, learning management system, software, etc.
4. Community	What is the environment in which this activity is carried out?	Blended learning environment.
5. Rules	Are there any cultural norms, rules or regulations governing the performance of this activity?	Library policies/standards, copyright law, curriculum and instructional design, university's expectations (mission/vision), teachers and students expectations, etc.
6. Division of labour	Who is responsible for what, when carrying out this activity, and how are these roles organized?	Lecturer & tutors; technical staff; students; and the University community as a whole.
7. Outcome	What is the desired outcome of the activity?	Finding best practices and continuous innovation in the integration of digital library services in blended learning environment.

* Note: My initial research design involved a single activity system, which later evolved into two activity systems (see Section 6.4.3).

I used the components of the activity system as a framework for my research questions and to guide the fieldwork. After mapping the components of the activity system, I drew connections between those components and my research questions and eventually the following scenario emerged, which guided my understanding before starting the fieldwork:

1. The first research question, "How do librarians integrate digital library services in blended learning environment?" was investigated by exploring the way in which the:

   a. *subject* perceived and performed the a*ctivity* to meet the *object(ive)* within the *community*;

   b. *subject* utilized various *tools* and adhered to *rules* in performing the *activity*;

   c. *subject* collaborated within *divisions of labour* to fulfil the *object(ive)*; and

   d. *subject* perceived their role in relation to the *outcome.*

2. The second research question, "How do teachers and students perceive and experience the integration of digital library services in blended learning environments?" was investigated by exploring the way in which the:

   a. *division of labour* understood and experienced the *activity* provided from *subject* within the *community*; and

   b. *division of labour* collaborated with *subject* during the *activity* to fulfil the *objective*.

3. The *outcome* would be finally understood once the above details are explored, thus answering the how and why of the integration of digital library services in blended learning environments.

The above components were identified at the initial stage of this research. As the research progressed, the components evolved and I discuss these changes in section 4.4. I will also discuss changes to my understanding of the activity system in Chapter 6.4.3.

The second purpose of drawing ideas from AT in the research; that is, to use them as interpretive tools for the research findings, involved consideration of the five principles of AT. The principles introduced by Engeström (1999b) and supported by others such as Daniels (2001), Cole and Engeström (1993) and Kaptelinin (1996) are: 1) the unit of analysis; 2) the multi-voicedness of activity systems; 3) historicity; 4) the central role of contradictions as source for change and development; and 5) the possibility of expansive transformation in activity systems. These principles assisted in data interpretation and the first three also guided my preliminary fieldwork. These principles demonstrate the complexity of the activity systems involved in this research and pave the way to understanding the phenomena under investigation and identifying possible best practices.

Principle 1: The unit of analysis

This principle informed me that my research's prime unit of analysis or "a collective, artefact-mediated and object-oriented activity system, seen in its network relations to other activity systems" (Daniels, 2001, p. 93) is the activity of integrating the digital library services in a blended learning environment in a selected university in Malaysia. Librarians' activities in terms of integrating digital library services in that university were investigated along with other key aspects of the digital library (purposes, process, content, access, users and usage of services) because "goal directed individual and group actions as well as automatic operations are relatively independent but subordinate units of analysis, eventually understandable only when interpreted against the background of entire activity systems" (Daniels, 2001, p. 93). A Malaysian university was chosen to be the "entire activity system" or the case study of this research. The three groups of participants – librarians, teachers and students – made up the three units of analysis. Selection of units of analysis was pragmatically conducted (see Section 5.9) and I provide an in-depth description of the case in Chapter 6.

Principle 2: The multi-voicedness of activity systems

This principle informed me that "an activity system is always a community of multiple points of view, traditions and interest" (Daniels, 2001, p. 93). Hence, my investigation focused on, but was not be limited to, librarians as the main "subject" of the activity, but also teachers and students who might also be the "subject" in their activity of teaching/learning in a blended environment. Moreover, I also considered other "divisions of labour" who were indirectly involved in the provision/usage of digital library services such as programmers or instructional designers. All participants "create different positions" and "carry their own diverse histories", hence "the activity system itself carries multiple layers and strands of history engraved in its artefacts, rules and conventions". The multi-voicedness was "multiplied in networks of interacting activity systems" which became "a source of trouble and a source of innovation" (Daniels, 2001, p. 94).

Principle 3: Historicity

This principle informed me that "activity systems take shape and get transformed over lengthy periods of time. Their problems and potentials can only be understood against their own history" (Daniels, 2001, p. 94). The development of digital library services in Malaysia has been discussed in detail (see Section 2.4) and there have been many issues such as access, skills, infrastructure, resources and the continuous advancement of ICT. Malaysian academic libraries have transformed to include digital library services and the history of this development "needs to be studied as local history of the activity and its objects, and as history of the theoretical ideas and tools that have shaped the activity" (Daniels, 2001, p. 94).

Principle 4: The central role of contradictions as source for change and development

This principle informed me that "contradictions are historically accumulating structural tensions within and between activity systems" (Daniels, 2001, p. 94). In the process of integrating digital library services in blended a learning environment, issues and challenges encountered by librarians and how they deal with them were explored. Issues encountered by teachers and students in using digital library services were also explored to identify any tensions that might hinder or encourage their usage. When an activity "adopts a new element from the outside, it often leads to an aggravated secondary contradiction where some old element collides with the new one". Such contradictions "generate disturbance and conflicts, but also innovative attempts to change the activity" (Daniels, 2001, p. 94). By identifying contradictions and tension encountered by participants in the activity system, I wanted to facilitate my identification of best practices for fulfilling demands for information in a blended learning environment. Possible disturbances on the other hand would allow me to reflect librarians' existing practices and make appropriate recommendations.

Principle 5: The possibility of expansive transformation in activity systems

This principle informed me that "activity systems move through relatively long cycles of qualitative transformations" (Daniels, 2001, p. 94). As the contradictions of an activity system are aggravated, some individual participants begin to question and deviate from its established norms. Academic library services have long been

investigated in relation to traditional face-to-face learning. The emerging blended learning environment has changed the landscape of library services provision, requiring librarians to incorporate increasing use of ICT such as the application of Library 2.0 to interact with library users. The nature of library work has changed and librarians, in my view, continuously search for new practices or "expansive transformation", which may be "accomplished when the object and motive of the activity are reconceptualised" to embrace digital library services "as a radically wider horizon of possibilities than in the previous mode of the activity" (Daniels, 2001, p. 94).

The above deliberation on AT components and principles of the activity system of integrating digital library services in blended learning environments assisted the design of this research by providing an understanding of various components of the activity system. AT focuses on human activity within a specific socio-cultural position (Tolman, 1999), and this is congruent with constructivist nature of my research epistemology and interpretive theoretical framework. I explain the research design in Chapter 5.

4.4 Criticisms of AT

It is important to note that AT is not a theory without criticisms. Davydov (1999), for example, discusses several "unsolved problems of the theory" (p. 42) which are related to the notion of the "activity" itself and its connection with interaction or communication with other theories and disciplines. One of the criticisms discussed by many authors (e.g., Engeström, 1999c; Kaptelinin, 1996; Scribner, 1985) is the absence of a standard method for applying AT. This could be attributed to the fact that the basic principles of AT provide a general research framework (Daniels, 2001; Kaptelinin, 1996) but concepts from this framework have been interpreted and applied in various ways in different contexts (Mwanza, 2001). I perceive this flexibility as both a limitation and a potential advantage, and this research in some ways involves the development of my own AT framework.

The criticisms concerning the use of AT as a theoretical lens exist, in my view, due to the scenario that the theory has a long tradition of being explained, interpreted or expanded in different ways. As a result, different versions of the theory exist (Lektorsky, 1999) and researchers have assimilated whatever they felt suited their own perspective, discipline or research objectives best. In human–computer interaction

research, for example, the basic principles of AT applied in human–computer interaction design were predominantly based on second-generation AT. These principles are object-orientedness, hierarchical structure of activity, internalization and-externalization, mental process versus external behaviour, psychological versus intra-psychological, and mediation and development (Kaptelinin & Nardi, 2006, pp. 66–72). In my case, despite the complexity of understanding of the long evolution of the theory, I have chosen to focus on third-generation AT because in my view this version is broad-spectrum and applicable to my research setting.

In addition, understanding of the development of AT has been hampered by its language of publication. Initially, publications were mostly in German, and the theory only penetrated English-language-based scholarship in the 1980s via the publications of a number of authors and organizations such as the Centre of Activity Theory and Developmental Work Research at the University of Finland (Roth & Lee, 2007). Moreover, the journal *Mind, Culture and Activity*'s conferences (such as the International Congress for Research on Activity Theory, first held in 1986 in Berlin) and the establishment of the International Scientific Society for Research Based on Activity Theory (ISCRAT) in 1987 have gradually allowed larger audiences to understand, discuss, critique, and add to the theory (Engeström, et al., 1999). AT has been unlocked through increasing research and publications, specifically by the works of Yrjö Engeström. My understanding of the theory was limited to literature published in English.

Applying AT is not unproblematic. The identification of components in an activity, for example, is bound to alter one own perspective. Although general guidelines on the application of the theory to the study of an actual activity were available, in my case I moved backwards and forwards in applying the theory in the course of this research. Initially, I conceived one activity system, namely the activity of integrating digital library services in a blended learning environment. During the data interpretation phase, however, complexity arose when dealing with various participants who had different objectives. I subsequently discovered two prominent activity systems: one involving the providers of the digital library services, and the other involving the users of services (Norasieh & Gerbic, 2011). Later, further contemplation led to the refinement of these two different activity systems as 1) the digital library; and 2) the blended learning

environment (Norasieh, 2013). These two activity systems are elaborated on in Chapter 6. In the process of discovering the different activity systems, which occurred during analysis phases, I was able to identify possible tensions or contradictions and eventually possible innovations or expansive learning. I discovered that my role had moved towards understanding and acknowledging the complexity of the systems. The development of this understanding took a long time and involved deep thought and reflection. I share my reflection on this matter in the discussion in Chapter 10.

4.5 Chapter summary

In this chapter I introduced the research's theoretical lens, third-generation AT and briefly discussed its development. I also discussed how I drew ideas from AT for this research, to inform my theoretical lens and interpretive tools. Despite the existence of criticisms, AT provides a more holistic framework than other theories I considered using to understand the integration of digital library services in blended learning environments. I demonstrated the use of third-generation AT by mapping the theory's components onto the research questions. These components and the theory's five principles were then explained. The theory's focus on human activity within a specific socio-cultural position fits well with my research epistemology and interpretive theoretical framework. The research design, which is based on constructivist epistemology, is explained in next chapter.

CHAPTER 5: RESEARCH DESIGN

5.1 Introduction

The purpose of this research is to explore and understand various perspectives of integrating digital library services in blended learning environments within the context of Malaysian HE. The specific objective is to answer the following research questions:

How do librarians integrate digital library services in blended learning environments?

How do teachers and students perceive and experience digital library services in blended learning environments?

To answer these questions, I chose to design this research as a qualitative case study. This chapter presents the research design of this inquiry and discusses significant philosophical assumptions; the research methodology and methods employed for data collection and analysis; and the steps taken to ensure the research quality. This inquiry involves exploring realities constructed in a real-life context, which is aligned with the constructivist paradigm (Crotty, 1998; Patton, 2002).

5.2 Philosophical assumptions informing the research design

"Research design" is defined as a process of making decisions based on sets of background or philosophical assumptions or a theoretical model, which expresses and determines a researcher's view of reality (Birley & Moreland, 1998). This process then governs the choices of methods and describes the strategies of inquiry (Creswell, 2003; Crotty, 1998; Jones, Torres, & Armino, 2006). As mentioned in the previous chapter, activity theory (AT) led me to choose a qualitative research design. The philosophical assumptions of qualitative research include:

1) Qualitative researchers seek holistic understanding and sense making of social realities (Patton, 2002) and accept that there are multiple realities and that people interpret reality differently based on their individual perspectives (Crotty, 1998; Newman & Benz, 1998).

2) Qualitative researchers focus on understanding, meaning making or making sense of complex realities and seeing the wholeness rather than the parts (Patton, 2002). Their overall purposes are "to achieve an understanding of how people make sense out of their lives, delineate the process (rather than the outcome or product) of meaning-making and describe how people interpret what they experience" (Merriam, 2009, p. 14). They use language that stresses the basic nature of the paradigm, which includes "understanding", "exploring", "discover[ing]", and "meaning" (Creswell, 1994).

3) Qualitative researchers use inductive logic and analysis (Creswell, 2005; Patton, 2002); utilize less structured techniques of data collection and analysis, and focus more on exploration and discovery rather than on hypothesis testing (Patton, 2002; Sarantakos, 1997). They may be informed by some discipline-specific theoretical framework but the framework is not tested deductively; rather, it is informed by what researchers inductively learn in the field (Merriam, 2009).

4) Qualitative researchers and the entities/objects/phenomena of study are closely interrelated and are actively involved in the data collection process and analysis (Guba & Lincoln, 1994; Sarantakos, 1997). The researchers are themselves the primary instrument for data collection and analysis (Merriam, 1998, 2009).

5) Qualitative research involves reflexivity (Patton, 2002) and may be influenced by the values of the researcher who may impose his/her values, insight and biases on the research (Creswell, 1994; Sarantakos, 1997). These "subjectivities" are identified and acknowledged rather than eliminated (Merriam, 2009), because one's subjectivities "can be seen as virtuous, for it is the basis of researchers making a distinctive contribution, one that results from the unique configuration of their personal qualities joined to the data they have collected" (Peshkin, 1988, p. 18).

The above philosophical assumptions reflect my own ontological and epistemological view of reality. Crotty (1998) suggests that one's view on the ontology or *what is* (p.

10) and epistemology or *what it means to know* (p. 3) will determine how the research is designed. He further describes the four basic elements of any research design:

epistemology: the theory of knowledge embedded in the theoretical perspective and thereby in the methodology;

theoretical perspective: the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria;

methodology: the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes; and

methods: techniques or procedures used to gather and analyse data related to some research question or hypothesis (Crotty, 1998, p. 3).

Figure 10 illustrates the four basic elements of the research design of this study.
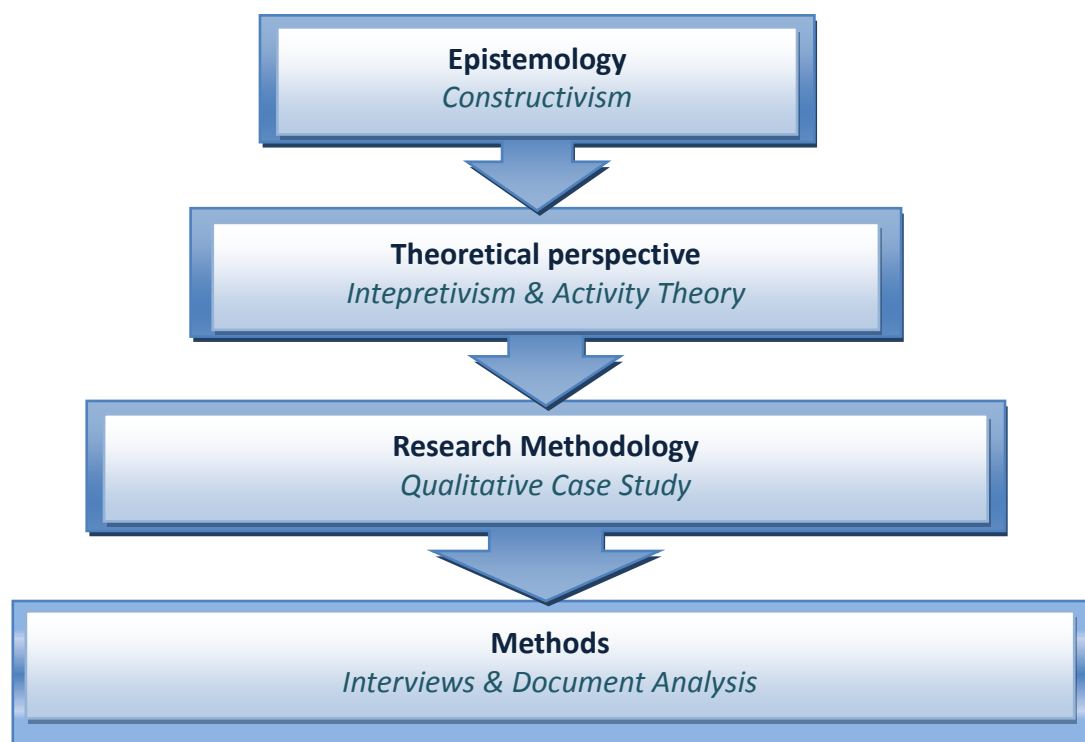
Figure 10: The research design, adapted from Crotty (1998)

I chose the constructivist epistemology, as opposed to other epistemological and theoretical paradigms such as those explained by Guba and Lincoln (1994) and which are illustrated below in Table 6. Constructivism has the foundation that "meanings are constructed by human beings as they engage with the world they are interpreting" (Crotty, 1998, p. 42), and "human beings have evolved the capacity to interpret and construct reality" (Patton, 2002, p. 96). There is no single reality, but multiple realities (Admiraal & Webbels, 2005; Creswell, 2013). As human beings see the world differently, the realities that they construct are complex, multilayered and social (Berger & Luckmann, 1967). In my view, reality is socially constructed and subjectively determined.

Interpretivism was also used in this research as a theoretical perspective which "looks for culturally derived and historically situated interpretations of the social life-world" (Crotty, 1998, p. 67) and focuses on "human beings and their way of interpreting and making sense of reality" (Holloway, 1997, p. 93). As argued by Denzin and Lincoln (1994), "all [qualitative] research is interpretative, guided by a set of beliefs and feelings about the world and how it should be understood and studied" (p. 13).

Table 6: Basic beliefs (metaphysics) of different inquiry paradigms

Item	Positivism	Post-positivism	Critical theory	Constructivism
Ontology	naive realism – "real" reality but apprehendable	critical realism – "real" reality but only imperfectly and probabilistically apprehendable	historical realism – virtual reality shaped by social, political, cultural, economic, ethnic, and gender values; crystallized over time	relativism – local and specific constructed realities
Epistemology	dualist/ objectivist; findings true	modified dualist/ objectivist; critical tradition/community; findings probably true	transactional/ subjectivist; value-mediated findings	transactional/ subjectivist; created findings
Methodology	experimental/ manipulative; verification of hypotheses; chiefly quantitative methods	modified experimental/ manipulative; critical multiplism; falsification of hypotheses; may include qualitative methods	dialogic/dialectical	hermeneutical/ dialectical

Source: Guba & Lincoln (1994, p. 109).

The constructivist epistemological stance and interpretive theoretical perspective imply that the meaning and understanding of the phenomenon under investigation in this research could be constructed by interacting and engaging myself with those who are directly involved in a digital library. Hence, my position is best described as the "passionate participant who is actively engaged in facilitating the multi-voice reconstruction" (Guba & Lincoln, 1994, p. 215) of integrating library services into blended learning environments. AT as a theoretical perspective is well aligned with constructivism and interpretivism as the theory focuses on human activity within a specific socio-cultural position (Tolman, 1999). The theory was used in this research as a conceptual framework to guide my exploration, based on meanings constructed by those who were directly involved in the activity system.

I agree with the view that both qualitative and quantitative approaches may be used appropriately within any research paradigm (Bryman, 1988; Creswell, 2003). However, I have chosen a qualitative design that is appropriate to the nature of my inquiry, which focuses on exploring and understanding. Creswell (2013, p. 44) provides a comprehensive definition that summarizes my position on qualitative research:

> Qualitative research begins with assumptions and the use of interpretive/theoretical frameworks that inform the study of research problems addressing the meaning individuals or groups ascribe to a social or human problem. To study this problem, qualitative researchers use an emerging qualitative approach to inquiry, the collection of data in a natural setting sensitive to the people and places under study, and data analysis that is both inductive and deductive and establishes patterns or themes. The final written report or presentation includes voices of participants, the reflexivity of the researcher, a complex description and interpretation of the problem, and its contribution to the literature or a call for change.

Creswell (2013) further explains five approaches – narrative, phenomenological, grounded theory, ethnographic, and case study research – to qualitative research and illustrates the contrasting characteristics of these approaches (see Table 7). Based on those characteristics, I chose a qualitative case study approach and one Malaysian university to be the "bounded system" (Creswell, 2005).

Table 7: Contrasting characteristics of five qualitative approaches

Characte-ristics	Narrative research	Phenomeno-logy	Grounded theory	Ethno-graphy	Case study
Focus	Exploring the life of an individual	Understanding the essence of the experience	Developing a theory grounded in data from the field	Describing and interpreting a culture-sharing group	Developing an in-depth description and analysis of a case or multiple cases
Type of problem best suited for design	Needing to tell stories of individual experiences	Needing to describe the essence of a lived phenomenon	Grounding a theory in the views of participant	Describing and interpreting the shared patterns of culture of a group	Providing an in-depth understanding of a case or cases
Unit of analysis	one or more individuals	several individuals who have shared the experience	a process, an action or an interaction involving many individuals	a group that shared the same culture	an event, a program, an activity, or more than one individual
Data collection methods	Primarily interviews and documents	Primarily interviews with individuals	Primarily interviews with 20-60 individuals	Primarily observations and interviews	Multiple sources such as interviews, observations and documents
Data analysis strategies	Analysing data for stories, "restorying" stories, and developing themes, often using a chronology	Analysing data for significant statements, meaning units, textual and structural description and description of the "essence"	Analysing data through open coding, axial coding and selective coding	Analysing data through description of the culture-sharing group and themes about the group	Analysing data through description of the cases and themes of the case as well as cross-case themes

Source: Creswell (2013, pp. 104–105).

5.3 Qualitative case study methodology

A case study is "an in-depth exploration and empirical inquiry of a contemporary phenomenon within its real-life context or bounded system" (Creswell, 2005, p. 439) or "an intensive, holistic description and analysis of a single (or multiple) instance, phenomenon or social unit" (Merriam, 1998, p. 27). It can be both a unit of analysis and a methodology (Jones, et al., 2006) and may utilize quantitative and qualitative evidence

(Yin, 2009). In this research, I employed a qualitative case study methodology because "case studies frequently follow the interpretive tradition of research – seeing the situation through the eyes of participants" (Cohen, Manion, & Morrison, 2000, p. 183).

As an attempt to understand the relationships that exist in reality within a single or multiple events/people/organizations, a case study allows researchers to capture "realities" in greater detail (Galliers, 1992) and to explain, describe and illustrate real-life phenomena in depth (Yin, 2009). This allows researchers to achieve "thick description" (Simons, 2009) of the case, which means better understanding of the phenomenon under investigation.

Criticisms of the case study approach have included its lack of rigor, little basis for scientific generalization, time-consuming nature due to masses of data (Yin, 2009), restriction to a single event/organization, and the different interpretations of events by individual researchers (Galliers, 1992). I agree that those issues exist but there are several ways researchers can counter them. I explain in Chapter 5.9 the strategies that I used during the analysis of a large amount of data, and in Chapter 5.10 the steps that I took to ensure the rigor and trustworthiness of this research. I also explain my use of analytic generalization in discussing the research findings in Section 10.3.2.

5.3.1 Case selection process

The "bounded system" in this study is the activity system/s of the integration of library services in blended learning environments in a university in Malaysia. I chose Open University Malaysia (OUM) based on a two-stage selection process: first, identifying potential universities, and second, selecting the most suitable university. Due to the common use of blended learning in the context of distance education (see Section 3.3), I identified Malaysian universities offering distance programmes during the first stage. Based on Ali, Fadzil and Kaur (2006), who delineated 10 universities offering distance learning programmes, three universities were shortlisted, namely Universiti Sains Malaysia, Universiti Putra Malaysia and OUM. Universiti Sains Malaysia was the first to offer distance programmes in the country in 1971. Universiti Putra Malaysia was regarded as offering "successful and expanding distance learning program" (Ali, Fadzil & Kaur, 2006, p. 16), while OUM offered multiple modes of learning. I then developed

criteria for selection (Silverman, 2010), namely the university learning mode, its library, and its affiliation to myself as the researcher (see Table 8).

Table 8: Case selection criteria

University	The learning mode	The library	Affiliation to me
OUM	Combined online and face-to-face learning with structured self-paced learning.	High level of digital services and application of Library 2.0 with small proportion of physical services. Most collections are in digital format.	None
Universiti Sains Malaysia	Mainly face-to-face with some degree of online learning.	More physical than digital services with reasonably high level of digital services including online chatting.	My PhD studies sponsor
Universiti Putra Malaysia	More face-to-face than online learning.	More physical services than digital.	None

The second stage was to choose the most suitable university to be the case. I intended to explore the various perspectives of integration from the viewpoints of librarians, teachers and students, as explicitly stated in the research questions. Patton (2002) suggests that the "extent of a research focus depends on [the research] purpose, the resources available, the time available, and the interest of those involved" (p. 228). I chose OUM as the bounded system (Creswell, 2005) because the university offered a blended mode of learning and it has had a digital library ever since its establishment in 2000. In contrast, both Universiti Sains Malaysia and Universiti Putra Malaysia practise more face-to-face than online learning, and their digital library services are minimal compared to OUM's.

5.3.2 The research sites

The research sites were chosen because OUM - offering an open and distance learning opportunity to the community - operated from its main campus in Kuala Lumpur and had more than 53 branches (see detailed description of the case in Chapter 6). Due to the nature of this university, the research should cover at least two sites, its main campus and any of its branches. I will explain the data collection process in section 5.8.

5.4 Approaching the case as an outsider researcher

Challenges occurred during fieldwork, particularly due to the fact that I was an outsider researcher in unfamiliar territory. I describe this experience, and how I adopted flexibility when conducting fieldwork and collecting data for this research, in section 5.8 below.

The insider–outsider discussion among researchers suggests that the distinction between the two is blurred and should be challenged (Bridges, 2001). Ravazi (1992) suggests that "by virtue of being a researcher, one is rarely a complete insider anywhere" (p. 161). I could consider myself as an insider whenever I deal with librarians. In this research, however, I positioned myself as an outsider in relation to OUM because I had no prior relation with the university.

A researcher does not need to be a member of the group being investigated to conduct a credible study (Merriam, 2009). I am aware of my position in that the data collected, and my interpretation of that data will be influenced by views of the people I interacted with, within a particular time and space, and/or the documents I managed to collect. The sense making of the data might not represent the views of the whole community working or studying at the university. My position as an outsider researcher demanded a high level of reflexivity and intuition, and I applied a great deal of flexibility during the course of the fieldwork and data analysis. In order to avoid "outsiders import[ing] damaging frameworks of understanding" (Bridges, 2001, p. 375), I cautiously conducted the analysis and shared my reflections (see Chapter 10). I also chose two appropriate methods of data collection, which I discuss next.

5.5 The methods

A method is defined as "techniques used to gather and analyse data related to some research question" (Crotty, 1998, p. 3). In accordance with a qualitative approach, I became the primary instrument for data collection and analysis (Merriam, 1998). In order to collect "multiple sources of evidence" (Yin, 1994, 2009), two types of qualitative data were gathered: 1) "direct quotations from people about their experience, opinions, feelings and knowledge" obtained through interviews; and 2) "excerpts, quotations or entire passages" extracted from various types of documents/artefacts

(Patton, 2002, p. 4). In my view, these methods enabled me to sufficiently understand the case and the various perspectives of librarians, teachers and students to answer the research questions.

5.5.1 Interviews

In this study, I planned to conduct one-on-one interviews which were:

> 1) *Semi-structured*, to allow me to have a clear list of issues to be explored and flexibility in term of order of questions or emerging questions, and to give participants opportunity to share their thoughts and speak more widely on the issues raised (Denscombe, 2003; DiCicco-Bloom, & Crabtree, 2006).

> 2) In the form of *open-ended* questions which were flexible, exploratory, and more like a conversation (Merriam, 1998).

> 3) *In-depth*, to efficiently investigate participants' experience, perspectives and insights (Denscombe, 2003; Yin, 2009).

A list of guiding questions were pre-prepared and approved by the Auckland University of Technology (AUT) Ethics Committee (see Appendix A for examples of questions) which served as a guide during interviews. I was prepared to be flexible if new questions emerged, which is in alignment with the iterative nature of the qualitative research. DiCicco-Bloom and Crabtree (2006) argue that the iterative nature of the qualitative research process in which preliminary data analysis coincides with data collection often results in altering questions as the investigators learn more about the subject. Questions which are not effective at eliciting the necessary information may be dropped and new ones added. Furthermore, they state that the interviewer should be prepared to depart from the planned itinerary during the interview because digressions can be very productive as they follow the interviewee's interests and knowledge. In this research, changes occurred to the planned one-to-one interviews. I will explain in section 5.8.3 how the plan changed to include pair and focus group interviews.

All interviews were conducted in a culturally appropriate manner with respect for cultural differences and personal preference among participants. Hence, interviews were conducted in the place, time, and the language that suited participants. However, for

participants who were geographically remote and where it was not practical for me to meet them in person, other possible options, agreed by both myself and participants, were utilized. The language used was either English and/or Bahasa Malaysia. All interviews were audio-taped with participants' consent and transcribed for analysis.

5.5.2 Documentary analysis

Documents that provided me with information about OUM or its library would enable a deeper understanding of the case and digital library services in blended learning environments. They could be published or unpublished and available in hardcopy or softcopy (Gillham, 2000). There are issues such as authenticity, credibility, representativeness and clarity of words which require researchers to carefully gather documents for their studies (Denscombe, 2003). Documents used in this study included any administrative documents or reports related to OUM or the library, such as annual reports, regulations, policies, handbooks, modules, information from the website, and so on; and my own note-taking and journals or "researcher-generated documents" (Merriam, 1998) prepared and updated as the fieldwork progressed.

I was aware that observations or "fieldwork description of activities, interaction or any aspect of observable human experience" (Patton, 2002, p. 4) is another type of qualitative data collection, and some researchers utilizing AT (e.g., Engeström, 1999a, 2008) have recommended this method. However, the activity system of integrating digital library services in blended learning environments involved a gamut of activities which were mostly non-observable in my specific time/location. Given my position as an outside researcher, exploring observable experience seemed less pragmatic in light of the limited time and resources that I had as a researcher. Moreover, observation as a method did not clearly contribute to the research question.

5.6 Ethics

Educational research needs "to be conducted rigorously, scrupulously and in an ethically defensible manner" (Cohen, Manion & Morrison 2000, p. 47). This research was conducted in accordance with the ethical standards determined by the AUT University Ethics Committee (AUTEC). The committee reviewed and approved my ethics application including the Participant Information Sheets and Consent Forms

which were prepared in English and Bahasa Malaysia (see Appendix B). The Participant Information Sheets were used to introduce participants to the research, to inform them of the voluntary nature of participation, and to address issues of privacy and confidentiality. The Consent Forms were used to confirm participants' agreement to take part in the research while understanding their rights such as the ability to withdraw from the research at any time. The research participants were advised that I took every possible step to preserve their anonymity and confidentiality. This included not disclosing participants' identities or reporting data in a manner that could identify participants (Ritchie, Lewis, Nicholls & Ormston, 2013). Pseudonyms were used in reporting findings, not only in this thesis but also in other publications and conferences (see my list of publications and conference presentation in page xi).

5.7 Research participants

As this research aimed to understand the integration of digital library services in blended learning environments from the perspectives of librarians, students and teachers, the research participants consisted of representatives of these groups. They were selected by using "purposeful sampling" (Creswell, 2005, p. 204). Purposeful or purposive sampling has been defined as "selecting units based on specific purpose associated with answering a research study's questions" (Teddlie & Tashakkori, 2009, p. 170). According to Patton (2002), "the logic and power of purposeful sampling lie in selecting information-rich cases for study in depth" (p. 230). Creswell (2007) suggests that in purposeful sampling, "the inquirer selects individuals and sites for study because they can purposefully inform an understanding of the research problem and central phenomenon in the study" (p. 125). Criteria for selecting participants were developed which include: they had to be working or studying at OUM, preferably for more than three years; and they had to be familiar with the digital library. As informed by AT, perspectives of other "divisions of labour", such as IT personnel or instructional designer, were also considered.

There are several qualitative purposeful sampling strategies (Miles & Huberman, 1994; Patton, 1990). In this research, I utilized several strategies including key research informants' recommendations (Patton, 2002), participants' recommendations via the snowballing approach or chain sampling (Cohen, Manion, & Morrison, 2000; Seidman,

1998), and "opportunistic or emergent" purposeful sampling (Patton, 2002, p. 240). Further details are elaborated in the participants' recruitment process in section 5.8.3.

The number of participants for the interviews was determined by the achievement of data. Guest, Bunce and Johnson (2006) found that "a sample of six interviews may have been sufficient to enable development of meaningful themes and useful interpretation", and discovered that their analysis was "fairly complete and stable after only twelve interviews" (p. 78). Hence, in order to holistically understand the topic under investigation, six to twelve interviews were planned for each group of participants. In other words, a total of between eighteen to thirty six interviews was planned.

5.8 Data collection process

I began my initial informal communication with the research informants after my research proposal was approved by the AUT Postgraduate Board in late October 2009. I then applied for OUM approval to conduct the research and it was granted in November 2009 (see Appendix C). Fieldwork commenced upon receiving ethics approval from AUTEC on 14 December 2009.

5.8.1 Fieldwork planning and initialization

An informal pilot interview was conducted with a fellow librarian in Malaysia prior to commencing fieldwork in early January 2010 to ensure the clarity of the pre-prepared open-ended interview questions. Interviews were conducted at locations that were convenient to participants, such as in the library, the participant's office, classroom, or seminar room. Before each interview, I began by introducing myself and explaining the research project and the nature of the interviewee's participation, based on an interview protocol, adapted from Creswell (2005, p. 222). A copy of the research interview protocol can be found in Appendix D. I gave potential participants the relevant Participant Information Sheet and the chance to ask any questions prior to giving their consent to participate in the research.

Before conducting an actual interview, the audio-recorder was tested whereby both the interviewee and I would say a few words. I would only proceed with the interview if the recorded voices were clear. Otherwise, a change of location convenient to both parties

was made. Interviews were conducted in the language most convenient to participants. Most lecturers and some librarians chose English while most students, tutors and some librarians preferred the Malay language during interviews.

During the actual interview, I employed a friendly and open conversational style. I asked questions based on my list of prepared open-ended questions, but used them with flexibility. Most of the time, I listened to them talking and followed the conversation of the interviewee. I also used probes such as "tell me more", "could you please explain that?" or "what does that mean?" to obtain further information (Creswell, 2005) and employed the responsive encouragement method (Gillham, 2005) of using words such as "uh", "yes" and/or nodding my head. I tried to be neutral when hearing participants' comments in order to allow myself, as the researcher, to explore the questions in detail, depth and with full clarity (Patton, 2002). I also noted important points in "researcher-generated documents" (Merriam, 1988) during the interview, such as unexpected ideas, non-verbal cues, or some factual information that need further elaboration or clarification.

When the interview was over, I thanked the participant and gave them a souvenir from New Zealand as a token of appreciation for their participation. This practice fitted well with the Malaysian culture that someone's help is honoured by giving gifts/treats (Low, 2010). I would normally ask the participant to introduce someone else to me as a possible participant to allow a "snowballing process" (Seidman, 1998) to occur. After each interview, I immediately completed the "Interview Summary Form" adapted from Miles and Huberman (1994, p. 53) (see Appendix E) to further note any ideas that were salient, interesting, illuminating, or important, especially ideas related to the research questions. I also immediately transferred the audio-recorded interviews onto my computer and made additional copies on an external hard drive.

5.8.2 Documents gathering

With regard to relevant documents, I managed to get permission from the chief librarian to access the library's online office-related databases which used software called Knowledge Tree. I received a temporary username and password and was able to access databases in the library or within the vicinity of the campus in Kuala Lumpur. I retrieved and made copies documents which I though relevant and significant. I also

retrieved OUM's annual reports which were available from their websites and related documents on OUM blended learning from participants. A list of these documents is given in Chapter 6. Most documents, including my own note taking, were in English.

5.8.3 Recruitment of participants

As noted earlier in section 5.7, I used key informant's recommendations (Patton, 2002), snowballing approach (Cohen, Manion, & Morrison, 2000; Seidman, 1998), and opportunistic purposeful sampling (Patton, 2002). As an outsider, recruitment significantly relied on key research informants and participants' recommendations. The key informants or "people who are particularly knowledgeable to the inquiry setting" (Patton, 2002, p. 321) were those who were working or studying at OUM. My research informants consisted of a librarian, a tutor, and a student at OUM. The three people were chosen mainly to allow me access to the three groups of participants: librarians, teachers and students.

My first research informant, a librarian, initially introduced me to his colleagues and arrangements for interviews with librarians were made soon after. All interviews with librarians were one-on-one except for one case in which two librarians requested a "pair" interview. This key informant also introduced me to lecturers. By the time I interviewed several lecturers, I was quite familiar with some students who frequently visited the physical library. I personally approached these students and some agreed to participate. The snowballing approach worked well but sometimes led to a dead end. Building personal rapport and attending programmes organized by the library opened opportunities to recruit more participants. The library organized a "Book Fair" on January 18, 2010, at which academic talks on Library 2.0 and Web 2.0 were held. I managed to recruit a few participants there. My other key research informants were from two teacher institutes in Pahang and Melaka, namely the Teacher Institute of Tengku Ampuan Afzan, Kuala Lipis Pahang, and the Teacher Institute of Perempuan Melayu, Melaka.

Recruitment of participants at OUM branches employed "opportunistic or emergent" purposeful sampling (Patton, 2002, p. 240) due to the fact that students were geographically dispersed and only occasionally met during face-to-face tutorials conducted at different branches. The Participant Information Sheets and Consent Forms

were initially sent via email to the key informants so that they could make an initial approach to whoever was interested in participating in the research. The key informants approached their friends, who desired to be interviewed via telephone. Having the experience of conducting face-to-face interviews, I preferred to continue with the same method. An attempt to record telephone conversation via landline was piloted and the audio result was not of good quality. I eventually decided to replace the one-on-one interview with focus group interviews due to geographical complications. By the end of January, the schedule for tutorials has been disseminated by OUM and tutors were among the first to receive an email about the study. As OUM explicitly stated in their approval letter that interviews with students should not be conducted during tutorials/seminars, time and location became crucial issues. Tutorials would normally take the whole day with a number of short breaks. With the help of the key informant, the tutor, I managed to conduct two focus group interviews with 10 students and seven tutors, respectively. Although of short duration, the interviews yielded rich data with lots of insight and important issues.

My initial analysis of all interviews including the two focus group interviews indicated some element of saturation with "detailed description" and "richness of data" (Morse, 1998, p. 148). I decided to stop collecting more data and focused on the existing data in hand. I eventually managed to conduct 26 interviews with 43 participants: 22 individual, 2 pair and 2 focus group interviews. Table 9 illustrates the distribution of participants involved in the interviews. Two participants were considered as 'division of labour', as informed by AT (see Chapter 4.3.2): a programmer and an instructional designer. They were included in the librarian group in Table 9. Their willingness to participant in this research highly contributed towards my understanding of the case.

Table 9: Distribution of interview participants

Interviews/ Participants	Individual interviews	Pair interviews	Focus group interviews	Total interviews (participants)
Librarians*	7	1	–	8 (9 participants)
Teachers	7	–	1 (7 participants)	8 (14 participants)
Students	8	1	1 (10 participants)	10 (20 participants)
Total interviews	22 interviews	2 interviews	2 (17 participants)	26 (43 participants)

* *Note:* This group included a programmer and an instructional designer.

The duration of interviews ranged from 15 to 75 minutes. Audio-recorded interviews were later transcribed in order to prepare the data for analysis. I next discuss the analysis of the data.

5.9 Data analysis

In order to "uncover findings that lead to new and increased understanding" (Jones et al., 2006, p. 128), this research employed Creswell's (2005) qualitative process of data analysis, which is illustrated in Figure 11. Documents related to OUM and its library (see Table 11) were listed, sorted and organized in a folder. I conducted a verbatim transcription of "converting audiotape recordings or field notes into text data" and found the process was significantly "labour-intensive" (Creswell, 2005, p. 233). However, doing so myself allowed me to be very close to the data and to immerse myself "in the details" of participants' perspectives (Agar, 1980, p. 103).

Code the text for description of the case

Code the text for themes to be used in the research report

Simultaneous

Code the data by locating text segments and assigning a code to label them

Iterative

Read through data to obtain a general sense of material

Prepare data for analysis (transcribe interviews, manage documents including personal field notes)

Collect data (audio-recorded interviews and documents)

Figure 11: The qualitative process of data analysis (Creswell, 2005, p. 231)

Transcribed interviews were sent to the respective participants via email for their approval or "validation" (Creswell, 2005). They were given ample time to reply to the email, which was prepared in English and/or Bahasa Malaysia. Nine out of 43 participants acknowledged their approval and none requested any emendation to the transcripts that were sent to them. Some data needed further clarification, so I asked respective participants for this and received feedback. Approved transcripts of interviews which were conducted in the Malay language were later translated by professional translators. I then read through the data, segregating according to units of analysis, and then conducted the analysis in phases.

5.9.1 Unit of analysis

Yin (2009) suggests that the "tentative definition of the unit of analysis (which is the same as the definition of the 'case') is related to the way you have defined your initial research questions" (p. 30). In this research, the research questions explicitly state my intention to explore the perspectives of three groups of participants – librarians, teachers and students – on their experience of digital library services being integrated in blended learning environments, either as providers or users of services. OUM was selected to be the case or bounded system. I stated in Section 4.3.3 that the units of analysis in this research consisted of three units: librarians, teachers and students. These units were used during analysis phases as well as in the presentation of the research findings.

5.9.2 Phases of analysis

Once the data was prepared, I conducted an inductive analysis in stages based on the units of analysis (see Table 10). An inductive analysis was conducted "to allow the important analysis dimensions to emerge from patterns found in the cases under study without presupposing in advance what the important dimension will be" (Patton, 2002, p. 56). In each stage, I read through all the data, obtaining a general sense of the information and reflecting on its overall meaning. I then began a thorough analysis with a coding process of "segmenting and labelling text to form descriptions and broad themes in the data" (Patton, 2002, p. 237).

Table 10: Data analysis phases

Phases	Remarks
1. Student perspectives	Inductive analysis was conducted using Microsoft Word and NVivo 8 on two separate occasions. Other phases used NVivo 8. Data included student perspectives on the digital library services and their use of them.
2. Library perspective	Data included descriptions of the blended learning nature at OUM (the case description). Data revealed librarians' experience of issues and challenges in integrating digital library services in blended learning environments and their continuous attempts for improvement.
3. Teacher perspective	Data included some descriptions of the OUM blended learning; the different roles of lecturers and tutors; and their perspective on the digital library services. Data disclosed teachers' use and their students' use of digital library services at OUM.
4. Cross-perspective	While the above three phases were based on a first layer of analysis, this phase was a second layer of analysis which was conducted to produce a synthesis of the findings. Ideas drawn from AT was used to interpret the findings, to understand the activity systems, and to acknowledge the complexity of networked systems.

During phase 1, I explored the difference between inductive analysis using computer-assisted qualitative data analysis software (CAQDAS) and a manual approach using Microsoft Word, and reported the experience in a conference paper (Norasieh, 2010). I found that coding using NVivo was systematic and gave me the feeling that the analysis was more "thorough" than using Microsoft Word. There was no significant difference in terms of the emerging themes in both analyses. Based on my experience, differences between Microsoft Word and NVivo mainly related to technical aspects whereby NVivo allowed the organization/management of a huge amount of data (in text and other formats such as PDF, image, etc.) and was able to simultaneously search multiple documents (Norasieh, 2010).

After phase 1, I decided to use NVivo to assist the coding process and categorization of codes. The central analytical task in qualitative research cannot be computerized (Kelle & Laure, 1995). However, the advantages of using CAQDAS include saving time (Lee & Fielding, 1991), making possible analysis of larger datasets (Kelle, 1995; Webb, 1999), and allowing researchers to concentrate more on the interpretive tasks, since time can be saved and management of data is less cumbersome (Marrison & Moir, 1998;

Roberts & Wilson, 2002). This means that its use is now relatively widespread (Bourdon, 2002). I chose NVivo 8 since AUT has a license for the software (there are other options such as Atlas.ti, The Ethnograph, or Folio Views) (DiCicco-Bloom & Crabtree, 2006).

In phases 1, 2 and 3, I began with free coding by assigning a code to segmented texts that represented an idea/concept. I then grouped codes (or "nodes" in NVivo) to create categories of nodes based on similar "ideas" or sub-themes (called "parent nodes" in NVivo), and further categorized those sub-themes into higher-level themes. This "layering and interrelating themes" (Creswell, 2005, p. 245) was enabled because NVivo facilitates the creation of "free nodes", "parent nodes", and "tree nodes". Building up trees allowed me to see relationships or "theoretical links" between nodes and concepts or themes (Bazeley, 2007). During phases 2 and 3, I discovered many narrations describing the blended learning nature of OUM. Those narrations and several documents assisted me to prepare the case's in-depth description (see Chapter 6).

Phase 4 analysis involved a second layer of analysis or "cross-case analysis" (Creswell, 2013, p. 101) which required more reflexivity and thinking. While the first three phases provided an in-depth understanding of each case or "within-case analysis", phase 4 involved "assertions or interpretation of the meaning of the case(s)" (Creswell, 2013, p. 101). Reaching this meaning involved reflexivity; that is "the capacity of the researcher to acknowledge how their own experience and context (which might be fluid and changing) inform the process and outcomes of inquiry" (Etherington, 2004, p. 32). During phase 4, I made several "trial and error" attempts, using NVivo to compare librarian, teacher, and student perspectives. I created "cases" in NVivo and utilized "queries" which were designed "to achieve either within case or cross-case analysis" (Bazeley, 2007, p. 136). I read through the transcripts again several times, reflecting and noting down significant findings. Thus I used a combination of manual and computer-assisted methods during phase 4. This combination, according to Welsh (2002), is likely to achieve the best result. I regularly consulted the NVivo trainer at AUT to get feedback on my approaches and use of the software.

I put aside AT during phases 1, 2 and 3 to allow inductive analysis to occur. Inductive analysis "allows the important analysis dimensions to emerge from patterns found in the cases under study without presupposing in advance what the important dimension will

be" (Patton, 2002, p. 56). In phase 4, I drew on ideas from AT as interpretive tools and discovered two activity systems.

The whole analysis process was lengthy, complex, and sometimes frustrating. The analysis involved listening to the interview tapes; transcribing the 26 interviews; checking translated interviews; reading the transcripts many times; coding statements and choosing categories; creating categories and sub-categories; creating and linking themes; selecting quotations; and ultimately writing the findings up in a coherent way. I made several attempts to ensure the quality of this research, which I discuss next.

5.10 Quality of research

I hold the view that judging the value of qualitative research should not be based on quantitative criteria and language such as reliability or validity terms (Jones et al., 2006). Qualitative researchers have developed different criteria for qualitative studies that are "breaking out from the shadow of quantitative criteria" (Arminio & Hultgren, 2002; Jones et al., 2006), including "trustworthiness" (Lincoln & Guba, 1985) and "goodness" (Jones et al., 2006; Lincoln & Guba, 2000; Smith, 1993). Trustworthiness of qualitative research, according to Lincoln and Guba (1985), could be achieved by adhering to the criteria of credibility, transferability, dependability and conformability. I discuss these criteria and the steps taken to meet them in this research below.

5.10.1 Credibility

Credibility is related to how truthfully data is collected (Lincoln & Guba, 1985) or how close the findings are to the reality of the participants (Merriam, 2009). Researchers have suggested several strategies to achieve credibility and the credibility of this research has been achieved by using the following strategies:

1) *Triangulation*: This involves "seeing things from different angles" (Simons, 2009, p. 129). In triangulation, researchers use multiple and different sources, methods, investigators and theories to provide corroborating evidence (Creswell, 2013, Miles & Huberman, 1994, Patton, 1990). In this study, I used two data collection techniques – interviews and documents – to gain rich data; and selected three

groups of participants – librarians; teachers and students – to gain a holistic understanding and different viewpoints of the phenomenon under investigation.

2) *Member check*: The researcher is advised to "solicit feedback on your emerging findings from some of the people that you interviewed" (Merriam, 2009, p. 217). Such feedback allows researchers to ensure the credibility of their research (Lincoln & Guba, 1985; Patton, 2002). In my case, I sent interview transcripts to participants via email to gain their approval and so they could check the transcripts and provide feedback. I sometimes contacted participants to clarify some of the findings.

3) *Peer debriefing*: A term similar to "peer examination" or "peer review". It implies having someone "to scan the raw data and assess whether the findings are plausible based on the data" (Merriam, 2009, p. 220). In my research, I conducted regular consultation with my supervisors throughout the fieldwork and analysis, and was involved in discussions with colleagues and friends. I also regularly presented conference papers to obtain audience/reviewers' comments and suggestions and to highlight the research contribution. Comments, suggestions and reviews obtained during presentations or the reviewing process were taken into consideration as they prompted reflexivity and provided useful insight. Emerging themes have been partially presented or reported in several publications (Norasieh, 2010a; Norasieh, 2010b; Norasieh, 2012; Norasieh & Fadzilah, 2011; Norasieh & Gerbic, 2010; Norasieh & Gerbic, 2011; Norasieh, et al., 2013).

4) *Explicit acknowledgement of my position and reflexivity*: "Reflexivity" is defined as "the process of reflecting critically on the self as researcher, the 'human as instrument'" (Lincoln & Guba, 2000, p. 183). I clearly identified my assumptions, based on my personal background and professional expertise, my worldview, and theoretical orientation at the beginning of the study. My position as an outsider researcher led me to reflect a lot on the findings and I dedicate a section to these reflections in Chapter 10.

Merriam (2009) suggests another strategy to ensure research credibility – *adequate engagement in data collection* – which allows researchers to "get as close as possible to participants' understanding of a phenomenon" (p. 219). I was aware that as an outsider researcher the three months spent doing fieldwork would be insufficient to completely understand the positioning of digital library services in blended learning environment at OUM. As explained in section 5.7, I planned a range of six to 12 one-on-one interviews for each group of participants which meant 18 to 36 interviews. However, after conducting 26 interviews I decided that data saturation had been reached. I was careful not to "import damaging frameworks of understanding" (Bridges, 2001, p. 375) by conducting interviews which were semi-structured, open-ended and in-depth, and collecting various documents which provided a clear understanding of the bounded case.

5.10.2 Transferability

Transferability means that the findings in one context can be transferred to similar situations (Holloway, 1997, p. 161). This was achieved by explicitly describing the analysis in a systematic three-stage process: 1) creating profiles of the case (Chapter 6); 2) describing the findings of each case (Chapters 7–9); and 3) conducting cross-perspective comparative analysis to synthesize the data from all the cases and interpret and discuss the findings (Chapter 10).

5.10.3 Dependability and confirmability

Dependability, according to Lincoln and Guba (1985), refers to the stability and trackability of data, while confirmability means that the data and interpretations of the study are grounded in events rather than the inquirer's personal constructions. In this research, I used an "audit trail" which "provide[s] detailed description of the path of the research, so that readers can follow the decision-making process" (Holloway, 1997, p. 161) to ensure the dependability of this research. I also used inductive analysis to ensure the research's confirmability – that the themes were all grounded in the data.

5.10.4 Goodness

In addition, this research demonstrates "goodness" or worthiness, which according to Arminio and Hultgren (2002) requires that "elements of the meaning making process are illustrated, epistemological and theoretical foundations are linked to the selected methodology; and that the method of data collection and its analysis are clear, offering new understanding that leads to improved practice" (p. 446). I have endeavoured to meet the criteria of goodness suggested by Jones et al. (2006, p. 119) by ensuring consistency of epistemology across the research questions, data collection and analysis procedures; correctly applied data collection and analysis procedures; a sufficient background knowledge of the topic; a clear justification on why some conclusions are embraced and others not; and an articulation of the value of the study to practice in a language that is accessible to a wide range of readers. The value of the study is articulated in Chapter 10, which provides an understanding of current practice and outlines the implications of this research.

The meeting of the above criteria of credibility, transferability, dependability and goodness indicates the quality of this research. Generalization is clearly not the aim of this study.

5.11 Chapter summary

In this chapter, I discussed the research design, including this study's philosophical assumptions, constructivist epistemology and interpretive theoretical framework, qualitative case study methodology, methods for data collection, data collection process and analysis, and steps taken to ensure the quality of the research. It is important to note that AT did not solely direct me to a qualitative methodology. Rather, it was my own ontology and epistemology of reality which was decisive factor when it came to choosing the methodology for this research. AT offers a theoretical framework to understand the phenomena under investigation by providing concepts such as the components of an activity system and introducing the notions of tensions and contradictions. Understanding of the nature of the case studied in this research is crucial for understanding the complexity of its activity systems and for revealing tensions and contradictions; this is the subject of Chapter 6.

Introductory remarks to the research findings (Chapters 6–9)

This study aimed to achieve a holistic understanding on the integration of digital library services in blended learning environments within the context of a Malaysian HE. The term "integration", as described in Sections 1.3 and 3.3, was viewed in relation to the positioning of library information services within emerging online learning environments. In order to achieve the research aim, three groups of participants were selected (librarians, teachers and students) and two research questions were devised:

> 1) How do librarians integrate digital library services in blended learning?
>
> 2) How do teachers and students experience the integration of digital library services in blended learning?

Following the constructivist epistemological and theoretical paradigm, I applied a qualitative case study methodology and utilized interviews and documents as methods for data collection. The bounded case, Open University Malaysia, is described in Chapter 6. Informed by activity theory (AT), the three groups of participants were considered as units of analysis (see Sections 4.3 and 5.9). The research findings are consequently presented in separate chapters: librarian perspectives (Chapter 7); teacher perspectives (Chapter 8); and student perspectives (Chapter 9). These chapters directly address the above two research questions.

In the findings chapters, I have provided interview quotes in a selective manner. Long quotes are given when they provide a clear description of ideas being presented, but in some cases short quotes are integrated into sentences. Demographic information of participants is available at the beginning of Chapters 7, 8 and 9. Pseudonyms are used throughout all chapters in order to protect the anonymity of participants involved in this research. Further designation of participants is given: in Chapter 6, where designation is mentioned next to pseudonym; in Chapter 8, where I differentiate between lecturers and tutors by adding the letter "L" or "T" next to their pseudonyms, and in Chapter 9, where I add the letter "FG" (focus group) to differentiate participants from OUM branch. Since AT was put aside during phase 1–3 of data analysis to allow an inductive analysis to occur (see Section 5.9.2), the findings on the three perspectives are presented with minimal reference to the activity systems. The interpretation of the findings in relation to AT is performed in Chapter 10, which also my reflections on the research journey.

CHAPTER 6: CASE DESCRIPTION

6.1 Introduction

For this case study research project on the integration of digital library services in blended learning environments, I selected Open University Malaysia (OUM) to be the bounded case. As explained in Section 5.3, OUM was selected due to its blended mode of learning for distance learners and its library being a digital library since its establishment in 2000.

My contemplation of, and reflection on, activity theory (AT) as a theoretical lens in relation to the data collected went through several phases of development and led to my discovery of two activity systems in the case under study: the OUM's blended learning activity system and the digital library activity system. As I explained in Section 4.3.2, I initially considered only one activity system when I commenced fieldwork. However, as I was including three groups of participants, the integration of digital library services became the librarians' activity system and the teachers and students became another activity system. Later, these activity systems became providers and users of services respectively. However, I was not able to fully identify the components of these systems based on the data collected. Eventually I settled on the blended learning activity system and the digital library activity system because I was able to identify their components.

This chapter provides a description of the case as well as the activity systems. I constructed this description from multiple sources, which are presented in this chapter. I then provide an overview of OUM as the bounded case, including its establishment and development. Next, I explain the two activity systems (blended learning and digital library) and describe the components of each system. I later describe the impact of OUM blended learning on the digital library services provision in meeting the information needs of library users in order to illustrate the intertwining network of the two activity systems.

6.2 Sources of description

I prepared this description using two main sources: the interviews conducted for this study and OUM-related documents. First, I used interviews or "direct quotations from people about their experience, opinions, feelings and knowledge" (Patton, 2002, p. 10) conducted during fieldwork. As explained in Section 5.8, I conducted 26 interviews with 43 participants consisting of librarians, teachers, students, an instructional designer, and a programmer. Most quotes in this chapter are taken from the interview with Farid, the instructional designer, and the others are from the interviews with the programmer, librarians and teachers. These quotes are presented here because they provide a clear description of the case. Participants have been assigned pseudonyms to preserve their anonymity. Demographic information relating to interview participants is included in each Chapter 7–9 in response to group perspectives. The instructional designer and programmer are included in the librarian group to conveniently segregate presentation of three perspectives.

Second, I used "documents" or "artefacts" (Patton, 2002) related to OUM which were collected during and after fieldwork. Some of these documents are listed in Table 11. Although only selected documents are referred to in this chapter, all the documents consulted provided me with a broad and deep understanding of the case. They familiarized me with OUM and provided necessary background during my analysis and interpretation of interview data.

As an outsider researcher, these documents and interviews were an important bridge for me to reach an understanding of the bounded case, as well as the two activity systems. This understanding assisted my presentation of the research findings and later guided my interpretation and discussion of them.

Table 11: References/documents used for the case description

No.	Documents
1.	OUM Annual Report (2005, 2006, 2007, 2008, 2009, 2010 and 2011)
2.	OUM website (updated 2011)
3.	OUM Today (Online Newsletters)
4.	OUM Prospectus 2011 and 2010
5.	OUM Study Guide (2011)
6.	Module: OUMH1103 Learning Skills for Open & Distance Learners
7.	Centre of Instructional Design and Technology (CIDT) – PowerPoint slides (2010)
8.	2010 Plan and Budget, TSDAS Digital Library – PowerPoint slides
9.	Library Report on Users Satisfaction Survey (2006 and 2007)
10.	Library Report on Printed Material Usage (2009)
11.	Library Newsletters
12.	Library minutes (2005 to 2008)
13.	Library Progress Report 2006
14	Conversations via email with librarians

6.3 The bounded case: Open University Malaysia (OUM)

OUM was established as a private university in the year 2000 by a consortium of 11 Malaysian public universities called Multimedia Technology Enhancement Operations Sdn. Bhd. (METEOR). The universities were as follows: Universiti Malaya, Universiti Sains Malaysia, Universiti Kebangsaan Malaysia, Universiti Putra Malaysia, Universiti Teknologi Malaysia, Universiti Islam Antarabangsa, Universiti Utara Malaysia, Universiti Malaysia Sarawak, Universiti Malaysia Sabah, Universiti Pendidikan Sultan Idris, and Universiti Teknologi MARA. These universities, as mentioned in Section 2.2, were established from the 1960s to the 1990s. They were the earliest public universities in the country. The fact that a consortium of public universities established a private university summoned an assumption that they possibly shared a common goal that could only be achieved through the establishment of a private university.

OUM adopted the motto "A University for All" which was claimed to be consistent with the university's philosophy on the democratization of education (OUM, 2010). According to this philosophy, education should be made available to all, regardless of

time, place, age and socio-economic background. OUM, as the seventh private university in Malaysia, has become an alternative avenue for the public to gain tertiary and lifelong education (OUM, 2010). Education does not stop when people join the workplace. With the establishment of OUM, people of different professions and backgrounds are able to further their studies on part-time basis, to get learning experience and upgrade their qualifications.

OUM operated from its main campus in Kuala Lumpur and had more than 53 branches all over the country and worldwide including Yemen, Ghana, Sri Lanka, Hungary, Bahrain and the Maldives. Within Malaysia, there are basically two types of branches. The first type is branches with specific buildings owned by the university (acquired or hired) and there were 18 of these at the time of data collection. Services and facilities at those branches included computer laboratories, resources centre (for library printed materials), wireless Internet (Wi-Fi), student lounges, prayer rooms and an electronic customer relationship management system (eCRM) (OUM, 2011b). The second type is branches where OUM cooperated with other institutions including local public universities and teacher institutes or *Institut Pendidikan Guru*. The public universities that are members of the METEOR consortium and the teacher institutes located all over the country provided facilities and resources (such as classes, laboratory, etc.) for OUM programmes. A list of OUM branches is available in Appendix F. The reason for having several branches was to cater for particularly the face-to-face learning in the OUM three modes of learning: online, self-paced and face-to-face learning. Further elaboration on OUM mode of learning is available in section 6.5 below.

OUM offered over 70 programmes at the time of data collection (compared to only four programmes when it commenced in 2001) at various levels, including diploma, bachelor, master and PhD programmes. As of 2011, more than 30,000 students had graduated from OUM, including teachers, nurses, civil servants, private sector employees, members of the armed forces and retirees (OUM, 2011a). There were six faculties: Business and Management; Education and Language; Applied Social Science; Information Technology and Multimedia Communication; Science and Technology; and Nursing and Allied Health Science.

6.4 The two activity systems

I identified two activity systems during the initial stage of analysis, namely providers of digital library services and users of services (Norasieh & Gerbic, 2011). Further contemplation led me to redefine these as the OUM blended learning activity system and the OUM digital library activity system (Norasieh, 2013). A description of these now follows, as well as a discussion of the impact of blended learning on the digital library.

6.4.1 Blended learning at OUM

Most OUM students were adult learners working full time and studying part time. They were employed in various professions and were furthering their studies at OUM for various reasons such as to upgrade qualifications, to venture into new careers, or to fulfil employer requirements. Student participants in the research, for example, included teachers and IT people working in banking institutions. Teachers are required by the MOE to further their studies and upgrade their qualifications. On the other hand, IT people tended to study at OUM in order to improve their skills so that they could venture into different professions.

The university provided a blended learning option for students which involved three modes of learning: self-managed learning, online learning, and face-to-face learning (OUM, 2010). Figure 12 illustrates these three modes of learning, which are explained below (OUM, 2011a):

1) *Self-managed learning*: In this mode, learners received a module for each course they enrolled in. The module was described as a high-quality study pack for each course which consisted of course guides/modules; textbooks and supplementary readings; and multimedia learning materials such as audio/video tapes and CD-ROMs (OUM, 2011a). This mode of learning requires OUM learners to study independently at their own pace.
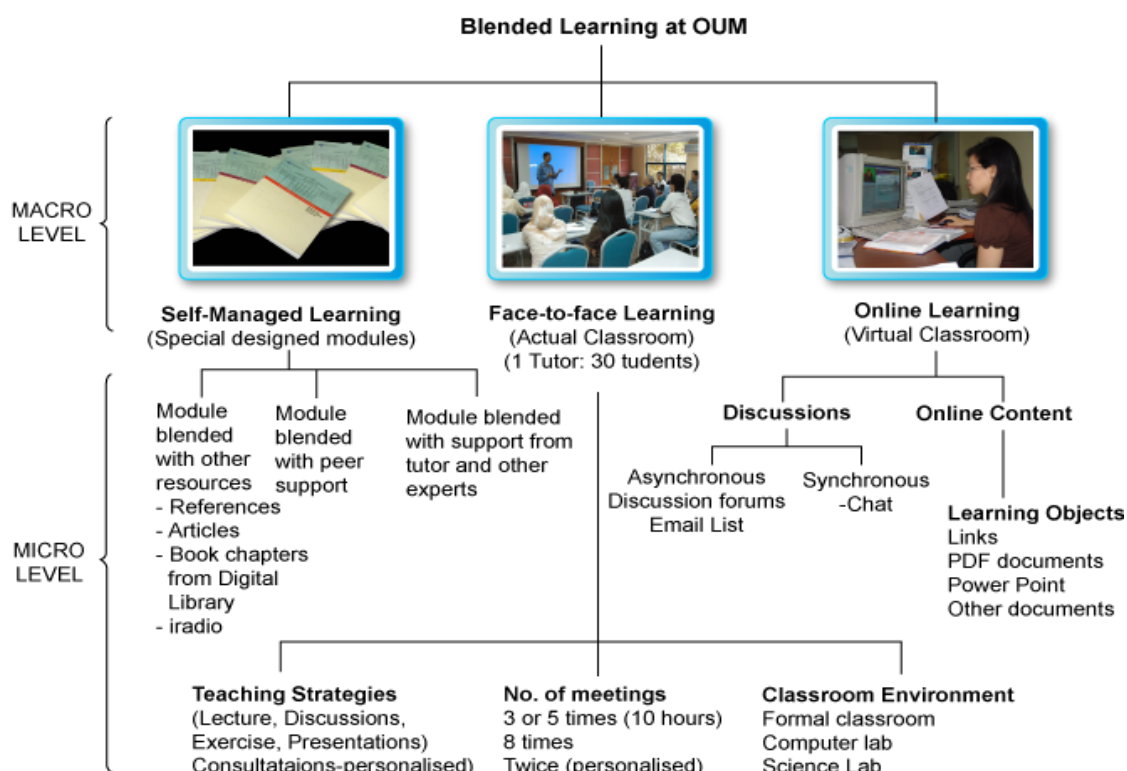
Figure 12: Blended learning at OUM

2) *Online learning*: OUM provides the necessary facilities for collaborative online learning, such as email and forums using the OUM learning management system (LMS) called "My Virtual Learning Environment". The platform enables quick and easy online access to course information and multimedia learning materials. It also provides email and forums for communication with fellow learners, facilitators or programme coordinators.

3) *Face-to-face sessions*: These are facilitator/tutor-led meetings with learners in which issues related to the course of study are discussed. These meetings were conducted during weekends. Regular face-to-face tutorials/seminars are conducted by highly qualified and experienced facilitators and sessions were held once or twice a month during weekends, with up to 15 contact hours.

The blending of the above three modes differed from one student to another. This is known as personalized learning (OUM, 2011a) and has been designed to best suit the different needs of distance learners. Learners might opt for more online learning than face-to-face learning. Those who were very busy at work and had limited time for their

learning, for example, might reduce the face-to-face learning and increase the online learning element. This was especially preferred by those working in organizations in cities who had a computer at home or an office with fast and convenient Internet access. In contrast, those living in rural areas where Internet access was limited might opt for more self-paced learning and a limited portion of online and face-to-face learning. In this way, students are able to personalize their learning using the blend of learning modes that suits their needs most.

The personalized learning policy offers flexibility to OUM for organizing face-to-face tutorials, especially when the number of learners from one geographical area might be too small for face-to-face study, thus making it difficult to assign them to a learning centre in their area. Personalized learning also offers flexibility to distance learners to choose the proportion of each mode of learning that best suits their time, location and needs. It requires learners to fully utilize the electronic educational platform provided by the university, including email and the online forum, in the LMS.

OUM students have access to their profile in the My Virtual Learning Environment LMS, which contains their personal details, registered courses, academic progress, transcripts and financial statements. They also have access to e-services which are linked to all forms related to online registration and exams or course-related activities such as add/drop, credit transfer, etc., as well as announcements and alerts, OUM-related documents such as handbooks, newsletters, etc., and the OUM academic calendar (OUM, 2011b). The digital library is also available in the LMS.

6.4.2 The OUM digital library

The digital library began operations in 2002 and was named after the OUM's founding president and vice-chancellor, Tan Sri Dato Abdullah Sanusi. The library is operated from the main campus in Kuala Lumpur by a small group of library staff (consisting of senior librarians, librarians and support staff, and headed by a chief librarian). Most collections are in digital format in the form of e-books and online resources/journals. There are limited physical/printed collections located in the library and some of them are distributed through selected learning centres across Malaysia.

As of 2011, the library was subscribed to 37 online databases (comprising of e-books, e-journals, e-theses, etc.), three newspaper databases, and one local legal database, and held close to 30,000 printed volumes (OUM, 2011a). The library has developed its own e-content of about 3,000 titles comprising articles, conference papers, books, past exam questions, and theses/dissertations. The library also conducts regular information skills workshops and makes use of Web 2.0 technology "to encourage users to utilise the library facilities and services effectively" (OUM, 2011a, p. 86).

As part of an open and distance learning university, with local and international students, the library has applied the concept of "anytime, anywhere" so that interactions with the library and access to collections are available 24/7 and from any location. The library was described by Ruzita Ramly, its former chief librarian, as follows (Norasieh et al., 2013, p. 72):

> The (library's) digital collection provides: (a) a borderless environment – the digital collection is accessible globally through the Internet; (b) seamless availability – the digital collection is accessible 24 hours a day, 7 days a week (although the physical library has its closing hours); (c) simultaneous access – databases are simultaneously accessible by several users; and (d) single sign-on portal – registered students and staff of OUM must login at the OUM portal to access all facilities and services and they are able to navigate to the library portal through My Virtual Learning Environment without a second time login.

In other words, the OUM digital library services could be accessed by students and teachers at any time and from anywhere they might be.

6.4.3 Illustrating the two activity systems

My understanding of the activity system/s involved in this research evolved and developed as the research progressed. In Section 4.3, I presented my initial understanding of the components of the activity system of the integration of digital library services in blended learning environment. I identified only a single activity system and constructed its components (see Table 5) based on my understanding of AT. This initial understanding occurred prior to fieldwork and my understanding of the activity system/s developed as the research progressed.

After the fieldwork and at early stage data analysis, I discovered two activity systems, which I called providers of services and users of services respectively. However, I was

not able to identify the components of these systems. Librarians as providers, and teachers and students as users were not activity systems in themselves but subjects or actors in the activity system. The same applied to users of services. This prompted further contemplation which resulted in the identification of two different activity systems: the OUM blended learning activity system and the OUM digital library activity system, which are illustrated in Figure 13.
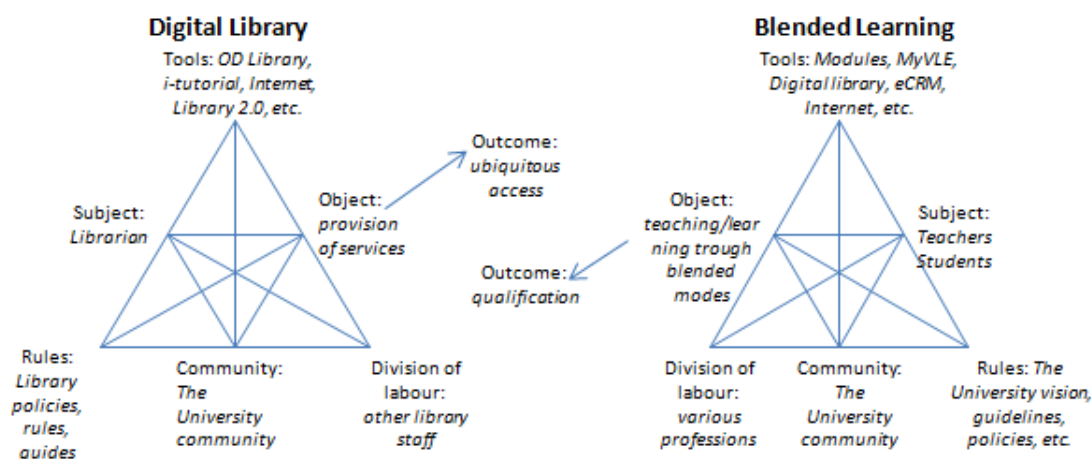
Figure 13: The two activity systems identified in this research

The components of these two activity systems were different although there were some similarities. In the blended learning activity system, the *subjects* (teachers and students) shared the same *object(ive)* of teaching and learning through OUM's blended modes of learning (face-to-face, online, and self-paced learning). There were *rules* within the systems including OUM's mission and vision, policies, rules and regulations. The *community* was the OUM community which included various faculties, departments, units, services and facilities located at the main campus in Kuala Lumpur as well as other learning centres located around Malaysia and elsewhere in the world. Activities in the system were segregated by various professions or *divisions of labour* who were in-charge, for example, of ensuring *tools* were in place and operating/working well. In modules (as one of the tools), for example, there were various professions involved in the entire process of writing, creating, moderating and making available the modules such as subject-matter experts (SMEs), lecturers, instructional designers, publishers, etc. The *tools* used by subjects include modules, the LMS, the digital library, eCRM,

Internet access or Wi-Fi within the campus/learning centres, etc. The *outcome* of the blended learning activity system is OUM formal qualifications; teachers are involved in facilitating the gaining of qualifications while students are involved in earning/getting the qualification.

In the digital library activity system, the *subjects* were librarians and their *object(ive)* was to provide ubiquitous access to the digital library resources and services to the OUM community, particularly its students and teachers. Librarians follow *rules*, such as the library policies or guides and they are assisted by other library staff or *divisions of labour* such as clerks or library assistants. They serve in a similar *community* as in the first activity system, namely various faculties, departments, units, services and facilities located at the main campus in Kuala Lumpur, as well as other learning centres located at various parts in Malaysia and elsewhere in the world. However, the findings of this study suggest that the core users of library services were students and teachers. Librarians utilize *tools* in performing their activities such as the library system, the Internet, the online library forum in the My Virtual Learning Environment, Library 2.0 (blogs, Facebook), i-tutorials, and so on. The *outcome* of the digital library activity system is ubiquitous access to the digital library resources and services for the OUM community.

In the intertwining of the two activity systems, various tensions/contradictions and innovations/expansive cycles (Engeström, 1999a, 1999c, 2001) occurred. I explain this further in Chapter 10; next I describe the impact of OUM blended learning had on the digital library.

6.5 OUM blended learning impact on the digital library

Each of the three modes of the OUM blended learning model impacted the ways in which digital library services were provided. I now describe each mode in relation to its impact on the digital library.

6.5.1 Self-managed learning

OUM students were given a module for each of their enrolled courses to facilitate their self-paced learning. The OUM printed modules are considered "the core learning

material that drove all other learning activities" (OUM, 2010, slide 31). The modules and the digital library were closely related; all references that were listed in modules must be made available by the library. In order to allow the reader to appreciate the close relationship, I next discuss module writing, the role of SMEs, OUM assessment, and the role of the OUM Centre of Instructional Design and Technology.

6.5.1.1 OUM modules

All OUM learning materials were developed by the university's Centre of Instructional Design and Technology. Established in January 2002, the centre is responsible not only for developing OUM learning materials but also supporting the institutional needs of OUM such as video/audio recording of events, multimedia courseware, design of calendars, greeting cards, backdrops, banners, multimedia montages, animations, desktop publishing, etc..

Modules are created in order to meet the nature and needs of distance learners who cannot afford to purchase the many textbooks associated with many conventional courses. This was well explained by Farid (instructional designer).

> Twenty or ten years ago, textbooks were very content oriented. In this so-called conventional way of learning, there would be a few textbooks for a course, or perhaps for few topics in a course. So students needed to refer to many textbooks for one single course. In the context of OUM (as an) open and distance learning (institution), we understood the nature of our students was totally different. Their backgrounds were different and their locations were geographically dispersed. Some of them lived in rural areas while others lived in town and cities. Some of them had Internet access but some had not. Most of them were working adult but had the courage and means to further their studies. Hence, we thought the conventional learning (with many textbooks) was not suitable for our students. Hence, we provided printed modules which we called self-instructional learning materials.

Modules were available in both printed and electronic versions. The latter was available online or in an offline (CD-ROM) version, as well as in web-based versions available in My Virtual Learning Environment. These alternatives were designed to suit the various needs of distance learners, as explained below:

> Generally, we gave printed modules to students every semester. The softcopy was uploaded into the My Virtual Learning Environment in PDF and the same applied to CD-ROM, called offline e-content. However, not all modules were available offline. For students who lived in a very rural area, they might go to

the learning centres. We had about 60 learning centres throughout the country. In some cases however, the nearest learning centre was still far from where they (students) lived. They may go to the learning centre twice or three times throughout semesters. Hence, the e-content available in My Virtual Learning Environment was surely not suitable for them. Hence, we provided offline content in CDs and only those rural students would receive them. For those who lived in areas where Internet access was easily available, or those who live nearby our learning centres, we provided them the web-version modules. (Farid, instructional designer)

As of January 2010, OUM had produced more than 900 modules. Farid described the module-writing process as a very long one which involved several groups of people:

First, once a syllabus for a particular course was approved by the MQA (Malaysian Qualification Agency), we appointed (module) writers or whom we called subject-matter experts (SMEs). Most writers or SME were not OUM staff, only 10 percent were, but the rest were lecturers in IPTA (public universities) or IPTS (private universities) or practitioners or professionals of certain subjects such as engineering and nursing. Second, we gave the SME training on how to write (module) for open and distance learning ... Third, (when the SMEs have written the modules) we conducted a moderation process whereby we appointed someone else to check the writing, to check if it suited the syllabus and that modules were well written … Fourth, once approved by respective faculty, only then we (instructional designers) started developing the modules. All process of writers and moderators' appointment and payment were done by CIDT (the Centre of Instructional Design and Technology) upon approval by respective faculty.

He continued:

In the module development and within the (abovementioned) processes, there was a Screening Unit that filtered the content, plagiarism and the language level. The instructional designers would communicate with SMEs and the development team, consisting of graphic designer and desktop publishers. Sometimes, we discussed about the story board, scripts, visualizations, etc. At the end, desktop publishers would compile everything. For printed module, they send them for printing, while for e-content (electronic module), they send them to multimedia programmer for further steps.

6.5.1.2 Subject-matter experts and the role of the library

In module writing, writers, or SMEs, as OUM called them, were advised to use materials readily available in the library, especially the electronic materials, as references in the modules:

We encouraged the subject matter experts to utilize our existing collections to be references in modules, regardless of printed or online (digital) collections. However, we preferred the online collections because students could easily

access them. If the experts selected printed materials as references in module, we could only acquire up to four copies of each reference. For textbooks, we send two copies to each learning centre. The problem in this case was when students at learning centre borrowed the printed books, other students could not borrow them until returned. (Zaini, librarian)

Initially, subject matter experts had the liberty to choose any references they wished to use in module writing. As a result, there were cases in which textbooks or references in modules were not available in the library. In this case, the library would purchase those materials and make them available to users.

> In module preparation, if they (SMEs) needed certain books as references, we would acquire them, preferably in electronic version. The reason was to allow many students to access e-books even those who lived in Sabah and Sarawak (rural areas). (Siham, librarian)

If materials requested by SMEs were not available in the local market, were out of print or were too expensive, librarians would find ways to solve this issue. As Zety (librarian) explained,

> Even if the materials (requested by SMEs) were too expensive, we would still buy them because they were listed as reference in modules. The reason was once materials were listed as reference in modules, students would definitely retrieve and use them.

In the past few years, OUM has established a policy that encourages SMEs to utilize the existing materials available in the library. The policy resulted after librarians realized the significant role SMEs could play in encouraging usage of the library collections, specifically textbooks and references listed in modules. As Zaini (librarian) explained,

> We proposed to the Centre of Instructional Designer and Technology and various Faculties to give subject matter experts access to the digital library in order to allow them to access to portal, e-books and e-journals. They could choose the existing electronic collections as textbook in modules. As a result, our students could utilize (textbooks) since access was unlimited.

As library resources developed and grew, the library ensured that module writers utilized the library's resources, especially its digital resources.

6.5.1.3 Modules and assessment

The role of the digital library in modules, as mentioned above, has been crucial because student assessment at OUM is based mainly on modules. Basically, assessment was

divided into four segments, as illustrated in Table 12. The examinations (mid-term and final) were based entirely on the modules, as confirmed by several participants, including Masri (tutor), who said that "*final examinations were totally based on the module. Assignments were also related to contents within module.*"

Table 12: OUM assessment

Format	Component	Weighing
Fixed	Online participation	5 %
	Assignment	35–45 %
	Mid semester examination	10–40 %
	Final examination	50–60 %

Consequently, some students have a tendency to refer to modules alone and use no other sources of information. Zaini (librarian) commented, "*(OUM) students, especially the undergraduates, only referred to the module and references (listed in modules) but not beyond that.*" These comments suggest that complete dependence on the OUM-produced-modules for students' self-paced learning had influenced the use of the digital library services and resources not only among students but also teachers. I elaborate on these findings in Chapters 8 and 9.

6.5.1.4 Centre of Instructional Design and Technology and the digital library

Besides the close relationship between SMEs, modules and the library, another role of the library was to act as a repository of the archive resources used by the Centre of Instructional Design and Technology in module development. Farid (instructional designer) commented,

> The Centre of Instructional Design and Technology cooperated closely with the library to keep materials that we think should be kept in the library. We have a lot of materials such as footage, audio-video (files), or modules that we have produced, etc. So we park these materials in the library … just imagine we have produced more than 900 titles of modules, some of them (materials used to produce modules) like audio video files, or the so-called archives are selectively preserved and kept in the library. For those who would like to conduct research or to write (publish) paper, they could refer our materials kept in the library.

Moreover, the library kept not only the Centre's materials but also other materials produced by OUM such as thesis collections, and journal and conference papers produced by OUM academics, staff and students, etc.

6.5.2 Face-to-face learning

The OUM digital library had a limited role in this mode of learning since it involved mainly students and teachers. Face-to-face learning occurs at the main campus as well as OUM learning centres all over the country. The interviewees described the roles of learning centres and the different roles of lecturers and tutors at OUM.

6.5.2.1 Learning centres

OUM students are mostly working adults. They might select a fully online mode of learning or a blended mode of learning. For those who choose the blended mode, they attend face-to-face tutorials which are conducted in various OUM learning centres located throughout the country. The main library is located at the OUM headquarters in Kuala Lumpur. There are also resources rooms in some learning centres. As mentioned earlier, librarians are only located at the main library, and resources rooms at learning centres are handled by administrators. In each learning centre and teacher institute, however, OUM has appointed an administrator. Since teacher institutes have their own libraries, OUM does not allocate any library resources at those institutes. "*In teacher institutes, OUM did not allocate any library resources but in learning centres such as in Sandakan, Johor Baharu, (etc.) OUM bought our own buildings and allocated a resources room in each centre*" (Siham, librarian). Teacher institutes' libraries are operated independently from OUM. OUM utilized facilities in the teacher institutes such as classrooms and teaching aids like projectors, computers etc., for its face-to-face tutorials.

Administrators at the various learning centres and teacher institutes liaise with tutors for face-to-face tutorial schedules and anything related to student learning conducted in their respective places. Tutors are appointed by OUM on a contract basis. As explained by Amin (tutor), "*every learning centre has an administrator. If we (tutors) have any problem, we would liaise with him/her. Administrator would directly deal with us … if*

there was any information or recent development." OUM administrators were expected to have some basic knowledge of the library. Siham (librarian) explained,

> Administrators in (OUM) branches knew how to use the library. I personally had asked some of them, and yes they knew basic information but not details… if students asked details … like how to search (specific databases), they (administrators) instructed them (students) to call or email the library.

The role of administrators is to redirect library-related enquiries to the librarians. As mentioned earlier, the library distributes the printed references in modules to all learning centres. The administrators are also responsible for managing the resources, including circulation of resources.

6.5.2.2 Different roles of lecturers and tutors

The roles of tutors and lecturers were different. Lecturers are considered permanent employees of OUM but tutors are paid on hourly basis. Tutors are only responsible for students' face-to-face learning, while lecturers are responsible for the overall module including ensuring learning materials are in place. Lim (lecturer) explained,

> The nature of working in OUM was a bit different… other lecturers who worked in public universities or higher learning institutions focused on lecturing and doing research. Here at OUM, our works were different because we were required to do more administrative work (than lectures or research), we did not spend much time with students, i.e., less face to face lectures. We spent more time doing assessment, first of all, preparing exam questions, preparing assignment questions, preparing schema, etc. We were also required to do research on new programmes, to design and plan for new programmes for the faculty. Of course we also have to spend more time looking for module writers to write the modules. We also have to monitor the online forums (in My Virtual Learning Environment). We monitored student discussion (in the forum) and replied students' questions promptly because they would pose questions to us or to their classmate from time to time. Therefore we have to go online to monitor and facilitate discussion, and to help students in the online forum.

Lim described the various responsibilities of lecturers at OUM. They did not get involved directly with face-to-face learning with students. OUM students received face-to-face learning from tutors and facilitators. Tutors dealt with undergraduate students while facilitators dealt with postgraduate students. This research managed to interview only lecturers and tutors.

The number of OUM students had increased in the years immediately before data collection, as had the number of tutors. Farid (instructional designer) explained,

> In a semester, there were approximately thirty-five to forty thousand active students but we have less than one hundred lecturers. So for sure the number of lecturers could not cater for forty thousand students. That was why we had four to eight thousand tutors at one time, to meet face-to-face with forty thousand students.

In this thesis, I have used the term "teacher" for both tutors and lecturers at OUM. The findings indicate that their different roles influenced the way they used digital library services in blended learning and I elaborate on this in Chapter 8. The library did not have a direct or clear role in face-to-face learning. This kind of learning was conducted by tutors. Since learning is bounded by modules, the library's role has been to make sure materials listed in modules were accessible all the time. On top of that, the library conducted face-to-face workshops in various learning centres. Similar to OUM's policy of blended learning, the digital library conducted frequent face-to-face tutorials on top of online tutorials or i-tutorials.

6.5.3 Online learning and the LMS

OUM's My Virtual Learning Environment is an online learning platform which provides an electronic means for the university to effectively deliver its programmes. It allows students to participate in online discussion with tutors and peers as well as access the digital library (OUM, 2009). It is a complete system that covers various aspects of learning "*from A to Z, from registration, courses, forum ... online add-drop and withdrawal, online forms ... payment, payroll, and students finance*" (Irene, programmer). Servers for the system are hosted outside the campus but cases of server outage or "*power interruption*" (Irene, programmer) have occurred. The Information Technology Department "*investigated and identified the main reason of such (outage) occurrences was because so many people entered into the system at the same time*" (Irene, programmer). The solution has been to selectively control access to server. As explained by Farid (instructional designer),

> The system could handle few hundreds of simultaneous entries. However, the number of OUM students has increased to thousands ... (In order to solve the issue of simultaneous entries into the system), the Information Technology Department selectively scheduled and prioritized access to the server, for

example during registration, extra bandwidth would be allocated to students, while after examination, extra bandwidth would be given to staff and tutors to enter marking results.

Due to issues of bandwidth, the university had to develop policies which affected access to the LMS. The findings suggest the issue of access influenced library use among teachers and students and this is elaborated on in Chapters 8 and 9.

6.5.3.1 The My Virtual Learning Environment and the digital library

My Virtual Learning Environment and the digital library were separate systems. The systems worked independently and did not link with one another. However, the library has added "*a hidden process*" (Daud, librarian) to allow a single sign-on service. This means that students could automatically access the library website and all databases once they log into the LMS.

There was a section called "Learning Resources" in the LMS where students could download electronic learning materials. The library provided hyperlinks to those materials.

> Lecturers might notice some (useful) materials available in the digital library. Hence, they informed tutors to inform students via the My Virtual Learning Environment. The system was a platform that allowed students to interact with peers and tutors as well as lecturers … and to access to learning materials. Electronic resources would be made available in the digital library. (Farid, instructional designer)

The library has created a specific forum in the LMS to allow students to post any enquiry to librarians. This forum, called the Online Digital Library or OD Library, was utilized by librarians to make announcements and to communicate with students and staff. According to Zaini (librarian), the forum was initiated in order to provide timely or synchronous feedback to students' enquiries and efficient staff management. The previous method of using personal staff and general library email to handle enquiries was inefficient. The forum successfully allowed the library to give timely feedback to enquiries. Although enquiries via email remained, the number has decreased, probably due to an increasing interest in Library 2.0 among the OUM community.

6.5.3.2 From the OD Library forum to Library 2.0

The OUM library was among the first university libraries in Malaysia to utilize Library 2.0. A Facebook fan page was created to handle students' enquiries. Librarians noticed that more enquiries were being posted on the fan page than in the OD Library forum. This gradual shift of interest towards Facebook was reported by Zaini (librarian):

> Every day, we replied (to students' postings and enquiries) in the Online Digital Library forum. Now that we moved to Blog and Facebook, and postings in the forum reduced… the forum was still available and students' enquiries in the forum remained.

The shift to social media, particularly Facebook, occurred probably due to increasing use of Facebook among OUM staff and students. Further elaboration of the feedback concerning Facebook from librarians, teachers and students will be given in Chapters 7–9.

6.5.3.3 Learner Service Centre

There were also questions not related to the library being posted in the library forum, blog or Facebook fan page. In this case, librarians channelled such questions to the Learner Service Centre. The centre uses an eCRM to track students' requests, complaints or feedback via email, telephone or facsimile, and to forwards them to relevant units. This system enables students to obtain timely feedback (OUM, 2009).

Students who come to the university during weekends tend to ask questions of librarians because the physical library is open on those days. Zaini (librarian) explained,

> Students came (to the library) on Saturday and Sunday … we were around and they asked questions. Initially, all new and existing librarians needed to prepare ourselves with information pertaining to the University and all sort of information (such as), credit transfer, payment, etc. (We need to know) at least the basic information … so that if students asked, we were able to answer.

Librarians initially took the initiative to prepare themselves with the necessary information regarding matters related to OUM in general. However, due to some dissatisfaction from other departments, the librarians were instructed to focus only on library-related enquiries. Other questions were then channelled to the Learner Service Centre, as Zaini explained,

We used to answer all types of questions (posted by students) in the Facebook. However, some department were not really happy (with what we are doing), it seems we override them. We are not overriding them … we think we could answer some questions promptly, we better do it at that moment. But the manager instructed us (later on) to answer only enquiries related to the library. All other questions will be channelled to the Learner Service Centre.

This means that librarians were initially very proactive to provide timely feedback to enquiries, both directly and not directly related to library services.

6.6 Chapter summary

Three modes of learning – self-managed, online and face-to-face learning – make up OUM's blended learning provision. Each mode has impacted the digital library, as demonstrated above. In summary, the way OUM provides distance learning opportunities has led to the design of its blended mode of learning and assessment which suited the needs of its distance students well. As a result, the roles of the digital library were bounded and limited by OUM's blended learning.

In relation to the activity systems of the digital library and blended learning, several tensions were evident within and between activity systems such as the use of modules as a dominant tool and the roles of tutors (subject or actor) in the blended learning process. This above case description provides an understanding of activity systems, but we also need to understand the various perspectives of the librarians, teachers and students at OUM. Findings relating to these three perspectives are presented in Chapters 7, 8 and 9, respectively. Further discussion of tensions and innovations detected is included in Chapter 10.

CHAPTER 7: LIBRARIAN PERSPECTIVES

7.1 Introduction

This chapter presents the research findings from the librarians' perspectives. Specifically, this chapter relates to the research question, "How do librarians integrate digital library services in blended learning?" I begin with a short introduction of the participants and then describe the librarians' perspectives under three themes: (a) the way OUM librarians integrated or positioned library services in blended learning environments; (b) issues and challenges they encountered, specifically how blended learning had impacted on their ways of providing library services at OUM and how they responded to those challenges; and (c) their views of librarians' roles and their continuous attempts to provide better library services.

7.2 Participants

The findings in this chapter are based on eight face-to-face interviews with nine participants. They consisted of five male and four female participants, and five of them had served OUM for more than five years by the time the research was conducted. All of them were Malay. Table 13 presents the basic demographic information of participants. The inclusion of interviews with an instructional designer and a programmer in this research is explained below.

Table 13: Participant information (librarians)

Participant	Gender	Ethnicity	Years in service	Position
Adam	Male	Malay	1 to 5	Librarian
Daud	Male	Malay	6 to 10	Librarian
Farid	Male	Malay	6 to 10	Instructional Designer
Efa	Female	Malay	1 to 5	Librarian
Irene	Female	Malay	1 to 5	Programmer
Mawar	Female	Malay	1 to 5	Librarian
Siham	Male	Malay	6 to 10	Librarian
Zaini	Male	Malay	6 to 10	Librarian
Zety	Female	Malay	6 to 10	Librarian

A few participants listed in Table 13 hold high-level administrative positions, but I have not disclosed their positions in order to ensure confidentiality and anonymity. Their insights provide a broader overview of the phenomenon under investigation as compared to other participants. Because of their positions, they were able to view the digital library in relationship with other departments within OUM.

As explained in Section 4.3, I also considered other personnel or *divisions of labour* who could help me understand the provision of digital library services at OUM. I interviewed a programmer and an instructional designer who agreed to participate in this research. Although they were not library staff, their roles were related. The programmer worked in the IT Department and the instructional designer worked at the Centre of Instructional Design and Technology. The insights, particularly of the instructional designer, gave me a deep understanding of OUM's blended learning. As explained in section 6.2, most quotes describing the case were taken from the interview with him. Guided by the AT notion of 'division of labour', I wanted to add other people such as from the Learner Service Centre (see Chapter 6.5.3). However, no one volunteered.

All interviews were conducted on a one-on-one basis, except for one interview with two librarians, which was conducted in accordance with their request to be interviewed together (see Section 5.8.3). Interviews were conducted in both Malay and English, whichever was most convenient for the participants.

7.3 Overview of themes

My analysis of the findings yielded three main themes. Theme 1 concerned the way OUM librarians integrated or positioned library services in blended learning environments. Theme 2 concerned the issues and challenges that librarians encountered, specifically how blended learning had impacted on their ways of providing library services at OUM and how they responded to those challenges. Theme 3 concerned their views of the librarians' role and their continuous attempts to provide better library services in blended learning environments.

7.4 Theme 1: Positioning digital library services in blended learning environments

In accordance with the concept of "anywhere, anytime", user accessibility or ubiquitous accessibility, the OUM digital library has acquired and provided library resources which could be ubiquitously accessed via the Internet. The library had acquired mainly digital resources and simultaneously maintained the physical library and resources. Corresponding to OUM's blended mode of learning, the library gave "*priority to acquiring digital materials ... such as e-books and online journals*" (Zety) as they could be "*easily and conveniently accessed by students from home (office or anywhere)*" (Efa). However, the library "*acquired printed collections for materials which were not available in electronic format*" (Zety). Some library users preferred "*to read and touch printed materials*" and the library needed "*to serve two types of customers: the conventional and the advanced groups*" (Adam); that is, those who favour printed books and those who were comfortable with digital resources. In other words, the OUM digital library provides mainly digital resources. Physical resources remained available due to demands from users. The physical library had limited operating hours and physical collections.

According to Daud, the library collection was "*comprised of over one hundred thousand e-books and about twenty thousand printed books*". He explained that the OUM library acquired two types of e-books: perpetual access e-books, and subscribed e-books. The first type would be owned by the library once payment was made. Subscribed e-books, meanwhile, could be accessed by library users within specific subscription periods.

Access to both types of e-books is seamless. Hence, many users may simultaneously access a single item.

The library resources and services could be accessed by OUM staff and registered "active" students through the My Virtual Learning Environment LMS. Users have access to the library collections anytime, anywhere through My Virtual Learning Environment. However, "*Internet access in remote areas*" could limit "*services to remote students*" (Zety). Students who have limited access to the Internet, particularly those who lived in rural areas, are not always able to access the library's digital resources and services. However, students may access printed materials from the main library in Kuala Lumpur or OUM branches available throughout the country. This means that the library's presence was a fusion of both the digital and the physical, which was similar to the general concept of blended learning as a fusion of online and face-to-face learning. For physical resources, OUM librarians have provided interlibrary loan services whereby "*requested materials were sent via snail mail*" (Adam). Due to the limited printed materials, Adam would sometimes mail similar titles, with users' consent, if requested items were not available. He added that users may also request printed books of other university libraries via interlibrary loan service.

OUM librarians perceived that they had augmented their face-to-face services and positioned digital library services for blended learning environments through various strategies. They created *i-tutorials* or online guides and provided news and updates via *i-radio* and *blog* tools. They also engaged in continuous interaction with customers, using both synchronous and asynchronous means such as *telephone*, *email*, *Facebook* and the "Online Digital Library" or OD Library forum in My Virtual Learning Environment (Zaini). These strategies might also be applied by librarians working in an online learning environment. In other words, the integration of digital library services in blended learning environments involved various activities which OUM librarians referred to as strategies. These strategies were initiated to reach their students beyond the library's brick and mortar, and are summarized below.

7.4.1 i-tutorials

i-tutorials were online guides developed by OUM librarians on various topics (for example, how to access specific databases and how to request articles) in order to

facilitate and support access and use of digital resources by distance learners. Some i-tutorials were available on YouTube as well as in the "*OUM mobile learning*" (Zaini). Siham reported that i-tutorials covered various topics such as how to use some e-books or how to retrieve information from databases. Although i-tutorials were advantageous to distance learners as they could retrieve them anytime, anywhere, face-to-face tutorials, according to Siham, allowed two-way communication and timely feedback. Zaini reported that the library initially conducted face-to-face tutorials to increase students' and teachers' information literacy. They were regularly conducted on weekends, normally early semester, both at the main campus and branches. All librarians were involved and they travelled to branches for the face-to-face workshops. Due to the limited number of librarians, they have prepared yearly schedules to allocate ample staff for handling workshops, simultaneously maintaining operations in the main library. Since 2008, the workshops had decreased due to decreasing participation in face-to-face workshops and rising costs (librarians' travel and accommodation). Face-to-face workshops are now conducted only upon request from branches.

7.4.2 i-radio

Launched in March 2007, i-radio serves as a channel to disseminate information, news and updates regarding OUM. According to Siham, students and the general public could listen to the radio, either live (on air) or anytime (archived recordings). The library's slot, every Tuesday afternoon at 3 pm, was meant to provide library news and updates as well as to introduce specific services or databases. Listeners to live library slots on i-radio "*were not many, maybe because of the time, it's still within working hours*" but listeners to archived slots "*were many, particularly during nights and weekends*" (Siham).

7.4.3 Blog and Facebook

The library used a blog tool and Facebook to notify users of any library updates or new services. It seemed that users preferred Facebook over the blog due to the former's features, as Daud explained,

> The library used not to have any blog or Facebook. I suggested the library to create a blog because I noticed many overseas libraries used blogs to notify students of any new services, new database, or any updates. Then Facebook

started to emerge and we created a fan page. It has a function called RSS feed which allowed anything we posted in the blog to be automatically posted in Facebook. So we didn't need to make double jobs. Based on comments, posted in blogs and Facebook, more students access Facebook because interaction in Facebook was better than in blog. (Daud)

Interaction in Facebook was considered better because both synchronous and asynchronous interaction was possible in Facebook. As noted earlier in Chapter 2.4.3, many academic libraries in Malaysia utilize Facebook to reach their users. Facebook has a large membership in Malaysia and OUM library was among the earliest Malaysian libraries to use it.

7.4.4 Learning Skills for Open and Distance Learners course

OUM introduced the "Learning Skills for Open and Distance Learners" course in 2005, which was designed "*to prepare students for the unique experience of studying at OUM*" (OUMH1103, p. 3). The course module, according to Zaini, was the library's contribution, whereby "*librarians were involved in the module writing*". Librarians managed to emphasize the "*importance of library information skills*" when the course became compulsory for all OUM students (Zaini). Since students were required to take the course, they became familiar with the digital library resources and services and knew how to get the right information.

7.4.5 Hyperlinks in web-based modules

OUM prepared each module in both printed and online (web) versions and the latter were obtainable in My Virtual Learning Environment. The library responded to the blended learning practice by creating hyperlinks to references (which are available in digital format) in web modules so that students could immediately access them from the Internet by clicking on the hyperlinks. In printed modules, a note "OUM's digital collection" was mentioned next to the references (which are available in digital format). According to Daud, direct hyperlinks were created in order "*to increase usage of the library digital collections*" (Daud). Usage of web modules however was limited and influenced by several factors (which will be explained later in Sections 8.6 and 9.5). Hence, creating hyperlinks to references may not benefit OUM students because electronic media usage was limited.

7.4.6 Collection development and circulation

Zety reported that the library would acquire references and textbooks as listed in modules. This was the case for modules written before the policy requiring module writers to reference only existing library resources was introduced. Priority was given to acquiring digital materials, but the library would acquire printed references or textbooks if they were not available in digital format. According to Zaini, at least four copies of each printed title would be acquired for the main campus and two copies would be sent to respective branches (if the respective subjects were offered in those branches).

As the printed collection developed over time, Zaini reported that the circulation of printed books had gradually changed. There was no loan policy when the library commenced its services in 2000 as it started with mainly digital collections. As the physical collection grew, book loans were allowed. Since 2004, the library allowed a user to borrow up to four items from the main library for a period of two weeks. That period increased to a month in 2007. Circulation of printed materials in branches began in 2005, and a user could borrow two items for two weeks. Tutors were not allowed to borrow books, according to Zaini, because they were not OUM permanent staff. However, that policy changed in 2006 and they can now borrow four books for a month. Lecturers on the other hand were allowed to borrow 20 books for three months and could extend the loan period, reflecting that OUM staff preferred physical materials. This loan policy was available despite the library policy to give priority to acquiring e-books.

Circulation of e-books was easy as students could access them anywhere, anytime without worrying about having to return or renew them. Moreover, a single e-book could be accessed by multiple users at a time. Circulation of physical books, on the other hand, could be done at the main library or branches, depending on availability of books. An interlibrary loan service was available to allow students or tutors to loan books of different branches. Circulation of physical books was managed using the library's system while interlibrary loans used a manual system.

7.5 Theme 2: Issues and challenges for OUM librarians

OUM librarians encountered several issues and challenges in providing digital library services to their library users. Issues and challenges are categorized into four sub-themes: (a) OUM students' characteristics; (b) digital versus physical resource dilemma; (c) synchronous and asynchronous interaction with users; and (d) accessibility and connectivity.

7.5.1 The characteristics of OUM students

OUM students were mostly working adults studying part time and working full time. Their characteristics influenced the way OUM librarians provided library services. One of these characteristics, according to Zaini, was that they were "*mature students*" and "*the way librarians communicate*" and deal with them would be "*different as compared to the way of dealing with fresh school-leavers*". Zety noted that OUM students have "*limited time*" as they work full time and study part time, hence, introducing blended learning in OUM, according to her, was "*helpful*" for these adult learners as they could "*attend to fortnightly face-to-face tutorials*" and "*communicate with tutors via the My Virtual Learning Environment to discuss their learning*". That the "*digital library was available in the system*" (Zety) was also helpful.

Zaini elaborated his point of librarians dealing with some students who were "*old-timers*" or non-IT-savvy. There was a strong need for librarians to give continuous training and step-by-step guides. These guides, he added, were promptly given if users made inquiries over the phone. Some problems could not be solved over the phone and librarians would ask the students to "*print screen and email (details) so that they could double check problems or issues such as authentication code*" (Zaini). If necessary, he added, librarians would refer students to the IT Department for further investigation.

Irene agreed with Zaini's observation that some "*senior*" or more advance in years students were not "*familiar with functionalities such as how to enter into forum or how to interact in the forum, which button to press or where to press, or how to find exam questions*" (Irene). She mentioned the role of the Helpdesk was to handle those kinds of questions.

On the other hand, some students, according to Adam, were "*advanced*" and they could easily find information from the Internet or other sources. Adam suggested the idea of "*bring(ing) the library to customers*" by "*providing more digital resources*" to users so they could access those resources anywhere, anytime, and "*interact with users using blog and Facebook*". In other words, OUM librarians encountered students with varied ICT skills which ranged from very advanced to very limited. Librarians were required to serve them accordingly.

Another student characteristic, as suggested by Zaini and Daud, was that some students, particularly undergraduates, have limited their learning to the scope of the modules given by OUM. "*Students should not refer to modules alone although they may be able to answer examination (without referring to other sources than the modules)*" (Daud). However, while undergraduate students' learning was restricted to modules alone, postgraduate learning seemed broader and unrestricted by modules. Zaini commented that "s*tudents would only refer to databases or references as stated in the modules, but not beyond. However, postgraduate (students) have a different way of thinking and doing things*".

7.5.2 Digital versus physical resources dilemma

Although the digital library focused on providing digital collections, Adam admitted that it had "*to serve two types of customers: the conventional and the advanced groups*" and this idea was endorsed by Zety, Efa and Mawar. This means that although the library has focused on acquiring digital resources (because they can be ubiquitously accessed by users, thus serving the OUM blended modes of learning), there were still library users who preferred to use physical resources or printed materials. The implication was that the library had to acquire both digital and printed materials adopt a blended approach. Serving two types of customer also required librarians to be multi-skilled and open to lots of different approaches to supporting students.

Adam reported that some of the challenges raised by OUM librarians with regard to digital versus physical resources were budget, physical library space, librarians' need to upgrade their knowledge and skills, and the need for continuous library user education/training:

The library was developed towards providing digital collections but simultaneously we could not ignore the traditional (printed) collections. Some users liked to read and touch books while others preferred to read online, easy access from home or office. The first challenge was budget. Good databases (for digital collections) required high cost and the library might have limited budget to subscribe to those databases. Alternatively, the library would subscribe to the databases with reasonable prices which offered relatively similar content. For printed materials, we had the (physical) space challenge. We have added a number of shelves and the reading space was becoming cramped. Another challenge was for librarians to keep abreast with needed knowledge (and skills), to acquire more knowledge, to pursue studies and to conduct research so that we became well prepared and well equipped to fulfil user needs.

Efa added that another challenge for librarians was "*to deal with technology illiterate users*" and she suggested the importance of "*providing training (workshops) for students and tutors on how to access e-books, e-journal ... and even on how to access the library collections*". Siham agreed with Efa:

(Our) challenge in (providing digital library services in) blended learning was (to serve) students who lack IT skills, especially 'senior' people. Some of them did not even know how to use emails and e-books. So our challenge was to firstly give them IT skills, how to use computer, then how to access the Internet, how to access the (digital) library and ultimately how to (access and) use e-books (and digital resources).

With regard to digital versus physical collections, librarians raised issues relating to the processing time of acquiring materials, and the various degrees of usage of library resources. The processing time of acquiring library resources differs for digital and printed materials. According to Zety, it would take approximately a month to process a printed book, from the time they place an order until the time they received the item. On the other hand, it would take only about a week or less to get single-order e-books (perpetual access e-books).

Zety reported that "*usage of digital and printed materials was both high*". Daud added that usage of databases (e-books and e-journals) depended on subjects, irrespective of faculties or programmes. Hence, databases related to compulsory subjects such as management or IT were highly used by library users. Daud also explained that the library kept usage records based on "*document full-text download*" and not based on "*document view*" because the latter did not represent "*the real usage measurement*". This measurement helped OUM librarians in making procurement decisions which best suited OUM's blended modes of learning. With regard to legal or copyright issues, Zety

reported that once the library had purchased or subscribed to any databases, access would only be provided to all "*active*" registered OUM students. No legal or copyright issues were raised by OUM librarians.

The increasing demand for physical materials had led the library to acquire more printed books and there were the issues of "*limited space*" (Daud) in the library, "*limited availability for readers*" (Zaini), "*additional cost*" and longer "*processing time*" as compared to e-books (Zety). This issue of demand for physical books was raised by students (see Chapter 9.5.4) and it becomes clear that this was not just from older students but also from students in rural areas, who had limited internet connection and who preferred physical books.

7.5.3 Synchronous and asynchronous interaction

Due to OUM's blended modes of learning involving face-to-face, online, and self-paced learning, interaction between OUM librarians and library users occurred through blended means including face-to-face, over the phone, online chatting (real-time or synchronous), as well as email, text and offline messages (asynchronous). Interaction occurred for different purposes such as reference enquiries, training and feedback. The library used to provide an online chatting service called "Ask the Librarian" to enable prompt feedback to library enquiries. However, as Siham noted, "*we stopped that service since ICT Dept disabled it in 2006. So currently we did not have synchronous reference services via Gmail, but we used Facebook to give quick answer to enquiries*".

The Gmail online chatting service was very popular among OUM librarians because it provided synchronous interaction, just like face-to-face interaction, and it allowed students of dispersed localities to interact with librarians. Hence, students did not necessarily come to the library to make their enquiries. Although the Gmail service has ceased, librarians have found other means to provide prompt feedback to users' enquiries, as Zaini explained.

> When Gmail was used as OUM email, one of its packages was an online chat service. For the library, it was a good tool as we could respond (to library enquiries) on the spot. However, the management stopped the service, we didn't know why, probably there were some departments who disagreed or disliked chatting. After Gmail was stopped, the library worked with the

learning management system team and we created a forum called Online Digital Library. In the forum, we added the library slots, services, feedback and other things. Hence, every time students posted questions, we needed to reply (in the forum). We visited the forum everyday ... Ever since we started our blog and Facebook, the forum usage has decreased. Students increasingly preferred Facebook because they could straight away get our response.

The decreasing usage of the OD Library forum in the My Virtual Leaning Environment probably occurred due to the fact that it provided asynchronous interaction whereby students could not get immediate replies to their enquiries. On the other hand, the synchronicity offered by Facebook resembles Gmail online chatting and students could get immediate responses. Daud reported that many enquiries and feedback were forwarded to librarians via phone calls and email. However, interaction over the phone was preferred by some librarians as compared to email because they could give instantaneous responses:

> Students sometimes asked questions using email. I would straight away contact them via phone. The reason was questions being asked in email were sometimes unclear. I would call and ask them "Where are you?" If he or she was in front of the computer, that would be great. It would be easy for me to straight away give a hands-on training over the phone. (Daud)

Library information skills workshops and training were conducted face to face. According to Zaini, students could request special training for small groups. However, for students who lived far away from the library, librarians could provide training over the phone or email:

> Our practice was, if a user called us and the conversation over the phone might take more than fifteen minutes, we would ask them to stop. We would call them instead to continue the conversation (training). This was (financially) fair for them. On the other hand, (we also provide training) through email. We would provide screen captured (images) and steps, (and asked them to) follow the steps. (Zaini)

Librarians used screen captures and step-by-step guides. When used correctly, they could be an excellent learning tool because students could see and follow the steps. Screen captures were used in i-tutorials and librarians could direct students to specific i-tutorials if questions were related to existing i-tutorial topics. Students were able to view them at a convenient time and place.

OUM students were geographically dispersed throughout Malaysia as well as other countries. In order to cater to overseas students, librarians tried to ensure someone was

available online 24/7. Library enquiries over text messages or phone calls, according to Siham, were handled at all times, regardless of day or night. He mentioned his fellow librarian's experience of receiving and replying text messages from overseas in the middle of night. As explained later in Chapter 9.5.1, most students were working full time, i.e. high possibility of the digital library being accessed outside working hours. OUM librarians providing training and handling user enquiries over the phone or email and being available 24/7 implied that librarians were highly dedicated to providing a support system for distance learners.

7.5.4 Accessibility and connectivity

Zety reported that "*distance would never be an issue*" in the provision of library services but also raised concerns about some students who lived in remote areas, as they might have limited Internet access:

> We provided various channels for students to reach us. Distance would never be an issue. However, remote students (such as) in Sabah or Sarawak might have the issue of Internet access because of their remote location. It was one of OUM's challenges to give services to students who lived in highly remote areas. But the issue was not too critical since we have (physical) resources in learning centres. However, collection in learning centres might not be enough due to its small size.

Students who have the Internet at home or in the office could access the library anywhere, anytime. Once they logged in to the LMS, they could retrieve full-text articles and e-books from the library website. The library resources and services could be accessed by OUM staff and registered "active" students through the My Virtual Learning Environment LMS. Initially, the library and the learning system were two different systems which were not integrated with one another. In order to better embed the library in the blended learning environments and to make things easier for the OUM students and staff to access the library, librarians created a "hidden process". By hidden process, they mean the integrated system required only a single sign-on function,

> The My Virtual Learning Environment and the library automated system were two separate systems which were not integrated ... the single sign-on service allowed students to access the library once they logged into the My Virtual Learning Environment. Actually there was a hidden process, a second layer log-in function into the library system which students could not see. (Daud)

There used to be the issue surrounding login but this was resolved when the library introduced the single sign-on service. Daud explained,

> Problems arose for new students (when) their names were not yet updated in the library system. Consequently, they could not access the library. This problem has occurred a few times whereby students could not login into the library (to) access databases, and find materials (for their learning). Hence, we created a hidden process whereby students could access (the library) even if their names were not available in the library system provided that they enter into the LMS.

Daud added another reason for creating single sign-on service, "*another reason for not creating a separate login system, like other universities, was because our students are "senior" people and it would be hard for them to memorise several passwords and usernames. It (single sign-on service) eased our students!*" The library's single sign-on service allowed OUM students and teachers to access the library from a single point; that is, My Virtual Learning Environment. The service created a seamless environment which integrated the library within the OUM blended learning environment.

7.6 Theme 3: Librarian roles

There are two sub-themes to Theme 3 which are related to one another. The first is related to how OUM librarians perceived their roles while the second is related to how they responded to their perceived roles by making continuous attempt to provide better services.

7.6.1 Librarians' perceived roles

Most OUM librarians perceived their roles to have remained significant, even in light of the fact that students could find information on the Internet themselves. Daud, Adam, Zety, Siham, Zaini, and Mawar agreed with this view and raised important issues such as the accuracy, validity, relevance, and authority of the information taken from the Internet.

Daud stated that "*our (librarians') roles were not decreasing. Students nowadays were (considered) as Google generation, so students could get a lot of information from Google. But they should take note of the accuracy, timeliness, authority of articles they get from there*". Efa argued that "*most students could search the Internet (to find*

information) but the accuracy of their information was sometimes debatable". Siham regarded the information that students searched and retrieved using Google as "*general, not precise and information overloaded whereas the Digital Library's contents were more authorised, such as peer reviewed journals. Besides, librarians could also guide students to get the precisely needed information*". Zety suggested the need for students to ensure "*the validity of the source of information*" and argued that the library ensured that its collections were "*valid and current*". She also raised the issue of the "*accuracy of information accessed from the Internet*".

According to Zaini, today's students have the freedom to search for information from any source. He raised the issue of validity and relevancy and suggested the idea of checking the authors' expertise:

> It was normal to meet students who said "Why don't we use Google or Yahoo journals?" Yes, they could find information from those sources. However, we (librarians) wanted to get articles which were valid and written by experts in their field. There were articles that met the criteria and were freely available (on the Internet) but the numbers were limited. As an example, as a librarian, I could write a paper, I read a lot and wrote a paper on engineering and sent it to a journal (publisher). For sure they would not accept my paper (because I am not an expert in that field). Upon explaining these (matters on checking validity and authors' expertise), students understood and learned how to get the right information.

The issues of the accuracy, validity, relevance and authority of information had led OUM librarians to perceive their roles as still significant and to make continuous attempts to provide better services.

7.6.2 Continuous attempts to provide better services

The data reveal that various attempts to improve library services have occurred at OUM. These included getting feedback from lecturers and students; conducting regular surveys/studies; introducing various services such as i-tutorials, mobile learning, integrated searching facility, 'Table of Contents' project, and hyperlinks to references in web modules; and maintaining collaboration with other university libraries in the country, particularly in providing interlibrary loan and document delivery services as well as supporting some activities of the Consortium of Malaysian University Libraries and the National Library of Malaysia (PERPUN).

Siham mentioned some examples of continuous improvement, which included i-tutorials, e-books and hyperlinks to references in web modules. He perceived them as the library's way of integrating digital library services into a blended learning environment. According to Zaini, i-tutorials or online library guides were created to transfer the contents of face-to-face workshops into electronic formats. The purpose, he added, was to allow distance learners access to library guides anytime, anywhere, and to cut costs associated with face-to-face tutorials. The library has received assistance from the Centre of Instructional Design and Technology in preparing i-tutorials, as Zaini reported,

> The library used expertise from the centre to prepare i-tutorials. We started with video tutorials but the project was suspended due to many editing (problems). After several discussions, we decided to create voice tutorials with screen-captured images. I understood that the centre was very busy with modules. With OUM management consent, we wanted to create i-tutorials ourselves, to capture, record, and upload them into the portal. We currently have twelve voice-based i-tutorials (for 12 different databases) which could also be accessed through mobile learning gadgets.

Zaini added that another example of continuous improvement was "OUM mobile learning", which allowed i-tutorials to be downloaded from mobile phones. Besides i-tutorials, users could also access other library services from their mobile phones including a simplified Online Public Access Catalogue (OPAC), loan status records, and texting (personal notes). The integrated searching facility was a continuous improvement effort, which according to Daud was "*a federated search(ing facility), instead of students searching one database (at a time), they used only one platform to search all databases. It's easy for students*".

According to Efa, the 'Table of Contents' project and hyperlinks to references in web module projects were introduced in 2009. For the project, librarians entered the table of contents of each library item into the OPAC. Mawar explained that they would "*manually insert the table of contents (into OPAC). It was very time consuming. In most cases, table of contents was not available in the Library of Congress website, hence, we had to manually create it*" (Mawar). Efa reported that the project was almost completed. She added that if specific items were not available in the library but available in other university libraries, she would make a note in OPAC that "*items available in so and so library*" (Efa).

The OUM digital library maintained collaboration with other university libraries in the country. Zety reported that "*the library had cooperation with other libraries for interlibrary and document delivery (services). In term of databases, there was a Commercial Databases Committee (under PERPUN), whereby each year, we met and shared prices*" (Zety). Interlibrary loans and document delivery services between OUM's library and other university libraries, according to Adam, were good. Requests for these services were recorded manually using a logbook. For documents that were not available in local libraries, Adam said he would request the items from the National Library of Malaysia, which would normally deal with the British Library:

> We would normally request overseas documents through the National Library. Most of the time, the National Library would deal with the British Library. There was a service charge which I think was reasonable because they (the National Library) did not make profit out of the services and they would absorb the cost. They charged only RM5 service charge and 50 cent per page whereas the British Library charges could reach RM70 to RM80 per item.

The data suggested that OUM librarians were cautious in spending the library money. With regard to the Commercial Databases Committee of PERPUN, Daud explained that it allowed university libraries in the country to compare the prices of databases offered by specific vendor. Through comparison, libraries in Malaysia would be able to "*negotiate and receive discounted prizes*" (Daud) from vendors.

7.7 Chapter summary and reflection

In this chapter, I presented the research findings relating to librarians' perspectives on integrating digital library services in OUM blended learning. The data were grouped into three main themes which were related to the ways OUM librarians positioned or integrated digital library services in the university's blended learning environment; issues and challenges encountered by librarians; and their roles and continuous attempts to improve library services.

The OUM library was a hybrid library, which consisted of a physical and a digital service. It gave priority to digital resources as they could be ubiquitously accessed by users at a convenient time and place for all users. Multiple users could simultaneously access items and they were free of any worry to check any due date or to go to the library to return the item. The idea that the digital library brings the library to users

(Arms, 2000) is evident in this research. OUM library however maintained its physical library and physical resources due to existing demands from users. The findings indicated user preferences for physical books and the need for having a physical space. While the University is working towards a 'paperless society' (Faerber, 1988), if it continues to provide a physical library it is quite likely some students will prefer this resource. In this way the library services are ensuring that they are flexible to the needs of the users.

Librarians at OUM integrated digital library services in blended learning through several strategies such as i-tutorials, social media and hyperlinks. Such strategies, according to researchers such as by Cohen (2001) and Joint (2006), enable greater use of electronic databases and journals and increase library users' awareness of existing digital library services and resources. The use of social medial, Library 2.0 in particular, is evident at OUM. It helps librarians to provide instant responses, to engage with, and to reach out to users beyond the physical library (Crawford, 2006).

One of the issues and challenges encountered by librarians at OUM was related to student characteristics and their learning environment. Librarians understood very well the users' characteristics, constraints, needs and expectations - significant knowledge for librarians to have (Bawden, 2006). The understanding of the learner had led the librarians to provide resources and services which accommodated the students and best suited OUM's blended learning environment, i.e. through the provision of both digital and physical resources as well as the use of both synchronous and asynchronous interaction techniques.

Accessibility and connectivity remained an issue not only to the digital library but also OUM blended learning. This technical issue has long been discussed by many researchers such as Chowdhury and Chowdhury (2002), Duncan and Ekmekcioglu (2003), and Greenstein (2000), and it requires attention not only from the library community but also higher education institutions as well as various agencies which are involved in providing infrastructure for internet access.

The findings suggested that despite issues and challenges encountered by OUM librarians, they perceived their roles to remain significant and made continuous attempts to provide and improve services. This scenario is closely related to the trends discussed

in the literature review (see chapter 3.3.3) namely Library 2.0 and blended librarianship. I perceived librarians' continuous attempts to improve services as an innovation, a notion of Activity Theory introduced earlier (see Chapter 4.3.2). I elaborate this significant finding in great details in the discussion Chapter 10.

In this chapter, I have presented librarian perspectives. I next present teacher perspectives on the phenomenon under investigation.

CHAPTER 8: TEACHER PERSPECTIVES

8.1 Introduction

This chapter presents findings related to teachers' perspectives on integrating digital library services in OUM's blended learning environment in order to partially answer the second research question: How do teachers and students experience the integration of digital library services in blended learning? Students' perspectives are presented in Chapter 9. The data collected from teachers revealed a wide range of teacher perspectives, not only on OUM digital library services but also other related issues. Teachers shared not only their perspectives and experiences of their own digital library use but also their perceptions of students' use of the digital library.

After briefly introducing the participants, the four main themes that emerged from the analysis are presented. These themes are delineated in order of their relevancy to the participants. Theme 1 describes teachers' perception and their own use of the digital library services. Theme 2 concerns four factors that influenced teachers' use of services, while Theme 3 is related to five factors that influenced students' use as perceived by teachers. I later highlight, in Theme 4, two important issues raised by teachers regarding the application of Web 2.0 in blended teaching and the disengagement of OUM tutors in blended learning.

8.2 Participants

The findings in this chapter were based on eight interviews with 14 participants: one-to-one interviews with seven lecturers and a focus group interview with seven tutors. In this chapter, the word "teacher" refers to both lecturers and tutors, but lecturers and tutors have different status at OUM. As explained in Chapter 6, lecturers are OUM permanent staff, while tutors are hired by OUM on a contract basis and receive hourly based payments. I was not able to conduct one-to-one interviews with tutors due to geographical constraints, as explained in Chapter 5. Interviews were between 20 to 75 minutes in duration and were mostly conducted in English, with a few lecturers using both English and Malay. The interview with the tutors was conducted in Malay. Table 14 provides demographic information on the teacher participants.

Table 14: Participant information (teachers)

Participant (pseudonym)	Gender	Ethnicity	Position	Years in service
Chong	Male	Chinese	Lecturer	6 to 10
Fatimah	Female	Malay	Lecturer	1 to 5
Fuad	Male	Malay	Tutor	1 to 5
Jamal	Male	Malay	Tutor	6 to 10
Lim	Male	Chinese	Lecturer (PhD)	1 to 5
Luqman	Male	Malay	Tutor	1 to 5
Musa	Male	Malay	Lecturer (Professor)	6 to 10
Mustaqim	Male	Malay	Tutor	6 to 10
Saufi	Male	Malay	Lecturer (PhD)	6 to 10
Seri	Female	Malay	Lecturer	6 to 10
Syed	Male	Malay	Tutor	1 to 5
Tuah	Male	Malay	Tutor	6 to 10
Zahra	Female	Malay	Lecturer (Professor)	6 to 10
Zuhdi	Male	Malay	Tutor	6 to 10

Teacher participants were mostly male and Malay. There were only three female and two Chinese participants. Nine out of the 14 participants had worked at OUM for more than five years. In this chapter, pseudonyms are used, with the designation "L" for lecturer or "T" for tutor following each pseudonym, for the purpose of identifying the different views of teachers.

8.3 Overview of themes

As mentioned earlier, there are four themes on teacher perspectives. Theme 1 describes teachers' perception and their own use of the digital library services. Theme 2 concerns four factors that influenced teachers' use of services. Theme 3 concerns five factors that influenced students' use as perceived by teachers. Theme 4 relate to two dominant issues raised by teachers: Web 2.0 applications in blended teaching; and disengagement of tutors in blended learning.

8.4 Theme 1: Teachers' perceptions and use of the digital library

The OUM digital library was perceived by teachers as "*very important*" (Fatimah-L), "*extremely useful*" (Seri-L), "*good (as) it helps those who are researching*" (Zahra-L), and "*a good thing whereby I tend to use it a lot*" (Chong-L). The ubiquitous nature of the digital library was also appreciated by teachers. Chong-L regarded the way in which the library was "*accessible anytime, anywhere*" as one of its advantages. Fatimah-L explained that she was "*very happy with the digital library because we don't have to go to the physical library ... just sit on our place (office) and see whatever we need ... we have so many things in our library*". She perceived the ubiquitous nature of the library as a "*benefit*" to distance students especially as they could access it "*anywhere they go, as long as they were connected to the Internet*".

Saufi-L described the integration of the digital library in the OUM blended learning environment by demonstrating on his computer how to access the digital library:

> This is My Virtual Learning Environment [showing the computer screen] ... when you hit this (button) you would see user profiles, e-services, Gmail, library, faculty school, etc. All these things were at your fingertips. So if you go to the library, you were given the info about how to use the library. So this was the beauty of blended learning. (Some) people were quite doubtful. How could I study (using) blended learning (or) open learning, like this, because there was no library? Unlike conventional universities, (each has) a huge (physical) library (and) that fact brings confidence to students. But here, this library would give you all the rich things that a library would have (including) search(ing facilities) ... i-resources, online databases, open access A to Z e-journals, pass exam papers, pass thesis, reading list ... it was just like the physical library ... even papers were available... they were highly used by both students and staff.

Saufi-L commented that conventional and digital libraries were alike in terms of the services they provided. Moreover, the digital resources could be accessed by multiple users simultaneously at the convenient of users' time and location. In his view, information being accessible at the click of a mouse is the strength of blended learning. His view indicated a strong connection between the digital library and blended learning. Chong-L supported this view when he made a comparison between OUM's and other universities' digital libraries in the country: some digital libraries "*need access within campus or local area network, beyond it, you can't access. But at OUM, you can access it from anywhere, using your username and password*".

In comparison to lecturers, tutors generally had different opinions and showed little appreciation of the existence and importance of the digital library. Tutors involved in this research were part-time staff at OUM. They worked full time as lecturers in a teacher institute in Kuala Lipis and occasionally provided tutorials during weekends for OUM undergraduate students. Their students were all school teachers sponsored by the MOE to upgrade their academic qualification, taking a bachelor's degree. All these factors have influenced the way tutors perceive and experience the digital library, and the way they perceive their students' usage of it. Lecturers' use of the digital library was high in comparison to tutors' use. I elaborate on this phenomenon in my discussion of Theme 2.

With regard to the purposes for using the digital library services, lecturers' purposes included "*module writing*" (Lim-L), "*course design*" (Saufi-L), and personal research (Seri-L, Fatimah-L and Chong-L). Seri-L was in the middle of her doctoral studies and made full use of the digital library collections and services:

> I frequently used the OUM digital library. I downloaded some e-books, journals and thesis. Especially for my case, I used it for my PhD studies. It would be complicated to study without it. Hence, the library was used not only for teaching but also for me as a student.

Collections referred to by the lecturers included journal articles, e-books and theses. If they could not find materials they needed from the library, they would ask for the librarians' help (Chong-L, Fatimah-L, Lim-L and Saufi-L). They asked for help via email, phone or personally met librarians. If materials they requested were not available in the digital library, they would utilize the interlibrary loan and document delivery services offered by the library (Chong-L, Fatimah-L, Saufi-L and Seri-L).

A few lecturers shared their experiences of dealing with OUM librarians to get materials using the interlibrary loan and document delivery services. Fatimah-L described the librarians as "*very helpful*" in finding the materials she needed from other university libraries. Saufi-L shared his experience of requesting a proceedings paper of a seminar that occurred in Bali in 1980, and commented that "*librarians were very helpful in looking for sources that produced the paper*".

Lecturers were also involved in the library's collection development. Seri-L said that she received frequent invitations to attend library workshops and database trials. Saufi-

L was happy to be chosen by the library to attend several *"book exhibitions or book fairs"* whereby he *"had collected hundreds of books"* for the library and he was *"impressed with (OUM) library services"*.

Lecturers perceived the role of librarians as *"not decreasing"*, even when students could find information they needed from other sources than the OUM digital library. They agreed that OUM students could search for information from other sources, such as Google or Yahoo, but they highlighted several issues which students needed to take into account and encouraged them to refer to the library. Lim-L drew attention to the issues of *"relevance"*; *"time to screen the abundant of information (available on the Internet) and to select the (needed) one"*; and lack of *"academic writing"*. Fatimah-L stressed the *"academic writing"* element, saying,

> Students might prefer using other sources than the digital library to find information because it was quick. However, for me, I would rather go to the library to get academic materials. Not all materials retrieved from Google were academically written. Hence, the digital library was very important. If students really wanted to learn and to increase their knowledge, then the digital library was vital. However, if they merely wanted to pass the exam, then modules would be sufficient.

Most lecturers encouraged their students to refer to the digital library. Chong-L, for example, stated his encouragement, but also that this did not guarantee students' usage:

> Yes of course I encouraged my students to use the digital library. Information was there. It's just a matter of students making an effort to go online and search for it. You did not have to even Google search it because as OUM community, you could access those information.

Seri-L's view was that usage among students was still limited:

> Sometimes, in my opinion, even though students had huge resources in the digital library, in the sense of effectiveness, or whether they used it or not, I didn't think the digital library was being used up to the maximum usage.

Fatimah-L and Lim-L explained that although they encouraged their students to refer to the digital library, usage among their students varied and depended on several factors, which I discuss further in Theme 3 below.

8.5 Theme 2: Factors influencing use of services

As mentioned earlier, teachers described not only their views of their own use of the digital library but also their views on their students' use. The latter form Theme 3 and are discussed below. From the data, I discovered the following factors that influenced teachers' use of the digital library. The analysis of and evidence for tutors' limited use of the digital library is included in this section.

8.5.1 Teachers' needs and views on the necessity of the digital library

Zahra-L was of the view that the digital library was needed only by teachers who taught graduate-level courses. For other teachers there was less necessity to use the digital library since the modules contained "*everything*" teachers needed and were "*an amalgamation of contents from a few sources*". She viewed the digital library as an additional element:

> Of course if the digital library did not play their role, courses would continue as usual without any interruption. The library was an extra and something nice to have. If librarians did not play their role, then we (lecturers) would forget about the librarians.

Some tutors expressed the view that tutors did not need to refer to the digital library since the OUM blended learning framework was based on modules. As explained by Jamal-T,

> The OUM (blended) learning in my view, could be considered the easiest learning ever to exist. The necessity to find information other than whatever was stated in modules seemed to be almost none. We were informed that exams would be based on modules alone. There was no need (to refer to the digital library). Moreover, students' assignment would be prepared around modules. Eventually, tutors would discuss topics only according to whatever being stated in modules.

Zuhdi-T acknowledged that OUM tutors should refer to the library. However, he stated that most tutors did not use the digital library because there was no need for them to do so:

> Let me talk in terms of necessity and profession. As teachers, we must find more information (and make use of the digital library). However, there was no necessity. The modules given to us were sufficient. We could find other information if we want. But we chose the necessity (tutoring based only on

modules). Why should we give more information when we were supplied with syllabus and contents? Why should we find more information when we were not required to? For me, the digital library was not a necessity.

Tutors' views on the "*extremely limited necessity*" (Tuah-T) of using the digital library were probably due to the fact that their students were undergraduate students, whose learning, according to them, was "*not demanding*" (Tuah-T) and "*not challenging*" (Mustaqim-T, Tuah-T). The modules provided to students were considered "*sufficient*" (Luqman-T) for their undergraduate studies. If they provided tutorials to postgraduate students, their view might be different, as suggested by Zahra-L above.

A few tutors were pursuing Master's degrees. However, they referred to other libraries – not the OUM digital library – and this is related to the next sub-theme.

8.5.2 Teachers' preferences and alternatives

All tutors involved in this research worked at a teacher institute in Kuala Lipis. The institute had its own library which is operated separately from the OUM library. The OUM learning centre in Kuantan was about 240 kilometres away. Hence, tutors could access library materials available at their own teacher institute. According to Jamal-T, their library was a "*better option*" than the OUM digital library:

> We have a library here which was meant for education. There were lots of materials and the collection was pretty comprehensive. Since OUM modules contained merely basic contents, it was sufficient for us to refer to our library at the teacher institute. It was even easier for us to get library materials here.

Mustaqim-T preferred to refer to other sources of information such as his "*own personal collection*" or "*dictionary*" rather than the OUM digital library. Tuah-T also referred to other alternatives to find information:

> We found other alternatives than the OUM library. I contacted my friends at University Putra Malaysia or University Malaya to get materials in our field. There were lots of materials there and there were also relevant materials at Institut Sukan Negara (National Institute of Sport).

Some tutors and lecturers mentioned their preference for physical or printed books rather than online or electronic materials. Syed-T, Mustaqim-T and Zuhdi-T explicitly stated such a preference, with reasons such as "*because we could easily get printed*

books and we could (carry and) read them anywhere" (Zuhdi-t). Zahra-L also preferred "*actual books*" for reading:

> I preferred books. I read a lot but usually books, not e-books. When I looked for journal articles, conference papers, research documents or white papers, then I preferred online. But when it came to reading books which could be a book in my field or a best seller, I would rather buy it or borrow it and then read it physically. I could go anywhere and easily browse through books while waiting.

Seri-L shared her experience of module writing, for which she preferred to refer to printed books than e-books. According to her, e-books "*were web-based, we had to browse, it would be very time consuming*", whereas "*physical books were easy to refer to*". If she found good e-books from the digital library, she would still print them out "*and made it like a physical book*" because she felt "*good to have (physical) sources around*" her when she wrote modules.

As a doctoral student at another university, Seri-L also preferred to refer to her library rather than the OUM library because digital resources in her field were limited:

> Some people liked to read printed materials but OUM library only subscribed to e-books. They bought physical books only if it was not available in e-books. They did not subscribe to a lot of e-books maybe because they were quite expensive. We could request for inter loan from other university libraries for printed books but we could not share access their digital resources. I preferred to go to the university where I studied, because lots of books relevant to my field were there.

I reported earlier that Seri-L used the digital library and found it "*extremely useful*". However, she still turned to other libraries due to limited resources in her field being available at the OUM library.

8.5.3 Limitations of the digital library

Like Seri-L, Chong-L thought that the OUM library subscribed to or acquired limited resources due to financial constraints: "*the only setback was the subscription ... (the library) did not subscribe to, for example, some popular top referred journal. Those (journals) were expensive*". He would therefore retrieve materials he needed using the interlibrary loan and document delivery services.

The OUM library's resources were perceived as limited by Jamal-T. According to him, the resources in some subjects were very limited, and he gave the example of Malay language and linguistic studies. Electronic publication in this particular subject was extremely limited and resources were mostly in the form of physical books. He added that many related books are available in the institute's library. Hence, tutors are inclined to refer to that library rather than the OUM digital library.

Another limitation of the OUM digital library voiced related to the navigation and user friendliness of some databases. Zahra-L expressed her frustration that some databases to which the library subscribed were not user friendly or often difficult to navigate. She understood that it was not the library's fault but that of the database providers. Seri-L also described the limitation of e-books for her:

> Sometimes the digital library was very difficult in the sense that not all books could be downloaded in PDF format. We had to browse page by page, and reading was time consuming because it had to be on the web. Journals were different. We could download journal papers in PDF format. We sometimes found free e-books on the Internet. I mean we lived in "IT world" so we could easily find e-books for free. For me, I could download a lot of e-books from the Internet for free, not from the digital library. I only referred to the digital library if I looked for journals. I had difficulty because I had to page browse and they allowed only five pages per one printing.

Again, e-books' limitations are beyond the OUM library's control. However, this impacted library usage, as explained by Seri-L. A greater influence on use than the digital library's limitations is related to the issue of accessibility and connectivity.

8.5.4 Connectivity and access

Many tutors felt the "no necessity" (for them to use the OUM digital library) factor and the issue of access and connectivity to be major influences that hindered their use of the OUM digital library. Issues included "*not able to log into the digital library*" (Syed-T), "*hanging*" or "*non-continuity of access*" and "*connection*" (Tuah-T), "*slow*" and "*difficult connection*" (Syed-T, Zuhdi-T), and "*difficult access*" (Luqman-T), on top of "*extremely limited necessity*" (Tuah-T), as discussed earlier. Tutors understood that the IT infrastructure in rural areas such as where they lived still required a lot of improvement, as explained by Luqman-T:

In my view, the ICT infrastructure in cities such as Kuala Lumpur or Kuantan was better than in rural areas especially in using wireless networking. Internet coverage in our place was still very limited. Even if we had mobile broadband or wired Internet access such as in our institute, access was still limited and slow. So if we wanted to access the digital library, we had to wait for a long time. That was our constraint. If access and connection was good, I think many (tutors or students) would like to utilize the digital library.

Unlike tutors, only a few lecturers mentioned the access issue. According to Lim-L, he occasionally experienced the "*system offline*" and he perceived several factors that contributed to difficult accessibility for both My Virtual Learning Environment and the digital library. Those factors included "*server*", IT "*infrastructure*", and "*coverage*" (Lim-L). Zahra-L encountered similar access issues with My Virtual Learning Environment, which led her to use other software instead of the OUM LMS for her graduate course:

My experience last year was that the learning management system frequently turned off. In the beginning, I was struggling. I didn't really have much time. Then suddenly I could not access the system or it was not supporting what I wanted to do. I couldn't log in when I wanted to log in because they were down. Or students (wanted to) email their assignment (because) the deadline was that day. They wanted to upload but they couldn't. I got messages through Facebook because even our email was down. They said they couldn't upload. I got such a headache.

Since the digital library was accessible from the LMS, nobody could access the library when the system was down. This scenario might only occur occasionally, but would definitely lead to frustration among library users whenever it happened.

8.5.5 Summary of influences

All of the above four factors that influenced teachers use of the digital library are closely related. For tutors who taught undergraduate students, since there was no necessity to use the library's resources, difficulties accessing the digital library further discouraged them and they turned to other available sources to find information. Lecturers seemed to use the digital library more than tutors, but there were still some issues, particularly the limitations of e-books. Again, as modules were sufficient for teaching undergraduate students, lecturers also thought there was almost no necessity to use the digital library.

8.6 Theme 3: Teachers' perception of factors influencing students' use of the digital library

The data showed that OUM teachers perceived several factors to influence digital library use among their students. Factors include: adult learners' constraints; students' needs and views of the necessity of the digital library; connectivity and access; cultural barriers; and preference and relevance of materials provided by the digital library.

8.6.1 Adult learners' constraints

The teachers understood that OUM students are "*working adults*" who had "*time constraints*" (Lim-L, Fatimah-L, Syed-T, Zahra-L and Zuhdi-T). As time was a major influence on students' learning at OUM, teachers explained that assessment was designed in a way that addressed this constraint. OUM modules for undergraduate courses were developed such that "*all the key concepts should be included*" to serve "*the need of adult learners*" (Zahra-L). Modules served "*like a simple textbook with quite comprehensive notes, prepared in a very systematic way to provide the necessary reading materials*" which included "*basic concepts, definitions, theoretical framework ... and some activities, exercises, self-check ... to make it much easier to do their revision*" (Lim-L).

Student assessment, according to Musa-L, varied according to faculties and courses. As mentioned in Chapter 6, assessment at OUM was based on online participation, assignments, and examinations. These three elements for assessment were all taken from modules (Jamal-T, Musa-L and Zahra-L). Musa-L added that assessment also generally took into consideration "*Bloom taxonomy levels*" such as "*application, analysis, synthesis and knowledge enquiries*". Hence, exam questions and answering schemes, according to him, were developed such that, by reading and relying on modules provided by OUM, students were capable of applying, analysing and synthesizing the knowledge obtained from modules.

OUM modules were designed to address adult learners' constraints, and module-based assessment has consequently led to less necessity for undergraduate students to refer to the digital library, as noted by some teachers in this research.

8.6.2 Student needs and views on the necessity of the digital library

Teachers perceived the use of the digital library among OUM students as being influenced by "*the need to do critical review*" (Zahra-L), or when "*they were requested to find relevant information for literature review for their projects*" (Seri-L). For teachers, there seemed to be less need for undergraduate students to refer to the digital library, as modules covered everything students needed to know for a particular course (Luqman-T, Seri-L, Zahra-L and Zuhdi-T), and that assessment would be based entirely on the modules (Lim-L, Zahra-L and Zuhdi-T). In other words, the digital library would be used by graduate students more than undergraduate students (Zahra-L). In this regard, however, Lim-L suggested that OUM "*postgraduate students were still very much tied up with the traditional way of library usage, i.e. they still go back to the ordinary (physical) library*".

Lim-L also suggested that digital library use among students depended on the demands of respective subjects and the way in which assessment was designed for those subjects:

> The library's use depended on what subject you taught. Module was there. Students were provided with the actual modules and they depended on them very much. Of course from time to time we encouraged students to do more reading, when they joined the forum or online discussions. We sometimes asked them to search other books from the library. For other subjects that involved assignments as part of their coursework, they might require even more library research because they required more reading material or journals, to help them to write their assignment. Hence, it depended on subjects or the nature of subjects. Is it fully exam oriented, or consist of assignment and final exam?

As mentioned earlier, many tutors commented on "*extremely less necessity*" to use the digital library, not only for them as tutors but also for their undergraduate students. In this case, Mustaqim-T offered an analogy of how his students would deal with modules:

> Most students, though not all, would have a special bag where they put their modules. When they came here for tutorials, they would bring the bag. Upon returning home, they would keep the bag and never open it again. Two weeks later, they came here and bring the bag (and only then open their modules). This seemed to be my observation or analogy. But not all students (were applicable to this analogy) and there were some who showed commitment.

According to Jamal-T, OUM module-based assessment had influenced students learning to the degree that they relied solely on the modules. He drew a comparison between

OUM's and other universities' undergraduate students. The latter, according to Jamal, would find other materials besides lecture notes and textbooks: "*Since they do not have modules, there is a need to refer to libraries to find journals or books*", whereas OUM students had no need to.

8.6.3 Connectivity and access

OUM teachers realized that Internet connectivity plays an important role for their students not only in accessing the digital library but also for their online learning. As mentioned earlier, Luqman-T viewed Internet coverage in rural areas as problematic, even with high-speed broadband. Hence, for students who were already deprived of time and with modules easily available, access difficulties discouraged them from utilizing the library's resources. Lim-L thought that the accessibility issue was closely related to students' familiarity with the digital library, as well as their computers' capabilities:

> For OUM adult learners, especially those who were staying in rural areas or out of Klang Valley, I believed Internet facilities would not be accessible for them. So whenever they wanted to login, it wasn't easy because quite frequently the server was down. Some students were not familiar with digital library facilities because in order to find a book, you needed to undergo several steps or perhaps the students themselves did not have Acrobat (reader software). As I said, accessibility was one part, secondly, they have to undergo steps they did not know, and thirdly, the computer itself ... they have to update (their knowledge on) the computer as well ...

Chong-L explained that he would still ask his students to look beyond modules, even those who lived in rural areas:

> Sad to say, students tended to depend solely on modules might be because of the geographical difficulty and also Internet availability. In remote areas, it was difficult to find a bookstore, water, electricity, and even Internet. For some of my assignments, I asked them to go beyond (modules). Those (who lived) in remote areas met for face to face tutorials every fortnight, so they made use of computers in their learning centre to access information. (These) students could actually bring the digital gap, to be aware that Internet was not a luxury item but a necessity nowadays. Although necessities for them would still be water, electricity, infrastructure and so on. But perhaps they could change the society.

Chong-L raised the issue of the "digital gap" in term of information accessibility between those in cities and those in rural areas. Another gap which emerged from the data related to cultural barriers, which are discussed next.

8.6.4 Cultural barriers

The cultural-barrier issue was raised by a tutor, Zuhdi-T, who explained the influence of the academic reading culture and language barriers on digital library use among students:

> I think the digital library was ineffective (lack of use) because of cultural issues. First, the culture of reading journals was very lacking among students and second, the culture of reading electronic materials. Our students still preferred physical books ... Another issue was attitude (among students) ... who would search for materials in our local language while the digital library had extremely limited resources in our language. Most resources were from overseas (in English). Hence, students would not be attracted to refer to the digital library.

Tuah-T added his thoughts on the lack of publications in the local language among Malaysian academics and students leading to limited use of the digital library resources:

> Our (Malaysian) lecturers and students seldom published articles in the Malay language. They would still write in English even among those who taught or studied in the country. There were a number of (local) journals, even in education, which were written in English. Perhaps (the reason was that) they thought they would reach a wider audience.

The medium of instruction included both English and Bahasa Malaysia. Students might choose English and/or Bahasa Malaysia in writing their projects or answering exam questions. The library prioritised electronic resources. The majority of online resources were in English and so the priority of electronic resources led to prioritising English resources. With the library's policy of acquiring digital resources that were mostly not in the local language, library use among students who had language barriers had decreased.

8.6.5 Preference and relevance of materials

Zuhdi-T and Syed-T perceived their students to prefer physical books because they were not accustomed to reading digital resources. Lim-L thought that even OUM postgraduate students preferred to use physical books, *"(because) they find it (physical books) much more friendly use ... I won't deny there were quite a number using digital materials but I believed many of them still go back to physical library to look for books"*.

Seri-L suggested that students' use of the digital library was influenced by limited information sources relevant to their field. Luqman-T also raised the issue of relevancy of digital library resources,

> We (tutors) do encourage our students to refer to various information sources other than those given in books (modules) and references or those websites recommended (in modules). However, they would encounter difficulty in finding materials which were relevant to their courses. Most articles or journals (in the digital library) were not really related to their assignments. Hence, even if they visited the digital library, the (library) resources would not help them much.

8.6.6 Summary of influences

All of the above influences on students' use of the library services as perceived by teachers are interrelated. It seems that there were both internal and external factors influencing students' use of the library, as perceived by teachers. Students' perspectives are presented in Chapter 9; I next discuss two important findings from the teachers' perspectives.

8.7 Theme 4: Two dominant issues: Web 2.0 application and disengagement of tutors in blended learning

Two other issues emerged from the data which were not connected to the previous themes. However, they provide insight into teachers' perspectives on digital library services and/or blended learning environments at OUM. These issues reflect close linkages between the components in the blended learning activity system (see Section 6.4.3), particularly Web 2.0 as tools as well as the disengaged position of subjects or actors (tutors) in the community, which could lead to tensions. Further elaboration is given in Section 10.3.3.

8.7.1 The application of Web 2.0 blended teaching

Web 2.0 refers to the second generation of the web development and design which utilizes dynamic web tools and applications such as blogs, wikis, mashup, folksonomy, tagging, etc., thus allowing people to communicate, collaborate and share information online (see Section 3.3.3). The data suggested that OUM teachers offered a range of views on the Web 2.0 application from full advocacy to almost zero participation. In

between the extremes, there were some teachers who brought up significant issues in the use of social media networking in learning. Saufi-L considered himself as having "*limited participation*" in any Web 2.0 tools while other teachers (such as Chong-L, Fatimah-L, Luqman-T and Mustaqim-T) used them for personal purposes, not for teaching and learning. On the other hand, Zahra-L advocated the potential of social media tools for learning:

> I never went into social media until two years ago. Before that, I ignored it (such as) hifi, Friendster. But when it was Twitter, I saw some potential and I joined Facebook. Usually when I went into something it was for learning, to see how learning could happen. That was why I advocated twitter and Facebook. For learning, you could structure it. For example, you found a website (or) news about a particular concept or threat. You shared it by knowledge updating using the social media. Now teachers and students did not meet physically so that's how you could announce that, you could twit, you could do that in Facebook too, but twitter was simpler.

Zahra-L thought that some of her fellow lecturers were "*not ready*" to explore and utilize Web 2.0 tools for learning, though they understood the concept well. The reasons, according to her, might be the time needed "*to learn (and) to explore new things*" and the knowledge needed "*to set up the learning environment*" using the tools. As mentioned earlier, she used different software, instead of the OUM LMS, for her graduate course and was willing to spend a few weeks to learn, explore, and use the software to set up the new learning environment. And she was successful; she proved that her willingness to learn and try new technology/software to create a different learning environment was worth her effort when students from several countries enrolled in her course.

The OUM digital library's use of Facebook and blog tools was regarded as "*good*" (Chong-L), "*very good*" (Zahra-L), and "*value added*" to the library (Fatimah-L), enabling the librarians and OUM community "*to communicate*" (Chong-L, Seri-L and Lim-L) and "*to disseminate information*" (Fatimah-L) between one another. The tools were "*appropriate media*" for the library to "*reach out to some of the students whom they may not reach out to*" (Zahra-L).

Lim-L and Seri-L, however, viewed Web 2.0 as nothing more than mere tools for communication. Lim-L stressed the "*content*" side of the tools in learning:

I think whatever 2.0 or 3.0, we must come back to the basics. The tools were just (means) to communicate with students. We actually wanted the reading material, the content. For me, no matter how smart (or) how advance you are, we still needed to come back to the basics. (Students) had to really go through the right way to get the right information. (They needed) not just chatting, posting pictures or just sending a few words, right! Students, willingly or unwillingly, must do your assignments, must know how to do a literature review (and) how to write a proposal, must expose themselves to the academic journals, must know how to write research questions, hypothesis, sampling, research design, and research methods. Tools like Facebook, how much they could help!

Seri-L also stressed "*content*" and emphasized the "*pedagogy*" of using any Web 2.0 tools in learning:

OUM utilized Facebook, twitter, blogs ... (and) tried to use mobile learning. But I was not sure how effective all those tools were. It depended on individuals ... I had a Facebook account to know the features. I unsubscribed it because it took a lot of my time, and sometimes, it intruded my privacy ... the issue of privacy depended on individuals' adaptation of the IT stuff. If they liked to share things, this social communication network could be advantageous to them. For those who did not really want to share, they found it time consuming. But pedagogy wise, what was actually the content that you wanted to share (and) how effective the contents were. We needed ample times to prepare the contents. For Malaysian culture, they did not really love those kinds of serious reading. So maybe even if they created a blog, it was for fun but not for serious reading.

Zahra-L, however, thought that some "*teachers were slower to change*", particularly those who focused mainly on contents and resisted keeping abreast with fast-growing technologies:

Lecturers think they knew their field and that content was what matters most. But lecturing was not about just knowing your content. It was about how to teach your students better, and how to make things more easily understood by the students and how to make your delivery, your course more interesting, and for the assessment to be fair and interesting ... to enable them to learn and provide them opportunities to learn.

Although "*librarians were faster to change*" (Zahra-L), with the increasing advancement of technology, Zahra-L offered some good advice to librarians, that they "*must be very creative, must stay ahead so that people they served would benefit from this information explosion*".

8.7.2 The disengagement of tutors in OUM blended learning

As mentioned earlier, OUM provided three modes of learning: face-to-face, online, and self-paced learning. In this case, lecturers were responsible for ensuring modules went through a moderation process and were ready before each semester began. Tutors meanwhile were responsible for providing face-to-face learning for students (Fatimah-L, Lim-L, Luqman-T, Musa-L, Saufi-L, Syed-T and Tuah-T) and both lecturers and tutors were involved in online learning or discussion (Chong-L, Lim-L and Mustaqim-T, Tuah-T). Lecturers were also responsible for ensuring examination questions (mid-term and final) were ready on time and that answering schemes for each subject were up to the standard and readily available when needed (Lim-L and Musa-L).

However, tutors claimed that there was almost "*no relationship*" between tutors and lecturers at OUM (Syed-T, Luqman-T, Tuah-T and Zuhdi-T), and that tutors received no other "*incentives*" except their hourly payment, which consequently influenced their perception and use of the digital library.

> The relationship between tutors and OUM was lacking. They (OUM) must provide more opportunities to build the relationship, such as organizing courses (for tutors) or inviting us to meetings ... so that we could enhance the quality (of learning at OUM). (Zuhdi-T)

> OUM gave us modules and it was up to us (tutors) to provide tutorials to students. Some used presentation, some used seminar, different style. It was totally up to us (to determine the pedagogy) ... so in term of effectiveness (of OUM learning modes), it was less effective. Furthermore, we were merely paid as (part time) workers and until now, there was no other incentive. (Tuah-T)

Tutors also reported that their students did not understand the concept of the tutorial (Luqman-T, Mustaqim-T, Syed-T and Zuhdi-t). During face-to-face learning sessions, according to the tutors, students expected a lecture instead of a tutorial. In tutorials, students should have already read their modules and came up with issues or matters for further discussion – but they usually hadn't. Consequently, most tutors conducted lectures instead of tutorials based on the demands or expectations of their students. This finding signalled the systemic influence of OUM blended learning to students experienced at OUM. The organisation of the course modules had impacted on the expectations of students regarding the tutorials and the roles of tutors.

Tutors also offered critiques on three other issues: modules, exam questions, and online participation. First, they noticed some errors or inconsistencies in concepts, formulas or facts in modules (Luqman-T, Tuah-T and Syed-T) and that those errors persisted, although a few had been reported to OUM. Second, with regard to exam questions, Luqman-T reported that he had frequent discussions on exam questions with tutors and his colleagues, as they noticed that some questions were "*too general*" or "*too broad*" or "*seem irrelevant*". Based on their investigations, they found that in certain subjects some exam question developers were not "*expert in that particular field*" (Luqman-T). Third, the 5% of the total marks for online participation would be assigned by the tutors; however, based on their experience, their students' online participation was "*posted merely to get marks*" (Luqman-T) and "*conducted more towards quantity than quality of participation*" (Mustakim-T).

Although the tutors' scenarios and critiques might be relevant only to their situation in that branch at that particular time, some of the issues they raised could be addressed by lecturers at the OUM headquarters. As an outsider, I regarded tutors' roles in OUM blended learning as important because tutors were the ones who dealt face-to-face with OUM students. The findings suggested that tutors felt undervalued, disengaged and disconnected, which consequently influenced their perception and attitude towards the digital library and blended learning at OUM.

8.8 Chapter summary and reflection

In this chapter, I briefly introduced the teacher participants and presented their perceptions of the OUM digital library and their experiences of using various library services. I also presented the factors that influenced teachers' use of the digital library and teachers' perceptions of factors that influenced students' use. Two additional issues were highlighted: the use of Web 2.0 tools for learning, and the role of tutors in OUM blended learning.

Lecturers appreciated the ubiquitous accessibility of OUM digital library and utilised it for various purposes. Tutors however, showed little appreciation of the ubiquity of the digital library. Segregated roles between lecturers and tutors seemed to have affected students' learning and motivation to use the digital library. Tutors particularly seemed disengaged, and their perception influenced students' perception towards OUM digital

library and blended learning. The opposite view between lecturers and tutors occurred mainly due to: the roles they played in OUM blended learning; their position at OUM (as permanent or contract basis) and the different experience they have with the digital library. This scenario is related to human and organizational issues (McLean & Lynch, 2004) as well as institutional structure and attitudes towards the management of change (Duncan & Ekmekcioglu, 2003). Human and organisational issues need to be addressed particularly when technology brings enormous and continuous changes to both academic libraries and higher learning landscape.

The issue of connectivity and access again received attention. In particular tutors, consistent with librarian perspectives as discussed in the previous chapter, expressed concerns about the mismatch between expected and actual use due to technical difficulties related to connectivity and access. This issue remains central and vital to digital libraries (Johnson & Magusin, 2005) regardless one view the digital library from services/organisation perspective or content/system perspective (Borgman, 1999, 2000) (see Chapter 3.2.1). The discussion among researchers on this issue covers other related issues such as enablers of and barriers to the technology (Main, 2001) and lead to a fundamental issue of the digital divide (Hawkin, 2005), I discuss further this significant finding in the chapter 10.5.

Teachers expressed mixed acceptance to the application of Web 2.0 in learning, from those who were active advocates to those who had very little interest and were very infrequent users of Web 2.0. The first group highlighted content and pedagogy issues. The contrast to the librarians' perspectives may be present because of the way in which each group perceives the application, which then influences the way in which the tools are used. The application of Web 2.0 or Library 2.0 is a mere mean/tool/method, which if used correctly, can ease the accomplishment of objective/s of any organization. The tool is a component of any activity system, used by the actors/subjects to achieve their object/ives (see Chapter 4.2.3). Negative perceptions and incorrect or limited use of tools will influence the objectives attainment of the activity system.

I have presented librarian and teacher perspectives and next Chapter 9 presents students' voices on how they perceived and experienced the digital library services in their blended learning environments.

CHAPTER 9: STUDENT PERSPECTIVES

9.1 Introduction

Chapter 8 reported the findings on teacher perspectives on integrating digital library services in OUM's blended learning environment and this chapter present the research findings related to the perspectives of the students interviewed for this study. Data from interviews with OUM students documented students' perception and use of the digital library as well as several influences on their library use. After briefly introducing the participants, I present the two main themes that emerged from the data: 1) students' perception of the OUM digital library and their experience of using the library resources and services in their learning; and 2) the influences on library use among students.

9.2 The participants

The students' perspectives presented in this chapter are based on 10 face-to-face interviews with 20 participants. They were selected based on criteria as mentioned in Chapter 5.7 which include: they had to be working or studying at OUM, preferably for more than three years; and they had to be familiar with the digital library. They were recruited using purposeful, snowballing and opportunistic sampling approaches.

All interviews were conducted on a one-on-one basis, except for one interview with a pair of students, and one focus group interview with 10 students. As explained in Chapter 5, the pair interview was at the participants' request, while the focus group interview was conducted due to geographical and time constraints. Interviews were conducted in the Malay language but some participants used a mix of Malay and English.

Table 15 provides demographic information for the participants. They were mostly undergraduate and Malays. The genders were equally represented; that is, there were 10 males and 10 females. They all worked full time in various sectors including education, marketing, IT, tourism, and counselling. Interviews were 15 to 75 minutes in duration. All participants were OUM students except Haris, who was a part-time student at a local public university. He regularly visited the main library, was very familiar with the

library, and only disclosed his status right before the actual interview. Comments from Haris were insightful, so I decided to include data from his interview as part of my research findings.

Pseudonyms have been used throughout the chapter to preserve participants' anonymity. For the purpose of differentiating perspectives of students of OUM main campus and of its branch in Pahang, I add a designation FG (focus group) next to participants' pseudonyms.

Table 15: Participant information (students)

	Participants (pseudonym)	Gender	Ethnicity	Level of studies	Working sector
1	Ahmad-FG	Male	Malay	Undergraduate	Education
2	Aishah	Female	Malay	Postgraduate	Counselling
3	Ali-FG	Male	Malay	Undergraduate	Education
4	Amir-FG	Male	Malay	Undergraduate	Education
5	Azmi	Male	Indian	Undergraduate	Marketing
6	Azwan	Male	Malay	Undergraduate	Tourism
7	Dina	Female	Malay	Undergraduate	Education
8	Haris	Male	Malay	Postgraduate	Education
9	Iqbal-FG	Male	Malay	Undergraduate	Education
10	Lina-FG	Female	Malay	Undergraduate	Education
11	Liza-FG	Female	Malay	Undergraduate	Education
12	Man-FG	Male	Malay	Undergraduate	Education
13	Mona	Female	Malay	Undergraduate	Marketing
14	Sam-FG	Male	Malay	Undergraduate	Education
15	Shila	Female	Malay	Undergraduate	Education
16	Suri *	Female	Malay	Undergraduate	IT/Banking
17	Tina *	Female	Malay	Undergraduate	IT/Banking
18	Vaiheki	Female	Indian	Undergraduate	Marketing
19	Yana-FG	Female	Malay	Undergraduate	Education
20	Zul-FG	Male	Malay	Undergraduate	Education

Note: FG - Focus group interview; * Pair Interview

9.3 Overview of themes

Two main themes related to student perspectives on the phenomenon under investigation emerged from the data analysis. The first theme concerns students' perceptions of the OUM digital library and their experience of using its resources and services in their learning. The second theme relates to the main influences on library use among students.

9.4 Theme 1: Perception and experience

Participants generally appreciated the ubiquitous nature and accessibility of the OUM digital library.

> For me, the digital library was very helpful. I worked until 5 pm and reached home feeling exhausted. From home, I could still access the library which was accessible for 24 hours. It saved my time. I did not need to go to the library to get books. I just searched any books and retrieved them from the library website. It was quick and convenient! (Dina)

> The OUM library was available online. It was very flexible for students. We could come to the library if we had time. Otherwise, we could still access to it. For me, the good feature of the library was that we could still access books from our home and other places. Since most students were working adults and had time limitation, we could still continue our learning where ever we were, as long as we had (Internet) access, (and had valid) username and password, we could still continue our learning. (Mona)

> The library was convenient. We did not need to go anywhere. We just stayed at home and sit in front of the computer to get materials and to print them out. (Sam-FG)

The ubiquitous accessibility of the library was perceived as useful and convenient not only by OUM students but also by Haris, a non-OUM student participant:

> The e-books were not limited, not bound to a single user at a time like printed books. We could search them anytime without worries that they might be borrowed by someone else or were not available on shelves. They were always there and flexible for us (to retrieve anytime). This (criteria of the digital library) was convenient and eased students learning.

Haris offered a straightforward comparison between the digital and the traditional library, specifically between physical and electronic books. He describes a common situation in traditional libraries, where books may not always be available on shelves,

and if someone has borrowed a book other library users would need to wait until the book was returned to the library.

The ubiquity of the library access is highly suited to the OUM blended learning approach, as students were geographically dispersed in different locations throughout the country and overseas. Students are able to pursue their self-paced and online learning anytime, anywhere, such as from home or the office as long as they are connected to the Internet and they are "*active*" or registered OUM students.

Usage varied among the students. Participants generally reported that their main purpose for using the library resources was for "*assignment preparation*" (Ali-FG, Azmi, Sam-FG, Shila, Tina, Vaiheki and Zul-FG). Other purposes included "*reading (online) news*" (Aishah), "*extra reading*" (Shila), as well as a "*physical space to study*" and to do "*final examination preparation*" (Shila, Azmi and Haris). Participants reported a preference for reading the library's digital resources "*on the computer*" (Azwan, Shila and Azmi), while others reported their preference of printing out materials and reading on paper (Sam). Some participants however preferred physical books (Dina, Mona and Azmi) which they borrowed from the library or other libraries (Dina), or bought for their own collections (Yana-FG and Liza-FG). On the other hand, some participants preferred e-books and online resources because they were free of issues such as "*renewal*", "*not available on shelve*", and "*over-due fines*" (Aishah), of the "*need to find the time to go to the library*" (Mona), and of any worry that "*books are loaned by someone else*" (Haris).

Participants generally accessed the library from afar via the Internet but a few visited the physical library. Tina came to the library "*to find printed books and access the Internet*" and Azmi utilized it to have "*group discussions*". A variety of services are provided in the physical library in Kuala Lumpur, such as Internet access from a number of computer terminals, information service counter, printing services, discussion room, self-check machines for book loan, and convenient spaces for reading. Haris reported that he frequently visited the library because it was a "*quiet and cosy (physical) space*" to study. As a part-time student of another public university, he used to visit the OUM library during weekdays because OUM students would normally visit it during weekend. The "*convenient and comfortable environment*" in the physical

library allowed him to "*focus on his research*". This convenient and comfortable environment of the physical library was something that a digital library cannot offer.

Some participants however reported that they made limited use the library and referred to other sources of information due to many factors or influences, which are discussed in the next section.

9.5 Theme 2: Influences on use

The data revealed that library usage among student participants was influenced by seven key factors, which are detailed below.

9.5.1 Adult learners' constraints

Time constraints were reported to be a major influence on library usage. As students were mostly working adults, commitments to work and family limited their time for learning. The OUM personalized learning model allowed them to choose their own time to study and the ubiquitous access to the library provided flexibility to use the resources whenever and wherever they wanted. Unfortunately, time factors tended to limit their library usage as well. According to Mona, "*OUM students are all working and (their) time (for studies) is extremely limited*". Amir said that "*if the library is just next door, I will definitely go to the library every day. Unfortunately, I do not have enough time to do that*". Azmi and Tina added,

> I used the digital library merely to do my assignments. Because of time constraints, I do not have the time to read for other things ... This university is established for working adult, so they understand that students' time is very limited. So that is why tutorials are conducted only twice a month ... so most of the students use the digital library only when they need to do research or to prepare assignments. (I'm) working in marketing (department), I don't have the time even to switch on the computer and I miss most of online discussion (for my learning). (Azmi)

> One of the reasons (for not using the digital library)...(was that) we were all working, we have limited time to complete our assignments ... sometimes, we went home very late (and tired), hence we have even less time to study, what's more to use the library. (Tina)

Since OUM students study on a part-time basis, they have limited time for their learning. Accessing the digital library and visiting the physical library could be both

very time-consuming though the latter, as indicated in the literature review, would consume more time than just accessing the digital library from the internet. Moreover, there was less need to refer to the digital library since they had their course modules, which is the next influence.

9.5.2 The influence of the modules

Participants considered modules as "*all-inclusive*" (Tina), "*well set up*" (Mona), "*comprehensive*" (Aishah), and "*easy to follow*" (Dina). In addition, references are available in modules "*for students to get extra knowledge and to gain better understanding*" (Mona). Since examinations (mid-term and final) are predominantly based on the modules, "*students would definitely pass their exam if they read modules*" (Dina) and "*the tip to study at OUM was to read modules that they (OUM) provided*" (Azmi). Zul-FG added that module-based-examination was "*guaranteed (by OUM)*" and that "*students could straight away leave exam (venue) if they found exam questions were beyond modules (contents)*" (Zul-FG).

OUM's modules-based-examination policy was perceived as helpful and suitable for working students:

> As part time students, working (full time) and have time limitations, I am so thankful that OUM examinations were only taken from modules. The (exam) questions were not easy and of high quality. The (exam) questions were suitable for university level (qualification) ... As compared to (part-time undergraduate) courses in other universities, there were five to six books to read and the final examination could be randomly taken from any of those books. I appreciated (the OUM approach). (Zul-FG)

Since OUM examinations were mainly based on modules that OUM provided for each course, students' usage of the digital library was determined by their views on the role of the modules. If the modules suggested that students referred to specific materials retrievable from the digital library, then students were likely to do this. Otherwise, the likelihood of referring to the library materials was slim. As reported by Vaiheki, "*I did not refer to the library, (I only) relied on modules and attended tutorials*", which she considered as "*sufficient*" for her learning at OUM. Tina and Suri (during their pair interview) also shared a similar experience:

> So far, we rely on modules and the Internet. (Suri)

And the OUM modules are all-inclusive. They (OUM) did research (to prepare modules) and combined information from many sources ... so those (contents in modules) are the important things for the subject, they are sufficient. The modules are really comprehensive. (Tina)

Two students, however, voiced a different opinion. Shila and Azwan reported their efforts to find information beyond the modules:

I might agree (with the idea that students could answer exam questions by referring to the modules) but for the sake of seeking knowledge, we wanted to find more information. Information in modules was enough for (respective) courses. That's why students can pass the examinations by reading modules. However, in order to find more knowledge, we needed to read from other references (and sources). (Shila)

I reckoned the modules were insufficient for us to understand what we learn (i.e., subject matter). We need lecturers, face-to-face (tutorials), forum and Facebook for online learning (and discussion). Hence, I think online learning and the library will greatly help us to have (meaningful) understanding. (Azwan)

The OUM blended learning model consisting of online, face-to-face and self-paced learning was purposefully created to address the time constraints of adult distance learners. However, this policy of having modules to support self-paced learning has influenced usage of the library, especially when students are aware that examinations and assessment are predominantly based on modules, as the participants indicated.

9.5.3 Language barriers

Language was reported to be an issue that influenced students' usage of the digital library. Most resources in the library were available in English and some students encountered problems in comprehending materials that they retrieved from the library. Aishah reported that she encountered language difficulties in understanding some journal articles that she retrieved from the digital library. She would read the articles several times to understand them, hence she consumed more time than she would in understanding articles in her local language. Ahmad also had difficulty in understanding materials that he retrieved from the library. He expressed frustration over finding limited materials in his local language,

When I referred to the digital library, I noticed that the materials were in English and the language was too advanced to understand and they were all from overseas. Hence I spend so much time locating materials and

understanding them. Language was the main problem. For those who were very fluent in English, it would be easy for them. But for us, (who were) studying Bahasa Melayu (Malay language), this (language barrier) was problematic.

The language problems raised other issues, such as needing to use a dictionary and having to get help with translations. These issues increased the time needed for students who were already time-starved. As reported by Sam-FG:

> I referred to the digital library. However the materials that I retrieved were in English and I was not too good. So I needed to ask for help from my fellow English teachers to translate the materials for me. Sometimes I referred to the dictionary. Let's say I could prepare an assignment within two or three days, but in this case it would take a longer time ... There were times when I found later that the materials being translated were not even related to my assignment ... Ah! What a waste then ...

Dina reported that she had turned to other sources of information because of her problems in understanding English materials that she retrieved from the OUM library. She said "*materials available in the OUM library were mostly in English*". Alternative options were also identified as another influence, which are discussed next.

9.5.4 Preferences and alternatives

In Dina's case, she turned to the National Library of Malaysia to get materials for her studies. She had the alternative of visiting other libraries to find information and preferred visiting the National Library because "*most collections in the National Library were in Malay language*". She also reported that she and her friends preferred printed books because they "*were not accustomed to digital books*".

There were different preferences among students: physical books over e-books, physical libraries over digital libraries, the Internet over the digital library, and buying books over downloading or referring to e-books. Mona mentioned her preference of borrowing physical books rather than using e-books:

> I normally go to the (OUM) library to get some books. I like physical books because I felt more satisfied reading from books. They looked "real". I knew e-books were good, saved our time, gave us knowledge, and enhanced our skills in IT through advanced technology. But for me, ever since studying here at OUM, I preferred physically going to the library, and borrowing some (physical) books.

Because of limited physical books in the library, students might refer to other sources of information. Students conveyed different alternatives or preferences, including buying books, visiting public libraries, or referring to the Internet to find information. Liza-FG reported that she preferred "*buying books since she could refer to books in her possession several times (without any difficulty)*". Like Dina who visited other libraries, Lina-FG had similar preferences:

> I do not use the digital library. I prefer to visit and use a public library which coincidently is near to my school (where she worked as a teacher). It is very convenient and easy for me to get information. I have no problems so far in getting materials for my assignment.

However, Aishah preferred the Internet and considered it highly important in her learning. She described the Internet as "*a heart, without which we cannot do our work*" and used "*Google to find information for works and studies*". Yana-FG reported that she did not refer to the OUM digital library and preferred "*buying books for personal collections*" and she "*turned to the Internet*" if she needed to find information.

9.5.5 Familiarity with the library

The "Learning Skills for Open and Distance Learners" course was introduced at OUM to familiarize students with the digital library, and prepare them for the "*unique experience of studying at OUM*" (see Section 7.4.4). Dina's view was that "*the exposure given (through the course) during the first semester allowed students to be familiar with and to know how to use (the digital library)*". However, she added that the course would not guarantee that students would utilize the digital library. Amir-FG's perception that the digital library would "*ease learning*" changed once he was familiar with the digital library:

> My usage of the digital library was probably only one per cent. I was excited during early stage of studies (that) the digital library could ease my learning. But after using it (familiar with the digital library), I think I did not want to use it anymore. Materials that I retrieved were not suitable and couldn't be translated (applied) to my learning.

Azwan regarded the exposure given by the course as insufficient:

> Frankly speaking, I think that the exposures (given through the course) were still insufficient, (such as on) how to find materials, how to learn online. There were still many (students) who could not familiarize. Not everyone could

understand especially among those age fifty or sixty and above ... Increasing our understanding on how to apply and utilize it (the digital library) would be beneficial and helpful.

Azwan also brought up the role of teachers' support in blended learning and library familiarization:

> Perhaps during early stage (of studies), we encountered difficulties and had limited understanding (familiarity). With time, we gradually learned how to find information that we needed for our research... through support and guidance from peers, forum and lecturers.

He raised an interesting point about the role of the teachers and peers in students' learning and in finding information in the best way.

9.5.6 User friendliness and relevance of materials

Yana-FG further explained that she "*turned to the Internet*" because she found the digital library had issues in terms of user friendliness. There were "*so many steps involved*" which led to "*frustration*" when she could not find the information she needed. Suri also complained that "*you have to go through all the process, steps by steps*" when using the digital library, which discouraged her use of it. Amir-FG explained that the resources that he retrieved from the library "*were not suitable and could not be translated (applied) to my learning*". Azmi expressed a preference for the Internet, specifically Google, as he could quickly identify relevant materials:

> I will first refer to Google because it's easy and fast. I retrieve lots of information and that is exciting. We can experience the so-called 'world without boundaries' in the Internet. Information retrieved from the digital library is 'boring'. On the other hand, if you Google search, you would see list of materials (about the topic) on top. And below (each item), there are short summary of the item. We can read (the summary) and straight away know if the item is relevant. In the library, there were only title and author, and we need to open the e-book in order to know the relevancy of the item. We get lots of information from the Internet, good information and not good stuff as well.

Azmi acknowledged the fact that the information he retrieved from the Internet may or may not be relevant to his studies. Mona on the other hand had a different opinion: "*the library provided a range of services from good collections, helpful librarians, to relevant materials for us to use for our research or assignment*". These have encouraged her to use the library, particularly the physical library, as she explained earlier.

9.5.7 Connectivity and accessibility

Access to the digital library was highly dependent on Internet connectivity. For students who lived in cities like Kuala Lumpur, they might not encounter any problems in accessing the Internet and the digital library. Connectivity became an issue for those who lived in rural areas, as explained by Sam-FG:

> The constraint of (using) the digital library was in term of the Internet speed ... for those who lived far (from cities), the line would be slow (and) hours of waiting. For me it's fast because I lived in the city (Kuantan). For those who lived far away from cities, they just wasted their time waiting.

Shila held the view that Internet access would be a "*big problem*" for not only library usage but also OUM online learning, particularly for those who do not have access, irrespective of their location. Zul-FG added that most students "*could afford (financially) to get the Internet, like 'Streamix' or broadband, however, for those far away (those living in rural areas), the line might be very slow*". Yana-FG expressed frustration over the issue of connectivity and the library's user friendliness, which discouraged her from using it:

> Frankly speaking, I have never used the digital library. There were so many steps involved before we reached the information that we needed. If line (connection) was not very good, we ended up waiting and waiting ... what a waste of time ... I have been studying at this university for two years now, and I have never used the digital library.

Despite being enrolled in a blended learning course, Yana-FG did not engage with the digital library. This finding indicated an important insight – user experience of the digital library is closely related to connectivity and accessibility. Furthermore, when students experience these issues, some may refused to use the digital resources.

9.6 Reflection and summary

In this chapter, I examined students' perspectives on OUM's digital library services and their experience of using them at OUM. The findings suggest that students appreciated the ubiquitous accessibility of the digital library which supported OUM blended learning. Experience of usage varied in term of how and why students used the digital library services. Seven influences of use were identified: adult learners' constraints, module based learning, language barriers, preferences and alternatives, library user

friendliness and relevance of materials, familiarity with the digital library, and connectivity and accessibility.

From student perspectives, the influences can be understood in terms of student factors, library factors, and external factors. Time constraints, language barriers, personal preferences, and alternatives were the student factors. User friendliness, relevance, and familiarity with digital library services were library-related factors, while modules and connectivity and accessibility were external factors.

Some influences of digital library use, from student perspectives, resembled the influences on use as perceived by OUM teachers. As explained in Chapter 8, teachers perceived five influences of students' use: adult learners' constraints, student needs and views on the necessity of the digital library, connectivity and access, cultural barriers, and preference and relevance of materials. Learners' constraints were acknowledged by both teachers and students. The design of OUM mode of learning was meant to cater for the adult learners' constraints and needs. Cultural and language barriers as well as connectivity and access received a particular attention from teachers and students, and I further elaborate them in chapter 10.

Furthermore, analysis of student perspectives indicated that participants, both from OUM main campus and its branch, shared all influences of use except for connectivity and accessibility. Most comments about connectivity and accessibility of the digital library came from participants in OUM branch. Moreover, they highlighted that this issue influenced both the digital library use as well as the blended learning in general. This finding also deserves further discussion which I include in Chapter 10.

In the next chapter 10, the differing perspectives of students, teachers and librarians are further analysed, reflected and discussed in the light of the theoretical framework, Activity Theory.

CHAPTER 10: DATA INTERPRETATION, DISCUSSION AND CONCLUSION

10.1 Introduction

This research has explored various perspectives on the integration of digital library services in the blended learning environment of a Malaysian university. Two research questions were investigated:

1) How do librarians integrate digital library services in blended learning?

2) How do teachers and students experience the integration of digital library services in blended learning?

A qualitative case study methodology was employed to answer these questions and provide an understanding of the phenomenon from the perspectives of librarians, teachers, and students of Open University Malaysia (OUM). Interviews and document analysis were employed as data collection methods. Creswell's (2013) six steps of qualitative data analysis were followed to identify themes, assisted by the computer-assisted qualitative data analysis software NVivo 8 to manage the data. Necessary steps were taken to ensure the trustworthiness of the research.

The research findings have been presented in Chapters 6–9, in which the bounded case was described and the three groups of findings were presented. In order to achieve a deep understanding of the three of perspectives on the phenomenon under investigation, a summary which delineates the key findings is presented first. I then reflect on the research questions, the findings, the methodology and the theoretical framework, which leads to the presentation of the two main discoveries of this research, namely innovation through Library 2.0 and the Malaysian digital divide. Activity theory (AT) introduces the concepts of "tensions" and "expansive learning" (Engeström, 1999a, 1999b, 2001) and this chapter applies these two concepts to the data collected for this study. Library 2.0 as an innovation or example of expansive learning and the digital divide as a tension are then further elaborated on and discussed. Later, I put forward implication of the research to academic libraries and information professionals, blended learning in HE institutions, as well as my growth as a researcher. I then detail the research limitations

and possible future research directions and complete the chapter with concluding remarks pertaining to the integration of digital library services in blended learning environments.

10.2 Research key findings

At the end of Chapters 7, 8 and 9, I have delineated several key findings which are based on specific group perspectives of librarians, teachers and students. I present here the overall key findings.

Integration of the OUM's digital library services in blended learning environments occurred mainly through its ubiquitous accessibility; that is, it being accessible anytime, anywhere, and this became the purpose or outcome of the digital library activity system. This feature was advantageous for OUM's distance learners. All participants showed appreciation of this particular feature. However, this feature did not guarantee use of library resources. The research revealed several influences on digital library use as perceived and experienced by teachers and students, which can be classified into two categories: influences caused by the library or internal influences; and influences beyond the library domain or external influences. Table 16 summarizes these influences on use.

Table 16: Influences on digital library use

Internal influences	External influences
- Limited resources - Relevance of resources - User friendliness - Familiarity	- Needs and views of the necessity of the library when learning was module-directed - Preferences and alternatives - Learners' constraints - Language and cultural barriers - Connectivity and access

The internal influences were mainly related to the resources of the digital library in terms of their relevance and limitations. The user friendliness of some databases was beyond the library's control. However, the library had full control over the decision to subscribe to suitable and user friendly databases and it is the library's responsibility to provide sufficient training to familiarize users with databases they are subscribed to.

Familiarity of resources and the right ways to find the information among users should be librarians' priorities when making decision as these factors influenced library use.

On the other hand, the external factors were related to personal reasons (constraints, preferences and barriers), organizational reasons (module-directed learning) and local reasons (connectivity and access). Librarians at OUM should acknowledge and address the language and cultural barriers. They should identify ways to follow its policy of giving priority to acquiring electronic materials (which were mainly not in local language) and at the same time to address the language and cultural issues. They acknowledged that module based learning to limit the digital library use particularly among undergraduate students and initiated ways to compromise such as creating hyperlinks in modules. With regards to the issue of connectivity and access, it was something totally beyond the library to handle. The ubiquity of the digital library was at stake when connectivity and access was an issue.

Although usage of the digital library was found to be limited in this research, the data suggested that librarians perceived their roles as still important, especially in advising users on how to retrieve resources with accuracy, validity, relevance and authority of information. They maintained both the digital and physical presences of the library. Despite their main focus being on their digital presence, they provided physical space and physical resources because demand for them from users remained. They also utilized both synchronous and asynchronous methods of interaction in reaching out to users.

Through the lens of AT, I discovered in the data several examples of tensions and innovation as a result of the intertwining relationship between the two activity systems: the digital library and the blended learning activity systems. I identified connectivity and access barriers as possible tensions, while the use of Library 2.0 was clearly an innovation. Further elaboration on these appears in the next section.

The application of Web 2.0 or Library 2.0 tools has been taken seriously by the librarians to reach out to their users. Teachers expressed mixed acceptance, from extreme advocacy to almost zero use of the tools. They brought up two significant issues with regard to the application of Web 2.0 in learning, namely content and

pedagogy. Students mainly used the My Virtual Learning System for learning, as required by OUM for one of its three blended modes of learning (online learning).

Segregated roles between lecturers and tutors appeared to have affected students' learning and motivation to use the digital library. Students' roles in learning had been confined by OUM course design, which was based on modules and nothing beyond them. This observation however only applied to undergraduate students. OUM courses were designed to suit students' constraints (working adult, limited time for study) and their web modules (either online or offline) were meant for students ranging from full access to limited access to the Internet. Module-based assessment served their students' constraints and conditions well; however, the data suggested that module-based assessment led to limited use of the digital library.

10.3 Reflection

Throughout the data analysis process I reflected on the findings, tried to make sense of them, and attempted to comprehend the complexity of the various phenomena under study. I also reflected on the chosen methodology which yielded a significant finding (the digital divide). Through my theoretical reflection, I also discovered Library 2.0 as a significant innovation.

10.3.1 Reflection on the research questions and findings

As mentioned earlier, two research questions were explored in my attempt to understand the various perspectives on the integration of digital library services in blended learning environments. In Chapters 6 and 7 I discovered that OUM librarians positioned digital library services in blended learning through various means. Access became a major contributing factor (Borgman, 2000; Lang, 1998) which may be considered an "enabler" (Zainab, Abrizah & Nur Badrul, 2004, p. 208) for the provision of digital library services. This is in agreement with the definition of a digital library (see Section 3.2.1) as a form of library organization/services that provide remote and ubiquitous access to their contents, resources and services. Access received great attention in this research, as did usage, compared to other aspects of a digital library (see Section 3.2.3). However, all aspects of the digital library were closely related to one another.

As explained in Section 3.2, key aspects of a digital library include *purpose*, *roles*, *process*, *contents*, *access*, *users* and *usage*. For the OUM digital library, their *purpose* was to provide ubiquitous access to their resources and services to support the blended learning of distance students who were geographically dispersed throughout the country and overseas. The *roles* of the librarians were to ensure availability of resources (references or textbooks) as listed in modules, and to provide library users with convenient interaction and continuous support. They understood the nature of their students (working adult) and accordingly prioritized digital library services which suited students' learning most. In the *process* of fulfilling their roles, OUM librarians utilized advanced technology and tools such as Library 2.0, and were involved in various attempts to improve their services in the face of the challenges and issues that existed along the way. Digitization efforts seemed minimal because they mainly acquired digital resources from databases providers. These resources or *contents* consisted of perpetual or subscribed e-books, e-journals, e-theses, etc., as well as OUM-related electronic contents. The library served various *users* who consisted of students, lecturers, tutors, subject-matter experts, etc. who were geographically dispersed but could access the library anytime, anywhere. They could reach librarians using synchronous and asynchronous means of interaction. Their *usage* of digital library services, however, was quite limited. Several factors influenced this scenario. The aspect of *usage* closely relates to my second research question and I have discussed the influences on OUM library usage (Chapters 8 and 9), as perceived and experienced by OUM teachers and students respectively. The data revealed several influences limiting the use of OUM's digital library services.

The ubiquitous accessibility of the digital library has been a contributing factor to encourage its usage, particularly among those who have no access issues. For those who had access issues, particularly those who lived in rural areas, the ubiquitous accessibility of the digital library did not help them much since they had barriers to access. Access barriers exist in various forms (Hawkins, 2005; Main 2001) and the findings revealed two types of barriers – cultural and language – as well as access and connectivity issue, which eventually revealed a digital divide. OUM was aware of these issues and had designed their blended mode courses to address the digital divide and to meet adult learners' circumstances. I return to the issue of the digital divide in Section 10.5.

I found both consistencies and inconsistencies between the findings and the research assumptions (see Section 1.2.2). The findings are consistent in that librarians would try to the best of their ability to accommodate and make use of ICT to provide access to library resources and services in the easiest, quickest, and most convenient manner (Sharifabadi, 2000). The continuous efforts undertaken by OUM librarians (see Section 7.6) provide evidence of such attempts. The utilization of synchronous and asynchronous interaction with users (see Section 7.5) implies attempts to bring the library to users (Arms, 2000). The findings on the library's ubiquitous accessibility also fit with the assumption that digital library services improved information access to users anytime, anywhere they needed. However, the contention that integrating the services would enhance blended learning was inconsistent with the discovery that the OUM course design reduced or limited digital library use. I acknowledge the complexity of the environment in which OUM, in their attempt to provide personalized learning opportunities to adult learners, has designed their courses to best suit the characteristics of distance learners. The roles of the digital library were consequently bounded by OUM's "setting" (see Section 6.5). In other words, positioning digital library services in a blended setting seems inevitably bounded or confined by the institution to which the library belongs.

The scenario of OUM librarians reactively responding to its bounded setting prompts reflection on librarians' practice and roles in the current landscape of education where advanced technologies are embedded deeply within the education system. Librarians have long served their users (stakeholders) in a reactive manner and several researchers agree with this view (e.g., Arinawati, 2011; Webb, Gannon-Leary & Bent, 2007). The existence of libraries in higher learning institutions is to fulfil the information needs of the learning community they serve. The role of fulfilling users' information needs is reactive in nature, which means that when there are demands for certain resources or services, librarians will meet them. In other words, librarians' activities reactively respond to users' demands and needs (Arinawati, 2011; Webb et al., 2007). The findings suggest that OUM librarians continued a long reactive tradition in terms of providing digital and physical resources and space. Although they focused on the library's digital presence (which suited distance learners), they also maintained physical space and resources because demands for them from users still existed. However, OUM librarians were advanced in terms of utilizing Library 2.0, especially social media, to

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reach their users and I consider this phenomenon as a pro-active role (Ahmad Bakeri, 2009; Raja Abdullah, 2004; Roes, 2001). I elaborate on this later in the chapter.

The findings also suggest that blended learning for undergraduate studies at OUM was restricted or constrained by course modules. Although required measurements and necessary steps were taken to ensure OUM learning fulfilled the standard set by the Malaysian Qualification Agency, such as considering Bloom taxonomy in the course design, the findings suggest the quality of learning at OUM as a private learning institution was questionable. Module-based learning limited the use of digital library resources and services, and could be seen as a "spoon-feed attitude" that results in "narrowly focused" study by students (Roberts & Davey, 2002). As the findings have revealed, the attitude was present not only among students but also was expressed by tutors. The disengaged position of tutors opened up a new challenge as they played a significant role in conducting face-to-face learning with students.

10.3.2 Reflection on the research process

The two research sites – one in an urban area and another in a rural area – provided rich data that eventually revealed a digital divide between the sites. My approach to the qualitative case study as an outsider researcher led to significant meaning and understanding, yet my status meant that I urged myself to conduct the analysis with caution.

1) The two research sites

Findings from the two research sites clearly indicate a digital divide. In Section 5.3.2 and 5.7, I mentioned that interview participants were chosen from two research sites. The two sites were OUM's main campus in Kuala Lumpur and one of OUM's branches in Pahang. The two sites were selected to represent two cases: an urban area, specifically Klang Valley, and a rural area. Table 17 gives the characteristics of the sites.

Table 17 : Description of the research sites

Description	Urban	Rural
ICT infrastructure and access to the Internet.	High-speed Internet access and wide range of advanced ICT infrastructure.	Limited ICT Infrastructure such as limited wireless coverage and low-cost technologies.
Geographical boundaries.	Located in cities especially Kuala Lumpur and Klang Valley.	Located in rural districts particularly in big states like Sabah, Sarawak and Pahang.
Population.	Highly populated.	Low population.
The University (OUM).	The main campus in Kuala Lumpur; all learning centres are located in cities.	All learning centres and branches located in smaller towns.
Student learning at OUM – the three blended modes.	Face-to-face tutorials were optional for some students.	Students with limited Internet access visit nearest learning centre for online learning. Compulsory attendance for face-to-face tutorials.
The digital library – accessible to all registered "active" students anytime, anywhere.	Physical library located at the main campus, has physical resources and services, managed by professional staff. Close to other libraries.	Selected physical resources are distributed to learning centres, kept in resource rooms and managed by centre administrators. Limited physical libraries nearby depending on where centres are located.

When I reflected on, analysed and compared the findings from the two sites, I identified three important differences, namely connectivity and access, use barriers, and course design. These differences are illustrated in Table 18.

Table 18: Comparison of findings from the two research sites

Themes	Urban research site	Rural research site
Connectivity and access.	Very much not an issue.	Major problem that discouraged digital library use among students and tutors.
Use barriers.	Language barriers influenced their use of digital resources.	Cultural and language barriers to influence limited use of the digital library.
Course design.	Module-based assessment led to limited necessity to use the digital library. However, a few participants referred to resources beyond modules.	Module-based assessment led to limited necessity to use the digital library. Student learning was limited by modules and nothing beyond them was used.

The issue of connectivity and access dramatically divided the two research sites. While participants at the urban site did not encounter such issues, participants at other sites regarded the issue as a major problem that discouraged digital library use. Access was

an issue for those living in rural areas. Participants in urban sites were aware of this issue and in fact OUM had designed its courses to accommodate this issue.

There were two significant barriers to use identified, namely cultural barriers and language barriers. Cultural barriers were highlighted by participants at the rural site, particularly tutors. They stressed the lack of extra reading (from sources other than the modules such as books, journal articles, conference paper, etc.), the culture of reading non-digital materials, and the attitude of preferring materials in the local language. Language barriers were mentioned by students at both sites. Since most digital resources in the OUM library are in English, students' limitations in that language hindered them from making full use of the resources. Lecturers raised neither type of barrier, however tutors were extremely concerned by both barriers. In their view, both barriers influenced the limited use of digital library resources.

The view that OUM's module-based assessment reduced students' necessity to refer to the digital library was shared by participants at both sites. They agreed that the modules were designed to fit well with OUM students' constraints and needs. However, the intensity of participants' concern differed between the two sites. Lecturers held the view that OUM course design had influenced the use of the digital library while tutors perceived that module-based assessment had extremely discouraged students from referring to the digital library. Students at the urban site referred to digital resources other than modules while students at a rural site confined their learning within the scope of modules alone.

The above differences indicate the existence of a digital divide between the two research sites. I will elaborate on this in Section 10.5.

2) The case study and my position

I reflected on the selection of OUM as the bounded case and my position as an outsider researcher. OUM was selected as the bounded case after a careful two-stage process (see Section 5.3). I chose OUM because of its established digital library and blended modes of learning. My entry into the research field was smooth as I received good cooperation from the university and its library. As an outsider who was not familiar with the OUM learning environment and workings, I built my understanding slowly and carefully. I was initially amazed by the way OUM designed their blended learning,

especially their personalized learning, which attracted professionals and adults to pursue their formal education.

I was pleased to find the digital library was well integrated into the learning system through its ubiquitous accessibility from the OUM learning management system (LMS). My initial amazement was replaced by a deeper understanding when I discovered the limited digital library use among students and tutors. I sought reasons and most of the time my findings suggested that the main reason was the way OUM designed their learning, particularly their module-based assessment. Complexity rose when I discovered tutors' positions on the learning system. Despite tutors' important roles in the face-to-face learning with students, they were employed on a contract basis and their sense of belonging to OUM was limited. Their view that the digital library was not a necessity due to module-based assessment reflected their disengaged position within the OUM learning communities.

I realized that some findings were unique to the bounded case. OUM course design in particular was unique to the university. Hence, the limited necessity of the digital library due to course design might not be generalized to other institutions. In this regard, Yin (2012) points out that analytic generalization, as opposed to statistical generalization, depends on using a study's theoretical framework to establish a logic that might be applicable to other situations. This brings me to my theoretical reflection, which I discuss next.

10.3.3 Theoretical reflection

My theoretical experience and reflection went through a plethora of phases and dimensions. As mentioned in Section 4.3, I considered a range of theories and chose third-generation AT to be my theoretical lens. In this study, I drew on ideas from the theory and did not let it govern the whole research journey or design. The theory informed my initial understanding of the phenomenon which occurred before fieldwork. It was referred to again during data interpretation, in alignment with the interpretive tradition of the constructivist approach to qualitative research. Difficulties occurred during data analysis and interpretation, as I was cautious in determining the findings, acknowledging the fact that I was an outsider researcher. I constantly reminded myself of my role as a researcher to construct meaning based on the meaning that was shared

with me during interviews and taken from the document analysis, and was careful not to "import damaging frameworks of understanding" (Bridges, 2001, p. 375) as an outsider.

I therefore moved backwards and forwards in drawing ideas from the theory to understand the phenomenon under investigation. Since AT is "primarily a descriptive tool rather than a prescriptive theory" (Jonassen, 2000, p. 110), there is no specific methodology for applying the theory to study a real-context phenomenon. As a result, my understanding of the activity systems under investigation also evolved and developed. Understanding the activity systems was crucial as the theory's first principle is that the activity system should be the unit of analysis (Daniels, 2001; Engeström, 1999, 2001; Kuuti, 1996; Vygotsky, 1978). Development of or changes to the understanding of the activity system is normal and can potentially occur after data analysis. Feijter, Grave, Dornan, Koopmans and Scherpbier (2001), for example, in their research on students' perceptions of patient safety, changed from a single activity system to two activity systems after the theme identification phase. In my research, I initially thought of a single activity system for integrating digital library services in a blended learning environment (see Section 4.3). During the early stage of data analysis this shifted to two activity systems – providers and users of digital library services (Norasieh & Gerbic, 2011). Upon further contemplation, I developed two different activity systems, namely the digital library activity system and the blended learning activity system (Norasieh, 2013).

The five principles of third-generation AT deserve some reflection. The two activity systems – the units of analysis of this research – were described in Section 6.4.3. The multi-voicedness of activity systems – the second principle of AT – means that activity systems consist of a community of multiple points of view, traditions and interests (Engeström, 1999, 2001). This is clearly evident in the findings as the various participants had different perspectives on similar issues. The issue of access and connectivity, for example, was shared not only by students but also librarians and teachers. Historicity – the third principle – suggested that activity systems' transformation over time should be understood against their own history. Chapter 6 included a lengthy overview on the historicity of OUM blended learning and its digital library. Chapter 2, in a broader sense, introduced the history of Malaysian HE and universities' digital libraries in the country. The fourth and fifth principles of AT – the

central role of contradiction as sources of change and development; and the possibility of expansive transformation in an activity system – were central in my theoretical reflection. My aim was to relate these two principles with the findings, through data interpretation, in order to reveal possible tensions or contradictions as well instances of expansive learning or innovation. The interpretation and reflection was simultaneous, continuous and constantly being revisited until this piece of writing was produced so that the phenomenon under investigation was exhaustively diagnosed.

1) Revealing tensions

It is important to note that innovation or expansive transformation, in my view, could only be identified after tensions or contradictions were revealed. Historically, accumulated structural tensions within and between activity systems (Engeström, 2001) manifest themselves as problems, ruptures, breakdowns, clashes, conflicts or breakdowns (Kuutti, 1996; Roth & Lee, 2007) and may arise in various ways. As mentioned in Section 4.2, a *primary* tension may arise in any of the elements/components in an activity system; a *secondary* tension may develop between elements; and a *tertiary* tension may develop between two or more activity systems (Engeström, 1987).

Before I elaborate on tensions found in the data, it is important to accurately understand the relationship between the two activity systems of blended learning and digital library. Understanding of the relationship allows better comprehension of the tensions. As illustrated in Figure 14, the digital library activity system operates within the blended learning activity system. The digital library functions as one of the tools used by teachers and students in their teaching/learning, beside other tools like OUM LMS, modules, the Internet, and so on. This relationship was found based on evidence found in OUM documents, as explained in Section 6.4.1 (see Figure 12) and supported by the interviews, particularly those with librarians and teachers. The evidence showed that in OUM self-paced learning, the module was blended with other resources including references, articles and book chapters from the digital library (OUM, 2010).
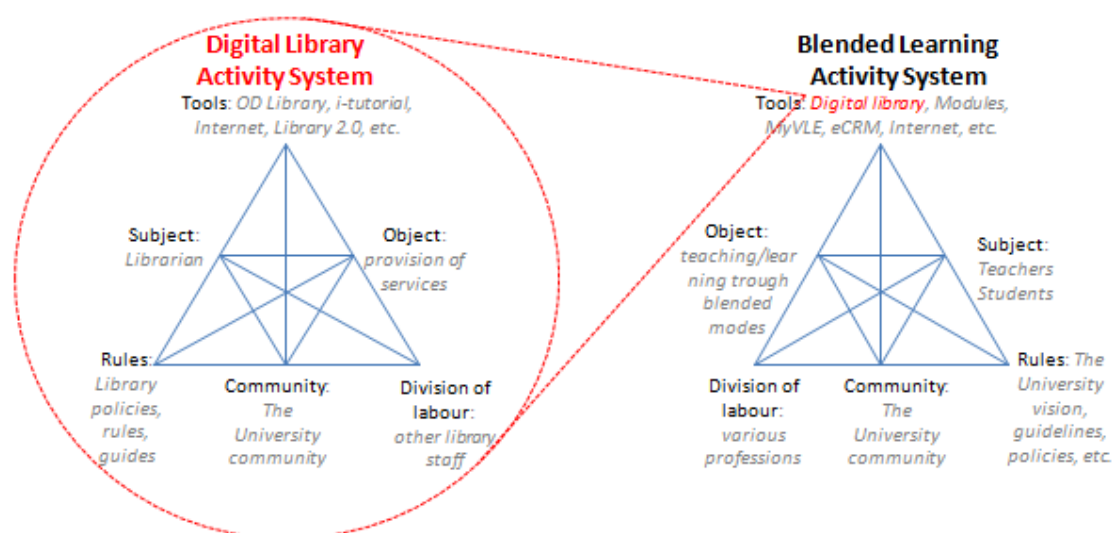
Figure 14: Relationship between the two activity systems

With the above relationship between the activity systems of the digital library and blended learning established, I reflected that complexity arises even in the process of revealing tensions in the data. There is the possibility of a secondary tension becoming a tertiary tension. This scenario occurs when tension exist between any of the elements in the blended learning activity system with the digital library as a tool. When tensions occur between elements other than the digital library, they become secondary tensions. Consequently, segregation into primary, secondary and tertiary tensions proved unhelpful. However, for the purposes of analysing tensions found in the data and revealing possible innovations, I shall delineate tensions according to the above segregation and later reflect on the complex process of identifying tensions. The following is a list of primary, secondary and tertiary tensions that I retrieved and/or interpreted from the data.

a) *Primary tensions*: I interpreted two examples of primary tensions or tensions that arise in any of the elements/components in an activity system. Time constraints seemed to be a primary tension encountered by the subjects (students) in the blended learning activity system. This tension was experienced by the students themselves and they explicitly shared the experience. Moreover, both teachers and librarians acknowledged the existence of these constraints. The tension occurred because students of the university worked full time and studied on a part-time basis. Due to time constraints, blended learning at OUM was designed in a way that students were not required to refer to other resources

than those stated in course modules and assessment was solely based on those modules. Cultural and language barriers appeared to be primary tensions for the subjects (again students) in the blended learning activity system. Students encountered these tensions and they consequently influenced their use of the digital library. Interestingly, this tension did not involve other element in the activity system. However, this tension had a consequence: the limited use of the digital library. At the first glance, this tension was regarded as a primary tension, but upon further reflection, this primary tension became a tertiary tension. I elaborate on this observation below.

b) *Secondary* tensions: I interpreted three examples of secondary tensions or tensions between elements within an activity system. The first tension occurred between the subjects (librarians) and the rules (digital resources as priority) in the digital library activity system. Due to the nature of the digital library, OUM set a rule that priority was given to digital resources so that distance learners could access them from afar via the Internet. However, due to the demand for physical resources, librarians had no choice but to acquire them and send selected references to respective branches. The second tension occurred between the subjects (tutors) with the community (OUM) in the blended learning activity system. This tension occurred as a result of the position of tutors in the activity system as part-time "players" which consequently led to disengagement among tutors from the activity system. This feeling had led to limited use of the digital library because tutors neither used nor encouraged their students to use the digital library. The third tension happened between a tool (Internet) and the subject (teachers and students) in the blended learning activity system. This tension came in the form of connectivity and access problems, which have been discussed at length in the findings chapters. Connectivity and access tensions consequently influenced the use of the digital library particularly among students. Connectivity became an issue particularly for those living in rural areas.

c) *Tertiary tensions:* These occur between two or more activity systems and I found two examples of tertiary tensions in the data. First, modules and the digital library seemed to contradict each another in the intertwining clash

between the blended learning and digital library activity systems. The blended learning was designed in a way that learning content was restricted to modules. Students could rely solely on modules in order to successfully pass assessment. In this case, the library served merely as a digital park of references and resources. Second, distance was a tension between all subjects (librarians, teachers and students) from both activity systems. In particular, the distance between librarians and students spurred the library to focus on digital resources, though demand for physical resources remained. The library's outcome or aim of ubiquitous access to its digital resources met the distant nature of students who could access resources anywhere, anytime. Moreover, OUM's blended learning was specifically designed to suit learners who were geographically dispersed throughout the country and abroad. The OUM branches were established to organize and manage students' learning – particularly face-to-face learning – in a decentralized fashion.

2) Observations on tensions

I have two observations regarding the revealed tensions. First, the complex process of identifying tensions becomes clearer when tensions (primary or secondary) within an activity system affect another activity system. The above examples of one primary (cultural and language barriers) and two secondary tensions (disengaged position of tutors and the connectivity issue) occurring in the blended learning activity system had negatively influenced the use of digital library services. This complex scenario raised the question of how we can locate "digital library usage" in the digital library activity system. The ultimate aim or outcome of the digital library activity system from the librarians' point of view was ubiquitous access to the digital library. However, through the lens of the intertwining relationship between the digital library and blended learning activity systems, the outcome of the digital library was viewed differently by teachers and students. They viewed the digital library as a mere tool that they used in their blended learning activities. This tool was supplementary and not a necessity due to the nature of OUM's blended modes of learning.

Second, the Internet served as a tool in both activity systems and the data revealed that connectivity was an important issue in both activity systems. Failure of this particular tool would influence the achievement of the outcome in both systems. In the digital

library activity system, Internet connectivity served as a "conduit" (Warschauer, 2003) or an enabler without which the digital resources could not reach library users. In other words, the Internet significantly influenced digital library use. On the other hand, the Internet was also an important tool in the blended learning activity system, specifically in the online learning mode via the LMS. However, in the self-paced and face-to-face learning, the Internet played a limited role. The subjects (teachers and students) were able to pursue self-paced and face-to-face learning even without the Internet.

3) Revealing innovation

I discovered innovations in the data which were related to the interaction between librarians and the digital library users, particularly students. Distance was a tension mainly between the subjects (librarians) in the digital library activity system and the subjects (particularly students) in the blended learning activity system. In reaching out to students to make use of the digital library services and resources, librarians implemented several efforts and utilized various techniques of communication. The data revealed efforts such as workshops, tutorials, i-radio, blog, Facebook, etc. In this case, OUM librarians discovered the usefulness of synchronous interaction techniques because immediate response could be given to enquiries.

OUM librarians' discovery of the usefulness of synchronous interaction techniques went through several phases or contradictions and eventually provided a driving force for innovation and improvement of practices and services. As reported in the findings, librarians moved from Gmail to a special forum in the LMS, then to the use of Library 2.0 and mobile communication to reach their users. The use of Gmail ceased due to external tension and a top-management decision. On the other hand, the move from the forum to social media was the librarians' decision upon close examination of users' feedback. The decreasing feedback in the forum indicated some kind of tension and librarians were aware of the scenario. They shifted to Library 2.0, particularly Facebook, and received increasingly good feedback, particularly concerning its immediacy of responses.

The main difference between the forum and Library 2.0 was the medium they existed in. The forum was available in the LMS. Users had to log into the system in order to post an enquiry in the forum. This meant that communication in the forum was dependent on

the Internet access and the system. On the other hand, Library 2.0 could be accessed from both the Internet (fixed or broadband) as well as from mobile/cellular phones. In other words, the digital divide mentioned earlier (access and connectivity) served as a tension for students utilizing the forum. The librarians' move to Library 2.0 tools was considered an innovation because it resulted from previous tensions. The move was not abrupt but rather gradual as librarians realized there were users who still used the forum.

10.3.4 Summary of reflection

I have shared reflections on the research questions and findings, the methodology, and the theoretical framework. I conclude that the two research questions have been qualitatively and extensively explored in this research. In brief, the integration of digital library services in a blended learning environment at OUM has been attained through the implementation of a single sign-on service which allowed a seamless environment to be created, hence ubiquitous access to the digital library resources and services became possible for students in dispersed localities. Despite being ubiquitous – accessible anytime, anywhere – the findings revealed that digital library use was influenced by several factors.

The theoretical reflection emphasized an important innovation adopted by librarians to reach distance users – the utilization of current Library 2.0 tools. There were however tensions within and/or between elements in an activity system, and between the two activity systems of the digital library and blended learning. On the other hand, the methodological reflection emphasizes a digital divide which existed particularly due to two important barriers: connectivity and access; and language and cultural barriers. I next discuss the two most important findings of this research: library innovation and the digital divide.

10.4 Library innovation

Based on the research findings and the above reflection, I come to a conclusion that Library 2.0 use at OUM was an innovation. The findings revealed that OUM librarians utilized Library 2.0, particularly social media such as Facebook and blogs, to reach out to their users. Despite the physical library being located in Kuala Lumpur, Library 2.0 served as a channel for librarians to reach users who were geographically dispersed

throughout the country. The librarians utilized not only Facebook and blogs, but had also embarked on using other social media such as WhatsApp, Twitter and Instagram. This development was announced on the library's Facebook fan page (OUM, 2014).

OUM librarians' constant and purposeful changes in adopting recent Library 2.0 are strong evidence of innovation among them. Library 2.0 is an innovation based on four principles: "the library is everywhere; the library has no barriers; the library invites participation; and the library uses flexible best-of-breed systems" (Black, 2007, p. 10) and the findings reveal OUM librarians' effort to execute those principles. Library 2.0 encourages constant and purposeful change and consistent evaluation of services (Casey & Savastinuk, 2006) and is becoming a model for library services in Malaysia. Library 2.0 flourishes not only at OUM but also at other university libraries, both in Malaysia and abroad. Research suggests that social media received much attention from academic libraries (Chu & Meulemans, 2008 Dickson & Holley, 2010; Maness, 2006) and Malaysian research suggests popular social media include Facebook (Rizalawati Ayu & Husriati, 2011; Rizalawati Ayu & Abrizah, 2011), blogs and wikis (Yushiana & Sufy Rabea Adawiyah, 2010).

The issue of contents and pedagogy when using social media like Facebook, as highlighted by some participants in this research (see Section 8.7.1), requires further discussion. Both education contents and library contents (or resources) are increasingly becoming available in digital format. Pedagogy or "the art, science or profession of teaching" (Merriam-Webster, 2014) serves as a bridge that teachers use to assist learners to construct contents/knowledge. For librarians, pedagogy relates mainly to one aspect of their profession: information literacy (Leckie & Fullerton, 1999). The use of social media among teachers serves a different purpose compared to librarians. Teachers regard social media as contributing towards social network knowledge construction that "help[s] faculty teach and students learn in dynamic new modes" (Dawley, 2009, p. 120). On the other hand, librarians regard social media as a tool to communicate with users, and to reach and win users – old and new – beyond their "brick" libraries (Crawford, 2006). In other words, while teachers utilize social media as pedagogy to allow contents construction, librarians utilize social media as a tool to promote contents utilization or consumption.

Library 2.0, or Web 2.0 from a wider perspective, has helped change the landscape of higher education (HE) as well as academic libraries. The role of Web 2.0, particularly social media in HE, has been explained by Selwyn (2011) as having influence over three dimensions: new types of learners, new types of learning, and new types of HE provision. In fact, the emergence of open and distance learning institutions like OUM, which extensively consider evolving learning technologies and ICT, resembles a manifestation of the three dimensions. At the same time, Library 2.0 in academic libraries has changed librarians' practice and role – from a reactive to a proactive one (Ahmad Bakeri, 2009; Raja Abdullah, 2004; Roes, 2001) – through applying technology appropriately and making proactive and innovative changes to successfully deliver library services. This practice is closely related to the concept of blended librarianship, as mentioned earlier in Section 3.3.3.

Blended librarianship combines the traditional skill-set of librarianship with the technologist's hardware/software skills, and the instructional or educational designer's ability to apply technology appropriately in the teaching-learning process (Bell & Shank, 2007), and the data suggested that OUM librarians possess the traditional skills and have applied technology appropriately. However, their presence or contribution to the teaching–learning process is quite ambiguous. The main reason for this is that OUM librarians played a limited role in the course design and teaching–learning activities. OUM courses have been designed by professional instructional designers and written by subject-matter experts. Librarians reactively responded to modules by creating hyperlinks, ensuring the availability of references, and housing archive modules.

Librarians had concerns about non-IT-savvy students (see Section 7.5.1) and this remains an issue despite their keen deployment of Library 2.0 to reach the students. The reality is users of digital library services range across a continuum with well advanced and IT-savvy users at one end and non-IT-savvy users at the other. It is librarians' role to reach out to all types of users.

There are also concerns over Web 2.0 applications in HE, but these concerns are indirectly related to the digital library. The applications were viewed by teachers as capable of supporting informal conversation, collaborative content generation, and knowledge sharing, thereby enabling access to an enormous array of representations and ideas and allowing learners to play a more active role in what they learn as well as how

and when they learn it (Lee & McLoughilin, 2010; Selwyn, 2011). However, the application of Web 2.0 in HE learning has, according to Selwyn (2011), shifted control from teachers to learners. This concern should not be an issue in this case because self-paced learning at OUM, for example, is entirely about learners having control over their own learning. The issue is how to guide and ensure learners effectively manage that control.

10.5 The digital divide

A large number of participants raised issues related to the digital divide. The divide existed particularly between those who lived in cities and those who lived in rural areas, in terms of access and connectivity as well as language and cultural barriers, in relation to utilizing digital library resources and services. Despite all the efforts undertaken by the Malaysian government to ensure ICT infrastructure and an education system sufficient to achieve the Vision 2020 goals, the digital divide has remained. Researchers including Chan and Mohamad Zaki (2008), Foo, Lai and Elamzazuthi (2002), Genus and Mohd Ali (2007), Norizan and Jalaluddin (2008), Rozhan and Hanafi (2004), Tengku Mohamed and Mitomo (2006) and Tipton (2002) raise concerns over the issue of digital divide in Malaysia from a plethora of perspectives.

The concept of access and connectivity related to the digital divide requires elaboration. Rather than looking at access and connectivity as simply having a computer and a network connection, students need to overcome four kinds of barriers to access (Van Dijk, 1999; Van Dijk & Hacker, 2003): first, lack of elementary digital experience caused by lack of interest, computer anxiety, and unattractiveness of the new technology (mental access); second, lack of computers and network connections (material access); third, lack of digital skills caused by insufficient user-friendliness and inadequate education or social support (skills access); and fourth, lack of significant usage opportunities (usage access). Main (2001) has suggested three major barriers to access to the global information structure, namely connectivity, language and content. The research findings reveal material access (connectivity), mental access (cultural barrier), and skill access (language barrier) influenced access to digital library resources and services at OUM.

The access and connectivity barrier found in this research is related to network connection rather than possession of a computer. Participants brought up problems such as slow connections or low-speed broadband in rural areas. A possible reason might be that suggested by Zulkefli, Ainin and Tengku (2011), which is the "uneven distribution of basic telecommunication infostructure between the urban and rural areas in Malaysia that has left rural areas at a disadvantage to access the ICT" (p. 19). As part of the Multimedia Super Corridor, the Malaysian high-speed Internet service is in fact focused on urban areas, especially the Klang Valley due to its importance to business and high-population density. Universities and education institutions in the Valley benefit from the high-speed Internet services while those in rural areas, such as the research site in Kuala Lipis, are among the disadvantaged.

The Malaysian government, however, has provided alternatives for rural communities whereby public libraries – in both urban and rural areas – enjoy the community broadband library initiative introduced by the Malaysian Communications and Multimedia Commission (2010) in 2006. As of 2011, 79% of public libraries in Malaysia had Internet access (Perpustakaan Negara Malaysia, 2012). Moreover, community broadband centres and the Ubiquitous Library or U-Library have been established (Raslin, 2010) to allow rural communities to enjoy the benefits of the Internet. As of 2010, 73 community broadband centres were established in several states. U-Library, a collaborative project between the National Library of Malaysia and the Malaysian Communications and Multimedia Commission, involved seven participating libraries, mostly state libraries. It aims to provide physical and digital access to knowledge resources anytime, anywhere, and claims to be "putting a library in every home" (Raslin, 2010, p. 8). These government initiatives have served as an alternative avenue for students to access the Internet, and this research found that some students utilized the alternatives, particularly public libraries. Librarians at OUM should build a network with public libraries and community broadband centres in various states so that their students, dispersed throughout the country, may make full use of Internet facilities provided at such centres.

The language barrier or "skill access" in Van Dijk and Hacker's (2003) words, was raised by OUM students as a negative influence on their use of digital library resources and services. Language had become a barrier as most digital resources were only

available in English. The introduction of the Internet in fact often results in English being used as a dominant language in many developing countries (McMahon & Bruce, 2002), including Malaysia. English-language dominance together with high costs, lack of relevant contents, and lack of technological support, according to Chen and Wellman (2004), were barriers for disadvantaged communities. The English language as the predominant language in the Internet is even viewed as a barrier that "widens the digital divide" (Huerta & Sandoval-Almazan, 2007, p. 217), and may be the "strongest factor in the digital divide" (Wolk, 2004, p. 177). As found in this research, students who lack English-language proficiency required assistance from others to translate the resources they retrieved from the digital library. Only by using precious time to refer to a dictionary, for example, could they understand the resources.

Attempts to master the language of the Internet have been taken seriously by the Malaysian government, particularly following the launch of Vision 2020. English language is one of the important curriculum subjects and the tenth Malaysian Plan (2010–2015) includes "strengthening English proficiency" as one of the government strategies to enhance Malaysian competitiveness (Economic Planning Unit, 2010, p. 201). The introduction of English for Mathematics and Science in 2003 was an attempt by the MOHE to increase English-language proficiency among Malaysian students (Noraini, Cheong, Norjoharuddeen, Ahmad Zabidi & Rahimi, 2007). However, the policy was changed in 2012 when the government decided that the subjects would be taught in the Malay language following pressures from various non-governmental organizations and communities who fought for local-language domination.

While efforts to upgrade English-language proficiency persist, publication and translation of books and e-books in the local language could be an alternative way of approaching students' language issues. A Malay proverb says "Bahasa Jiwa Bangsa" ("language is the soul of a nation"), so translation of books and resources from foreign languages into the Malay language could be promoted to disseminate knowledge and support the use of digital library services and student learning (Norasieh & Gerbic, 2010). The increasing publication of e-books in the local language, particularly by lecturers and the academic community, may reduce the language barrier and the digital divide. It should be encouraged and supported by university communities as well as the MOE.

The cultural barrier or "mental access" was brought up by tutors as influencing not only their use but also their students' use of digital library resources. Mental access refers to both mental and social unwillingness to engage in digital resources for learning. The findings reveal that students were not willing to engage in digital resources because they were more accustomed to printed than digital materials. The findings also reveal that some teachers were resistant to change or to try new technologies for learning which influenced their implementation of new ways of learning such as social media use in learning. The willingness and attitude towards change in the education sector is highlighted by Duncan and Ekmekcioglu (2003) as one of challenges for integrating digital library services in blended learning. Attitude and culture will not change over a short period of time. Providing 30 years for the achievement of Vision 2020 (it commenced in 1991) should be sufficient to change the Malaysian attitude and culture and turn the country into a knowledge society (Chan & Ibrahim, 2008). The commencement of electronic government or e-government services (Lean, Suhaiza, Ramayah & Fernando, 2009), for example, would gradually change the Malaysian culture to accept ICT and to assimilate online and digital services as the e-government services affect almost every single Malaysian citizen.

Besides access and barriers, literacy is included in the discussion of the digital divide by Warschauer (2003) and the findings suggest literacy does influence digital library use. Influences on use, such as familiarity with the library, relevance, user friendliness and preference, were found in the findings, and improved literacy could possibly offer a solution. Warschauer (2003), who introduces "technology for social inclusion", focuses on how people can promote social development in their communities with the support of ICT. He believes that access must be a priority if social inclusion is to effect change and defines "access" as having three parts: devices, conduits, and – unlike the concept of the digital divide – literacy (p. 31). He uses a particular meaning of "literacy" which blends the traditional definition (i.e., reading and understanding the printed word) with information literacy, which relates to the effective acquisition and appropriate utilization of information. With the increasing volume of information available in digital media, digital and media literacy may be a solution for the digital divide.

The notion of literacy has expanded over the past decade beyond its original application to the mediums of reading and writing. From basic literacy which refers to the ability to

read, write, speak and listen, literacy has expanded to include other terms like computer literacy, information literacy, media literacy, digital literacy, among others (Buckingham, 2006; Hobbs, 2010). Digital and media literacy, introduced by Hobbs (2010), encompass the full range of cognitive, emotional and social competencies that include texts, tools and technologies usage; critical thinking and analysis skills; message composition and creativity practice; the ability to engage in reflection and ethical thinking; and active participation through teamwork and collaboration. In Malaysia, much attention has been given to information literacy (Mohd Sharif & Nor Edzan, 2005; Nor Edzan, 2008; Norma & Mohd Sharif, 2005), focusing on teaching library users to locate, retrieve, evaluate and effectively use information. The National Information Literacy Agenda (NILA) was proposed in 2005 and included national standards and assessment tools for primary, secondary and HE (Nor Edzan & Mohd Sharif, 2005). The agenda provides guidelines for universities, but it is up to universities whether they follow them or not. Private universities like OUM might prefer to set their own standards and assessments that suit their students best.

10.6 Implications of the research

Based on the research findings and the above reflection and discussion, this research holds a range of implications for the different audiences it addresses: academic libraries and information professionals, blended teaching and learning in HE institutions, and my growth as a researcher.

10.6.1 Implications for academic libraries and information professionals

Academic libraries in Malaysia have tremendously changed over the past few decades whereby advanced technologies have been deeply embedded into them. As technology changes and evolves, librarians must keep abreast of said changes. The emergence of the Internet, the wide spread of ICT, and increasing digitization of library resources, and the digital presence of academic libraries bring new issues and challenges. One significant issue discovered by this research is the digital divide. Academic libraries in Malaysia, especially those handling distance students, must acknowledge the existence of the digital divide in the country and respond to it appropriately. Academic libraries in other countries possibly encounter similar issues. Libraries of universities which cater

only for distance learners, such as OUM's, need to focus on reaching out to their users beyond their brick and mortar, such as by using Library 2.0 which utilizes both synchronous and asynchronous means of communication. Libraries which cater for both on-campus and distance learners encounter greater challenges as they need to fulfil the information needs of both types of learners, both within the "bricks and mortar" university and the 'click' learner community.

The task of integrating and positioning digital library services in the blended learning environment requires librarians to maintain their traditional skill-set of librarianship. Simultaneously, it also requires them to bring proactive and innovative changes to successfully deliver library services, continuously improve literacy to facilitate the teaching/learning process, and collaborate with academic staff and various people within their institution as well as departments and librarians from other universities or public libraries. Ubiquitous accessibility of the digital library allows library users to access library resources anytime, anywhere they wish. Providing precise literacy training allows students to make full use of digital resources. I think Malaysia needs to begin focusing on digital and media literacy which is beyond information literacy. The current needs for students in today's advanced ICT world are to be both digitally literate (Martin, 2008) and media literate (Buckingham, 2006; Hobbs, 2010), because today's knowledge and the media that disseminate the knowledge are both equally important.

10.6.2 Implications for blended learning in HE institutions

Digital divide issues, particularly language and cultural barriers as well as connectivity and access, exist in the current HE institutions, especially those universities dealing with distance learners such as OUM. Teachers, instructional designers, administrators and policymakers in universities must take the digital divide issues into consideration in their decision-making process and/or in conducting activities related to teaching and learning. Since online learning is an important segment of blended learning, universities play a significant role in advising relevant ministries and agencies that are responsible, directly or indirectly, for the provision and maintenance of broadband services in the country.

Blended learning in Malaysia will increase in decades to come as many universities are increasingly integrating online learning into face-to-face learning. The establishment of

the Malaysian Public Higher Learning Institutions e-Learning Coordinators in 2007 and the introduction of the National e-Learning Policy and Malaysian e-Learning Guidelines in 2011 have led to an intensification of online learning in the country (Mohamed Amin, 2014). Module-based learning, according to this research's findings, has led to limited use of digital library resources. However, the shift of learning control from teachers to learners should enable the latter to take responsibility for their learning. It is vital that proper guidance be given and that learning content is in place. In this case, universities should involve librarians in developing their e-content if they want to ensure an optimum use of library resources. Librarians at the same time should know about "online pedagogy" (Mohamed Amin, 2014) and offer their expertise to those involved in e-content development. Collaboration between teachers and librarians is much needed in blended learning as both share responsibility for ensuring that learning content is in place when required.

10.6.4 My growth as a researcher

My understanding of digital library services developed as I progressed on my research journey. The digital library from the system/content perspective deals with tools while the digital library from organization/services perspective deals with activities. Both tools and activities are inseparable as both entities exist in the day-to-day life of librarians. This research, which was conducted from the digital library as organization/service perspective, has revealed that digital library services and resources are appreciated by users, because they are ubiquitously accessible anytime and anywhere users need them. However, accessibility is influenced by users' connection to the Internet, specifically their connection to the library system. Hence, both perspectives (digital library as system/content and digital library as organization/services) focus on different areas but they are closely connected to one another.

My contention that integrating digital library services would influence, contribute to, and enhance blended learning was challenged as I discovered that librarians, in many ways, practice a reactive rather than a proactive approach. I recognise that the traditional reactive roles remain because libraries exist mainly to fulfil the informational needs of the community/institutions they serve. However, with the advancement of ICT, more proactive roles can and must be played by librarians, particularly in bringing users to the library and in reaching out to users beyond the physical library. Librarians must

utilize Library 2.0, which encourages constant and purposeful change, invites user collaboration in creating both the physical and digital services they want, and consistently maintains services evaluation (Casey & Savastinuk, 2006). They must also become involved in designing methods for integrating the library into the teaching and learning spaces (Brown, 2005), a notion inspired by blended librarianship (Bell and Shank, 2007).

In drawing on ideas from third-generation AT, I came to the conclusion that libraries – whether physical or digital – always exist within various networks of activity systems. The notion that ''no library is an island'' is true in that no library can stand on its own. Libraries' existence within networks of activity systems requires them to collaborate and cooperate with other activity systems within and outside the institution they belong to. As tensions possibly exist at all levels such as within libraries, between libraries and other departments within the same institution, or with other institutions, or between libraries and users, librarians must cope with any breakdown or challenge and proactively responds to them. The advancement of ICT brings both challenges and opportunities and librarians should make use of ICT to deliver library services in most convenient manner to users. ICT can provide the tools to achieve a library's objectives, vision and mission.

10.7 Limitations of the research

All research has some constraints and limitations (Cohen, Manion & Morrison, 2000) and mine is no exception. Below I outline the limitations of this study.

This research suffered from the limited capacity of an outside researcher attempting to gain a holistic understanding (breadth and depth) of the phenomenon under investigation using a qualitative case study methodology. In this research, the breadth and depth of understanding of the case occurred at the same time as data collection was carried out. While 26 interviews with 43 participants were conducted and several documents were collected, the depth of my understanding was a concern as I spent considerable time to grasping the breadth of the research task I had set myself. An insider researcher would be able to straightaway develop an in-depth understanding as he or she may already be familiar with the breadth of the case. Although I see this outsider-limited-capacity issue as a disadvantage (in terms of breadth and depth of

understanding), there was also an advantage in that I held neither bias nor prejudice towards the case and commenced my analysis from a blank page. This situation had allowed me to appreciate every single item of data that I managed to collect.

Another limitation is related to the application of the theoretical framework of this research from an outsider point of view. I discovered that AT was a powerful theory to understand the complex relationship between the digital library and blended learning. However, this theory imposed some limitations on an outsider researcher in qualitative case study research. I learned that one's interpretation of components of any activity systems may be influenced by the limited data one manages to collect about the case. An insider researcher might be able to better understand the complexity and to link networks of other activity systems than an outsider researcher.

The next limitation is related to ensuring the credibility of the findings. While necessary steps to ensure the credibility of this study have been taken such as triangulation, member checking, peer debriefing, presentations at conferences, and consultation with my supervisors on a regular basis (see Section 5.10), the interpretation nonetheless has significantly been a solo effort. When data is viewed to a great extent through the eyes of only one person, the interpretation of that data is intrinsically slanted towards one perspective. This is a limitation of this research, and indeed of almost all qualitative research, where the interpretative process is undertaken primarily by one individual.

10.8 Future research directions

There are a number of directions for future research. In this research, I chose a university as the bounded case, one that only handled distance learners. Having a digital library is very suitable for distance learners, as they can ubiquitously access library resources anytime and anywhere they want. Investigating libraries which cater for both on-campus and off-campus or distance learners may reveal more issues and challenges than those discovered in this research. A comparison between three types of libraries, that is, those handling only on-campus students, those handling only off-campus students, and those handling both on-campus and off-campus students, will be of great benefit as it may offer guidelines for librarians to implement practices which suit the community they serve most.

This research explored the integration of digital library services in a blended learning environment from various perspectives within a Malaysian university. The perspectives were constructed mainly from interviews with librarians, teachers and students, as well as an instructional designer and a programmer. Adding other personnel (such as subject-matter experts as module writers, branch administrators who handle library resources in various learning centres, staff at the Learner Service Centre, and/or IT personnel who handle the My Virtual Learning Environment LMS) would have provided different insights. This research also chose two research sites, one in Kuala Lumpur and the other in Pahang. The latter was a branch in teacher institute not owned by OUM and without library resources. Choosing a branch which has library resources may give additional data. Furthermore, choosing several universities instead of one for a case would also provide meaningful insights from wider perspectives but such investigation would require more time and resources than those available to me.

The research finding relating to the language barriers which cause the digital divide and limit the use of digital resources requires further investigation. Deeper understanding of factors causing language barriers may allow universities and the MOE to take necessary actions and precautionary measures to appropriately approach or overcome the digital divide. The increasing use of online and blended learning in HE, not only in Malaysia but also other countries, requires a certain English proficiency level among students. Publication of academic e-books in local languages and/or their translation into a local language could be an alternative avenue to approach the language issue from. Further research on this area and the role of digital libraries as customers of such publications would be an interesting research endeavour.

10.9 Concluding remarks

This research on the digital library from the organization/services perspective has explored its integration into blended learning environments from a Malaysian HE perspective. Specifically, librarian, teacher and student perspectives were sought on the topic under investigation. The findings reveal that the integration of digital library services in a blended learning environment allows ubiquitous access to library resources and services by users at anytime and from anywhere they might be. Although teachers and students appreciated the ubiquitous accessibility of the digital library, digital library

use among them is influenced by several internal and external factors including connectivity, language and cultural barriers, preference and alternatives. Interpretation of and reflection on those factors, from methodological and theoretical viewpoints, reveal the two most important findings of this research, namely Library 2.0, as innovation, and the digital divide as a source of tension.

As previously discussed, Library 2.0 has inspired the utilization of dynamic web tools and applications in order to bring positive, constant and purposeful changes to libraries and to encourage user collaboration and consistent evaluation of services. The roles and practices of librarians who work in blended learning environments require them to utilize Library 2.0 as an innovative attempt to reach users both within and beyond the brick and click libraries; that is, the physical libraries and the digital libraries. The digital divide remains an important issue in developing countries like Malaysia, particularly due to connectivity issues as well as language and cultural barriers. Attempts to decrease the divide must focus on literacy, particularly digital and media literacy, and publication and translation of e-books in the local language.

In summary, this thesis offers a deep and novel understanding of the integration of digital library services in blended learning environments from a Malaysian HE perspective. This understanding developed from various angles and considered the opinion and experiences of librarians, teachers and students. However, this understanding may be limited by the interpretation of an outsider researcher exploring the phenomenon using a qualitative case study methodology and drawing ideas from third-generation AT. The two most significant findings of the research are related to Library 2.0 as an innovation and the digital divide as a tension. Ultimately this research has led to the conclusion that in a blended learning environment, librarians should utilize Library 2.0 to reach users to encourage them to use digital library services, despite the issue of the digital divide within Malaysian society.

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GLOSSARY

Blended learning – a fusion of face-to-face, online and self-pace learning.

Blended learning environment – a learning environment where both face-to-face and online learning are thoughtfully combined with self-learning to achieve desired learning outcome.

Blended librarianship – librarianship that combines the traditional skill set of librarianship with the technologist's hardware/software skills, and the instructional or educational designer's ability to apply technology appropriately in the teaching-learning process.

Digital divide – social division or differences between individuals, households, companies, or region related to the access to and usage of ICT.

Digital library – a form/concept of library organizations/services that provide remote and ubiquitous access to their contents, resources and services, that are selected, organized, stored, preserved and managed by specialised staff, who optimize technology usage, and combine an on-site collection of current and heavily used materials available in a variety of formats (print, electronic, etc.), with an electronic network which provide access to, and delivery from, external worldwide library and commercial information and knowledge sources.

Digital library services – these represent the core business of a digital library and are classified into two types: the provision of various customer and information services; and the provision of access to various kinds of library resources.

Integration – positioning digital library services within emerging online and blended learning environments.

Library 2.0 – a model for library services that encourages constant and purposeful change, invites user collaboration in creating both the physical and digital services they want, and is supported by consistently evaluating services.

APPENDIXES

Appendix A: Pre-prepared guiding questions for interviews, approved by AUTEC

(Library Staff)

1. Could you please describe various library services?
   - What are services that have been integrated into the blended learning environment?
   - What are issues/challenges in the integration process?
2. Today's learning environment has evolved to include ICT facilitated learning such as online learning, web-based learning and blended learning. Today's access to information has also changed (increasing choices and convenient access over the internet).
   - What do you think the role of academic libraries with regards to these changes?
   - In what ways do you think library could contribute to the ICT facilitated learning?
3. How do you view collaboration and cooperation with lecturers in integrating digital library services in blended learning environment?
   - Do you think the students also contribute in the integration process? How?
4. What are issues or challenges of providing digital library services?
   - Do library receive sufficient supports to provide those services?
   - How do you perceive collaboration and cooperation with other academic libraries as well as public or special libraries in the country?
5. How much do you think the library have been utilizing ICT such as Library 2.0 tools to better serve library users?

(Lecturer)

1. Can you describe your experience of using library services?
   - In what ways do you use library services? Give examples in your teaching and research activities.
   - How often do you contact library staff and why?
2. Today's learning environment has evolved to include ICT facilitated learning such as online learning, web-based learning and blended learning. Today's access to information has also changed (increasing choices and convenient access over the internet).
   - What do you think the role of academic libraries with regards to these changes?
   - In what ways do you think library could contribute to the ICT facilitated learning?
3. How do you perceive the integration of digital library services in blended learning environment?
   - In what ways could the digital library be integrated in the learning and teaching activities?
   - Does the library assist in creating your courses? How?
   - Can you give some examples from your teaching

4. How do you perceive your role as lecturer in the integration of digital library services in blended learning?

(Student)

1. Could you describe your experience of using library services?

    - What services have you used in the library?

    - How do you think about those services? (Good or not so good, if not so good, why, what is missing or lacking?)

    - Are there any difficulties to use/access library resources and services?

    - How could the library improve its services?

2. The role of academic libraries in today's easy and convenient access to information available over the internet is open to debate

    - Do you think your library play significant role in your learning?

    - Which library services help your studies a lot?

3. Do you think the library has fulfilled your information needs?

    - How do you normally find information/resources for your assignment?

    - How do you communicate your information needs to the librarian?

    - Are there any issues to use/access library services?

4. Could you describe your motivation and encouragement to utilize library services in your learning?

    - Do your lecturers encourage you to utilize library services in your learning?

    - Do the learning management system make it easy for you to access learning materials

Participant Information Sheet
Library staff

Date Information Sheet Produced:

30 Nov 2009

Project Title

The integration of digital library services in blended learning: A Malaysian higher education perspective.

An Invitation

Hello, my name is Norasieh Md Amin and I am a PhD student at Auckland University of Technology (AUT). You are invited to participate in this research project to explore the integration of digital library services in blended learning environments from the perspective of library staff and stakeholders in Malaysian higher education. Your participation in this project is entirely <u>voluntary</u>. You may choose to withdraw at any time and this will not affect you in any way.

What is the purpose of this research?

The purpose of the study is twofold:

- to explore how academic libraries, as providers of digital library services, meet the information needs in blended learning, in the Malaysian higher education context; and

- to holistically understand the provision and usage of digital library services within the context of two blended learning environments: on-campus and off-campus environment.

How was I chosen for this invitation?

You are invited to participate in this research because of your experience working as library staff in your university. Your name has been chosen based on my personal contact and/or suggested by lecturer, student and/or your colleagues.

What will happen in this research?

If you agree to participate in this project, I will invite you to participate in an individual interview which should not exceed 60 minutes and will be audio-recorded. It will be arranged at your preferred time in a place within your university and will be conducted either in Bahasa Malaysia or English that is convenient to you.

What are the discomforts and risks?

There will be no expected discomforts or risks in this research. However, you may feel reluctant to share your thought or experience with me.

How will these discomforts and risks be alleviated?

The interview will be conducted in ways that you are comfortable with. At any time during the interview, you may choose not to talk about subjects that you find uncomfortable. You may also withdraw from the interview and your data will be destroyed. After the interview, I will return the transcript to you for approval. You may omit, amend or clarify your statements before I use the data in my analysis and thesis writing. Your real names will not be used in my thesis. I will use pseudonyms and remove all identifiable personal information.

What are the benefits?

You will contribute to better understanding the role of academic libraries in today's changing learning environment that has moved towards ICT facilitated learning. Although there would be no immediate benefits to you for participating in this project, your views and insight will primarily contribute to my research findings which I intend to disseminate through presentation/s at national and international conference/s, and in refereed publication/s as well as in my PhD thesis.

How will my privacy be protected?

Your privacy and confidentiality will be protected in this research. Library staff, lecturers and/or students will not know if you are/are not participating in this research. Even though your name was suggested by one of them, all names are part of a pool of potential participants, and nobody will know who has been invited or agreed to participate. The only person who will access my observation notes and audio-recording will be me and transcribers (who will sign a confidentiality agreement). My supervisors may see the transcripts but will not know your identity. Your real names will not be used in my thesis. I will use pseudonyms and remove all identifiable personal information. All data and consent forms will be kept securely as the research progresses. Upon completion of my studies, they will be securely stored in locked cabinets in the postgraduate administrator's office at the School of Education, AUT. All original data will be destroyed after six years.

What are the costs of participating in this research?

The only cost of participating in this research project is your valuable time. There will be no other anticipated costs related to this research.

What opportunity do I have to consider this invitation?

Your participation is voluntary. Please take one week to consider your possible involvement as a research participant. If you are willing to participate in this research or have questions about it, please email me at nora.amin@aut.ac.nz or call Malaysian mobile number xxx-xxxxxxx by dd/mm/yyyy.

How do I agree to participate in this research?

If you agree to participate in this research, please complete, sign and return your consent form to me any time before dd/mm/yyyy.

Will I receive feedback on the result of this research?

If you wish, I will send you an electronic version of the summary of my research findings at an email address you provide. If you are interested, I will also inform you any imminent publications concerning the findings of this research project.

What do I do if I have concerns about this research?

Any concerns you have regarding this research should be notified to my research supervisors (contact details are given below). Concerns regarding the conduct of this research should be notified to the Executive Secretary, AUTEC, Madeline Banda by sending an email to her at Madeline.banda@aut.ac.nz or call her at 0064-921-9999 ext 8044.

Whom do I contact for further information about this research?

Researcher Contact Details:

Norasieh Md Amin (nora.amin@aut.ac.nz or tel.: XXXXXXXXX)

Project Supervisor Contact Details:

Dr Philippa Gerbic (philippa.gerbic@aut.ac.nz or tel.: 0064-9-9219999 ext 9825)

Dr Andy Begg (andy.begg@aut.ac.nz or tel.: 0064-9-9219999 ext 7355)

Approved by the Auckland University of Technology Ethics Committee on 15 December 2009, AUTEC Reference number 09/280.

Participant Information Sheet
Lecturer

Date Information Sheet Produced:

30 Nov 2009

Project Title

The integration of digital library services in blended learning: A Malaysian higher education perspective.

An Invitation

Hello, my name is Norasieh Md Amin and I am a PhD student at Auckland University of Technology (AUT). You are invited to participate in this research project to explore the integration of digital library services in blended learning environments from the perspective of library staff and stakeholders in Malaysian higher education. Your participation in this project is entirely <u>voluntary</u>. You may choose to withdraw at any time and this will not affect you in any way.

What is the purpose of this research?

The purpose of the study is twofold:

- to explore how academic libraries, as providers of digital library services, meet the information needs in blended learning, in the Malaysian higher education context; and
- to holistically understand the provision and usage of digital library services within the context of two blended learning environments: on-campus and off-campus environment.

How was I chosen for this invitation?

You are invited to participate in this research because of your experience as lecturer in your university. Your name has been suggested by your student, colleague and/or library staff and/or based on my personal contact.

What will happen in this research?

If you agree to participate in this project, I will invite you to participate in an individual interview which should not exceed 60 minutes and will be audio-recorded. It will be arranged at your preferred time in a place within your university and will be conducted either in Bahasa Malaysia or English whichever is convenient to you.

What are the discomforts and risks?

There will be no expected discomforts or risks in this research. However, you may feel reluctant to share your thought or experience with me.

How will these discomforts and risks be alleviated?

The interview will be conducted in ways that you are comfortable with. At any time during the interview, you may choose not to talk about subjects that you find uncomfortable. You may also withdraw from the interview and your data will be destroyed. After the interview, I will return the transcript to you for approval. You may omit, amend or clarify your statements before I use the data in my analysis and thesis writing. Your real names will not be used in my thesis. I will use pseudonyms and remove all identifiable personal information.

What are the benefits?

You will contribute to better understanding the role of academic libraries in today's changing learning environment that has moved towards ICT facilitated learning. Although there would be no immediate benefits to you for participating in this project, your views and insight will primarily contribute to my research findings which I intend to disseminate through presentation/s at national and international conference/s, and in refereed publication/s as well as in my PhD thesis.

How will my privacy be protected?

Your privacy and confidentiality will be protected in this research. Your colleagues, students and library staff will not know if you are/are not participating in this research. Even though your name was suggested by one of them, all names are part of a pool of potential participants, and nobody will know who has been invited or agreed to participate. The only person who will access my observation notes and audio-recording will be me and transcribers (who will sign a confidentiality agreement). My supervisors may see the transcripts but will not know your identity. Your real names will not be used in my thesis. I will use pseudonyms and remove all identifiable personal information. All data and consent forms will be kept securely as the research progresses. Upon completion of my studies, they will be securely stored in locked cabinets in the postgraduate administrator's office at the School of Education, AUT. All original data will be destroyed after six years.

What are the costs of participating in this research?

The only cost of participating in this research project is your valuable time. There will be no other anticipated costs related to this research.

What opportunity do I have to consider this invitation?

Your participation is voluntary. Please take one week to consider your possible involvement as a research participant. If you are willing to participate in this research or have questions about it, please email me at nora.amin@aut.ac.nz or call xxx-xxxxxxx by dd/mm/yyyy.

How do I agree to participate in this research?

If you agree to participate in this research, please complete, sign and return your consent form to me any time before dd/mm/yyyy.

Will I receive feedback on the result of this research?

If you wish, I will send you an electronic version of the summary of my research findings at an email address you provide. If you are interested, I will also inform you any imminent publications concerning the findings of this research project.

What do I do if I have concerns about this research?

Any concerns you have regarding this research should be notified to my research supervisors (contact details are given below). Concerns regarding the conduct of this research should be notified to the Executive Secretary, AUTEC, Madeline Banda by sending an email to her at Madeline.banda@aut.ac.nz or call her at 0064-921-9999 ext 8044.

Whom do I contact for further information about this research?

Researcher Contact Details:

Norasieh Md Amin (nora.amin@aut.ac.nz or tel.: XXXXXXXXX)

Project Supervisor Contact Details:

Dr Philippa Gerbic (philippa.gerbic@aut.ac.nz or tel.: 0064-9-9219999 ext 9825)

Dr Andy Begg (andy.begg@aut.ac.nz or tel.: 0064-9-9219999 ext 7355)

Approved by the Auckland University of Technology Ethics Committee on 15 December 2009, AUTEC Reference number 09/280.

Participant Information Sheet
Students

Date Information Sheet Produced:

30 Nov 2009

Project Title

The integration of digital library services in blended learning: A Malaysian higher education perspective.

An Invitation

Hello, my name is Norasieh Md Amin and I am a PhD student at Auckland University of Technology (AUT). You are invited to participate in this research project to explore the integration of digital library services in blended learning environments from the perspective of library staff and stakeholders in Malaysian higher education. Your participation in this project is entirely <u>voluntary</u>. You may choose to withdraw at any time and this will not affect you in any way.

What is the purpose of this research?

The purpose of the study is twofold:

- to explore how academic libraries, as providers of digital library services, meet the information needs in blended learning, in the Malaysian higher education context; and
- to holistically understand the provision and usage of digital library services within the context of two blended learning environments: on-campus and off-campus environment.

How was I chosen for this invitation?

You are invited to participate in this research because of your experience studying in your university. Your name has been suggested by library staff, lecturer and/or your friends, or has been identified via social networking groups available in your university.

What will happen in this research?

If you agree to participate in this project, I will invite you to participate in an individual interview which should not exceed 60 minutes and will be audio-recorded. It will be arranged at your preferred time in a place within your university and will be conducted either in Bahasa Malaysia or English whichever is convenient to you. If you stay somewhere remote and are not able to come to the university, I will arrange the interview to be conducted via email or phone. Phone interview will be audio-recorded. For email interview, I will email questions and upon receiving your feedback, I may email again if further clarification is needed.

What are the discomforts and risks?

There will be no expected discomforts or risks in this research. However, you may feel reluctant to share your thought or experience with me.

How will these discomforts and risks be alleviated?

The interview will be conducted in ways that you are comfortable with. At any time during the interview, you may choose not to talk about subjects that you find uncomfortable. You may also withdraw from the interview and your data will be destroyed. After the interview, I will return the transcript to you for approval. You may omit, amend or clarify your statements before I use the data in my analysis.

What are the benefits?

You will contribute to better understanding the role of academic libraries in today's changing learning environment that has moved towards ICT facilitated learning. Although there would be no immediate benefits to you for participating in this project, your views and insight will primarily contribute to my research findings which I intend to disseminate through presentation/s at national and international conference/s, and in refereed publication/s as well as in my PhD thesis.

How will my privacy be protected?

Your privacy and confidentiality will be protected in this research. Your friends, lecturers and library staff will not know if you are/are not participating in this research. Even though your name was suggested by one of them, all names are part of a pool of potential participants, and nobody will know who has been invited or agreed to participate. The only person who will access my observation notes and audio-recording will be me and transcribers (who will sign a confidentiality agreement). My supervisors may see the transcripts but will not know your identity. Your real names will not be used in my thesis. I will use pseudonyms and remove all identifiable personal information. All data and consent forms will be kept securely as the research progresses. Upon completion of my studies, they will be securely stored in locked cabinets in the postgraduate administrator's office at the School of Education, AUT. All original data will be destroyed after six years.

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What opportunity do I have to consider this invitation?

Your participation is voluntary. Please take one week to consider your possible involvement as a research participant. If you are willing to participate in this research or have questions about it, please email me at nora.amin@aut.ac.nz or call xxx-xxxxxxx by dd/mm/yyyy.

How do I agree to participate in this research?

If you agree to participate in this research, please complete, sign and return your consent form to me any time before dd/mm/yyyy.

Will I receive feedback on the result of this research?

If you wish, I will send you an electronic version of the summary of my research findings at an email address you provide. If you are interested, I will also inform you any imminent publications concerning the findings of this research project.

What do I do if I have concerns about this research?

Any concerns you have regarding this research should be notified to my research supervisor (contact details are given below). Concerns regarding the conduct of this research should be notified to the Executive Secretary, AUTEC, Madeline Banda by sending an email to her at Madeline.banda@aut.ac.nz or call her at 0064-921-9999 ext 8044.

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Researcher Contact Details:

Norasieh Md Amin (nora.amin@aut.ac.nz or tel.: XXXXXXXXX)

Project Supervisor Contact Details:

Dr Philippa Gerbic (philippa.gerbic@aut.ac.nz or tel.: 0064-9-9219999 ext 9825)

Dr Andy Begg (andy.begg@aut.ac.nz or tel.: 0064-9-9219999 ext 7355)

Approved by the Auckland University of Technology Ethics Committee on 15 December 2009, AUTEC Reference number 09/280.

Consent Form
Library Staff

Project Title

The integration of digital library services in blended learning: A Malaysian higher education perspective.

Project Supervisor: Dr Philippa Gerbic

Researcher: Norasieh Md Amin

Please tick whichever applicable:

☐   I have read and understood the information provided about this research project in the Information Sheet dated dd mm yyyy.

☐   I have had an opportunity to ask questions and to have them answered.

☐   I understand that my privacy and confidentiality will be protected.

☐   I understand that I may withdraw myself or any information that I have given for this project at any time prior to data is analysed, without being disadvantaged in any way.

☐   I understand that the interview transcript will be given to me for approval prior to analysis. Hence, I may omit, amend or clarify my statements.

☐   If I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.

☐   I agree to take part in this research.

☐   I wish to receive a copy of the report from the research (please tick one):
       Yes ☐☐No ☐

Participant's signature:

………………………………………………………………………….

Participant's name:

………..................…………………………………………………………

Participant's contact details (if appropriate):

……………………………………………………………………………………………

……………….…………………………………………………………………………………

Date:

Approved by the Auckland University of Technology Ethics Committee on 15 December 2009, AUTEC Reference number 09/280.

Note: The Participant should retain a copy of this form.

Consent Form

Lecturer

Project Title

The integration of digital library services in blended learning: A Malaysian higher education perspective.

Project Supervisor: Dr Philippa Gerbic

Researcher: Norasieh Md Amin

Please tick whichever applicable:

☐ I have read and understood the information provided about this research project in the Information Sheet dated dd mm yyyy.

☐ I have had an opportunity to ask questions and to have them answered.

☐ I understand that my privacy and confidentiality will be protected.

☐ I understand that I may withdraw myself or any information that I have given for this project at any time prior to data is analysed, without being disadvantaged in any way.

☐ I understand that the interview transcript will be given to me for approval prior to analysis. Hence, I may omit, amend or clarify my statements.

☐ If I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.

☐ I agree to take part in this research.

☐ I wish to receive a copy of the report from the research (please tick one):
   Yes ☐☐No ☐

Participant's signature:

………………………………………………………………………….

Participant's name:

………....................…………………………………………………………

Participant's contact details (if appropriate):

………………….………………………………………………………………………………

………………….………………………………………………………………………………

Date:

Approved by the Auckland University of Technology Ethics Committee on 15 December 2009, AUTEC Reference number 09/280.

Note: The Participant should retain a copy of this form.

Consent Form
Students

Project Title

    The integration of digital library services in blended learning: A Malaysian higher education perspective.

Project Supervisor: Dr Philippa Gerbic

Researcher: Norasieh Md Amin

Please tick whichever applicable:

☐   I have read and understood the information provided about this research project in the Information Sheet dated dd mm yyyy.

☐   I have had an opportunity to ask questions and to have them answered.

☐   I understand that my privacy and confidentiality will be protected.

☐   I understand that I may withdraw myself or any information that I have given for this project at any time prior to data is analysed, without being disadvantaged in any way.

☐   I understand that the interview transcript will be given to me for approval prior to analysis. Hence, I may omit, amend or clarify my statements.

☐   If I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.

☐   I agree to take part in this research.

☐   I wish to receive a copy of the report from the research (please tick one):
        Yes ☐☐No ☐

Participant's signature:

………………………………………………………………………….

Participant's name:

………..........................……………………………………………………

Participant's contact details (if appropriate):

…………………………………………………………………………………………………

……………….…………………………………………………………………………………

Date:

Approved by the Auckland University of Technology Ethics Committee on 15 December 2009, AUTEC Reference number 09/280.

Note: The Participant should retain a copy of this form.

Appendix C: OUM approval to conduct the research

Appendix D: Research interview protocol adapted from Cresswell (2005, p. 222)

Research project: Digital library services in blended learning environment: a Malaysian higher education perspective

Time of Interview:

Date:

Place:

Interviewee:

Position of Interviewee:

Description of the project:

(a) Purpose of the project
   i. To explore how academic libraries, as providers of digital library services, meet the information needs in blended learning, in the Malaysian higher education context, and
   ii. To holistically understand the provision and usage of digital library services within the context of two blended learning environments: on-campus and off-campus environment.
(b) Individual and source of data being collected
   - Two sources of data namely interviews and documents
   - Interviews involve library staff, lecturers, students and IT personnel
   - Documents include minute meeting, handout, guidelines, newspaper clipping, information from websites, etc. in hard or soft copies.
(c) What will be done with the data to protect confidentiality of the interviewee
   i. All data in the forms of interviews transcripts, audio-recording, various documents as well as consent forms will be securely kept during the fieldwork and data analysis.
   ii. Participants' real name will not be used in any report and thesis writing, instead, pseudonyms will be used.
   iii. The transcript and audio recording may be accessed by transcribers, who will sign 'confidentiality agreement', thus, ensure confidentiality of participants.
   iv. Upon completion of the analysis, the data and consent forms will be stored in a separate and locked cabinet in postgraduate programme administrator's office, Room AR416, at the School of Education, AUT. The data will be stored securely and after six years, they will be destroyed by shredding.
(d) How long the interview will take
   - Will take approximately 60 minutes or less

Turn on the tape and test it (both interviewer and interviewee)

Appendix E: Interview Summary Form adapted from Miles and Huberman (1994, p. 53)

Name:

Comments about the interview (conditions, technical issues or participants matters)

Main points/new ideas during the course of the interview.

Ideas that were salient, interesting, illuminating or important (especially related to the research questions)

Any new questions to be asked or issues to be explored next

Appendix F: List of OUM branches

	OUM-owned centres *(with resources room)*	IPG-OUM and other centres *(without a resources room)*
1	**Kedah Learning Centre** 80-86, Lengkok Cempaka 2 Bandar Aman Jaya 08000 Sungai Petani KEDAH	**IPG KDA Learning Centre** c/o Institut Pendidikan Guru Kampus Darul Aman (IPG KDA) 06000 Jitra KEDAH
2	**Alor Setar Offi ce** 4, Tingkat Bawah, Jalan Stadium 05100 Alor Setar KEDAH	**IPG KSAH Learning Centre** c/o Institut Pendidikan Guru Kampus Sultan Abdul Halim (IPG KSAH) Jalan Kuala Ketil 08000 Sungai Petani KEDAH
3	**Penang Learning Centre** 1, Lebuh Tenggiri 2 13700 Pusat Bandar Seberang Jaya PENANG	**IPG KP Learning Centre** c/o Institut Pendidikan Guru Kampus Perlis (IPG KP) Jalan Behor Pulai 01000 Kangar PERLIS
4	**Perak Learning Centre** 71, Jalan Lim Bo Seng 30300 Ipoh PERAK	**SEAMEO-RECSAM Learning Centre** c/o SEAMEO-RECSAM 11700 Gelugor PENANG
5	**Greenhill Learning Centre** 55-57, Persiaran Greenhill 30450 Ipoh PERAK	**IPG KTB Learning Centre** c/o Institut Pendidikan Guru Kampus Tuanku Bainun (IPG KTB) Mengkuang 14000 Bukit Mertajam PENANG
6	**Negeri Sembilan Learning Centre** 86, Jalan Dato' Bandar Tunggal 70000 Seremban NEGERI SEMBILAN	**IPG KI Learning Centre** c/o Institut Pendidikan Guru Kampus Ipoh (IPG KI) 31150 Hulu Kinta PERAK
7	**Melaka Learning Centre** 2, 2-1, 2-2 Jalan KP AA3 Kompleks Perniagaan Al-Azim 75150 Bandar Bukit Baru MELAKA	**IPG KRM Learning Centre** c/o Institut Pendidikan Guru Kampus Raja Melewar (IPG KRM) Jalan Sikamat Beg Berkunci 43 70990 Seremban NEGERI SEMBILAN
8	**Johor Learning Centre** Jalan Ibrahim Sultan Stulang Laut 80300 Johor Bahru JOHOR	**IPG KTI Learning Centre** c/o Institut Pendidikan Guru Kampus Temenggong Ibrahim (IPG KTI) Jalan Datin Halimah 80350 Johor Bahru
9	**Batu Pahat Learning Centre** Lot 2317 Jalan Ampuan Bandar Penggaram 83000 Batu Pahat JOHOR	**IPG KTHO Learning Centre** c/o Institut Pendidikan Guru Kampus Tun Hussein Onn (IPG KTHO) KM 7.75, Jalan Kluang Karung Berkunci 524 83009 Batu Pahat JOHOR
10	**Kuantan Learning Centre** c/o Kolej Shahputra Jalan 1M 3/10 Bandar Indera Mahkota Point 25200 Kuantan PAHANG	**IPG KTAA Learning Centre** c/o Institut Pendidikan Guru Kampus Tengku Ampuan Afzan KM10, Jalan Padang Tengku 27200 Kuala Lipis PAHANG

11	**Mentakab Learning Centre** c/o Tingkat 3 Kompleks MARA, Jalan Siantan 28400 Mentakab PAHANG	**IPG KDRI Learning Centre** c/o Institut Pendidikan Guru Kampus Dato' Razali Ismail Batu Rakit 21030 Kuala Terengganu TERENGGANU
12	**Kelantan Learning Centre** Jalan Sultan Yahya Petra 15200 Kota Bharu KELANTAN	**Kuala Terengganu Learning Centre** c/o Universiti Teknologi MARA Kubang Ikan, Chendering 21080 Kuala Terengganu TERENGGANU
13	**Sarawak Learning Centre** Batu 9½, Princess Garden Commercial Centre, Jalan Kuching Serian 93250 Kuching SARAWAK	**IPG KSM Learning Centre** c/o Institut Pendidikan Guru Kampus Sultan Mizan (IPG KSM) 22200 Besut TERENGGANU
14	**Sibu Learning Centre** c/o Institut Methodist Pilley Jalan Lily, PO Box 760 96008 Sibu SARAWAK	**IPG KKB Learning Centre** c/o Institut Pendidikan Guru Kampus Kota Bharu (IPG KKB) Pengkalan Chepa 16109 Kota Bharu KELANTAN
15	**Miri Learning Centre** c/o Lot 993 & 994, King's Commercial Centre Blk 10, Jln Miri-Bintulu 98000 Miri SARAWAK	**IPG KTAR Learning Centre** c/o Institut Pendidikan Guru Kampus Tun Abdul Razak (IPG KTAR) Jalan Dato Mohd Musa 94300 Kota Samarahan SARAWAK
16	**Sabah Learning Centre** Block A, Lot 1-10 Lintas Jaya Uptownship Jalan Lintas, Kepayan Highway 88200 Kota Kinabalu SABAH	**IPG KMS Learning Centre** c/o Institut Pendidikan Guru Kampus Miri (IPG KM) Jalan Bakam 98009 Miri SARAWAK
17	**Keningau Learning Centre** 1st Floor, Block A-1 Pegalan Shopping Complex 89008 Keningau SABAH	**IPG Gaya Learning Centre** c/o Institut Pendidikan Guru Kampus Gaya (IPG KG) Peti Surat 10491 88805 Kota Kinabalu SABAH
18	**Labuan Learning Centre** c/o Tingkat 2, U0064 Jalan OKK Awang Besar 87000 Wilayah Persekutuan Labuan SABAH	**IPG Keningau Learning Centre** c/o Institut Pendidikan Guru Kampus Keningau Beg Berkunci 11 89009 Keningau SABAH
19	**Sandakan Learning Centre** Batu 1½, Jalan Utara 90000 Sandakan SABAH	**IPG Tawau Learning Centre** c/o Institut Pendidikan Guru Kampus Tawau (IPG KT) KM36, Jalan Balung Beg Berkunci 27 91009 Tawau SABAH
20	**Tawau Learning Centre** c/o Wisma Jin Ho Tingkat 2, Jalan St Patrick 91000 Tawau SABAH	**IPG KPT Learning Centre** c/o Institut Pendidikan Guru Kampus Pendidikan Teknik (IPG KPT) Jalan Yaacob Latif Bandar Tun Razak 56000 KUALA LUMPUR
21	**Shah Alam Learning Centre** Lot G (7-06-01) Blok 7 Presint Alami Pusat Perniagaan Worldwide 2 Jalan Tinju, Seksyen 13 40100 Shah Alam SELANGOR	**IPG KPIK Learning Centre** c/o Institut Pendidikan Guru Kampus Pendidikan Ilmu Khas (IPG KPIK) Jalan Yaacob Latif Bandar Tun Razak 56000 KUALA LUMPUR

22	**Seri Kembangan Learning Centre** Lot 49, Mezzanine Floor Jalan Utama Taman Serdang Raya 43300 Seri Kembangan SELANGOR	**IPG KBA Learning Centre** c/o Institut Pendidikan Guru Kampus Bahasa Antarabangsa (IPG KBA) 59200 Lembah Pantai KUALA LUMPUR
23	**Kuala Lumpur Learning Centre** **(Postgraduate)** Main Campus Jalan Tun Ismail 50480 KUALA LUMPUR	**Petaling Jaya Learning Centre** c/o Pusat Matrikulasi Universiti Islam Antarabangsa Jalan Universiti 46350 Petaling Jaya SELANGOR
24		**Bangi Learning Centre** c/o Fakulti Kejuruteraan Universiti Kebangsaan Malaysia 43000 Bangi SELANGOR

Source: OUM Librarian, via email, March 9, 2011.