A TECHNO-RELIGIOUS FRAMEWORK TO SCAFFOLD SPIRITUAL INTELLIGENCE AMONG STUDENTS

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ABSTRACT

Spirituality is an essential core of a person and the basis of life. Negligence of spiritual dimension has raised many problems particularly relevant to the degradation of moral values among students. Lack of spirituality is the root cause of the chaos and crises in the contemporary world.

Spirituality is vital in student's development and therefore higher education should honour this dimension in the pursuit of knowledge in order to understand the absolute truth.

This research explores the use of information technology (IT) to cultivate university students' spiritual development. The perspectives of information technology, holistic education and spiritual and religious aspect of human development influenced the undertaken research work. The education component is the study context; the religious and spiritual element is the study content; and information technology is the beneficial support tool for spiritual engagement among undergraduate Muslim students. This study adopts design research methodology, which goes through phases of awareness of problem, suggestion, development, evaluation and conclusion. In order to nurture student's spirituality, a techno-religious framework is proposed to guide the building of a spiritual learning system called Spiritual Reflective System (SRS). Provision of guidance, resources and learning environment that values spirituality is via an informal learning channel. The learning process is through face-to-face interaction with a teacher and SRS support. A focus group survey and discussion are the method of data collection in evaluating the meaningfulness of SRS. Four main criteria of evaluation used are the feel, awareness, consciousness and mindfulness. The system had created the feel in the participants that mostly came from the audio and video tazkirah, words of advice, online Quran recitation, Hadith and Islamic poster message. Knowledge gained through SRS made them realize the real purpose, vision and mission of the worldly life and

triggered their mind to think about the existential questions. The chance of knowing these implicit stuffs in an explicit way has created awareness in them. They admitted that they are conscious concerning the things they know very well except that they do not practice. None of them claimed to be mindful of Allah at all times. The participants agreed that the SRS support the National Education Philosophy. Overall results confirmed that participants of the Spiritual Reflective System find the system useful and went through a positive learning experience in using the system. However to gain spiritual intelligence, students need more than self-learning, this system is just an assistance in the first step to progress towards spiritual intelligence journey.

ABSTRAK

Kerohanian adalah teras penting dalam diri seseorang dan merupakan asas bagi kehidupan. Pengabaian dimensi kerohanian telah menimbulkan banyak masalah terutamanya berkaitan dengan kemerosotan nilai-nilai moral di kalangan pelajar. Kepincangan kerohanian adalah punca kepada kecelaruan dan krisis dalam dunia kontemporari.

Kerohanian adalah penting dalam pembangunan pelajar dan oleh itu pendidikan tinggi sewajarnya mengutamakan dimensi ini dalam penyebaran ilmu pengetahuan.

Penyelidikan ini meneroka penggunaan Teknologi Maklumat (TM) untuk memupuk pembangunan rohani pelajar universiti. Perspektif teknologi maklumat, pendidikan holistik dan aspek rohani & agama dalam perkembangan manusia mempengaruhi kerja-kerja penyelidikan yang dijalankan. Komponen pendidikan merupakan konteks kajian; unsur agama & rohani adalah kandungan kajian; dan teknologi maklumat adalah alat sokongan bermanfaat untuk penglibatan kerohanian dari kalangan pelajar Islam ijazah dasar. Kajian ini menggunakan kaedah penyelidikan reka bentuk, yang terdiri dari lima fasa; kesedaran mengenai masalah, cadangan, pembangunan, penilaian dan kesimpulan. Dalam usaha untuk memupuk kerohanian di kalangan pelajar, satu rangka kerja tekno-agama dicadangkan untuk memandu pembangunan sistem pembelajaran kerohanian, yang dipanggil Sistem Refleksi Spiritual (SRS). Penyediaan panduan, sumber dan persekitaran pembelajaran yang menghargai kerohanian disampaikan melalui saluran pembelajaran tidak formal. Proses pembelajaran adalah melalui kaedah bersemuka dengan interaksi bersama guru dan sokongan SRS. Kajian kumpulan fokus dan perbincangan adalah kaedah pengumpulan data dalam menilai kebermaknaan SRS. Empat kriteria utama penilaian yang digunakan terdiri dari rasa, ketahuan, kesedaran dan kewaspadaan. Sistem berupaya membangkitkankan rasa pada

peserta di mana sumber utama adalah dari audio dan video Tazkirah, kata-kata nasihat, bacaan Qur'an dalam talian, Hadis dan poster mesej Islamik. Ilmu yang diperolehi dari SRS telah menyedarkan mereka tentang tujuan sebenar, visi dan misi kehidupan duniawi dan mencetus minda mereka untuk memikirkan persoalan-persoalan eksistensi. Peluang mengetahui perkara-perkara tersirat secara yang jelas telah mewujudkan ketahuan dalam diri mereka. Mereka mengakui bahawa mereka sedar tentang perkara yang mereka ketahui dengan baik, cuma mereka tidak mengamalkannya. Tiada seorang pun dari mereka yang mendakwa mempunyai tahap kewaspadaan sentiasa ingat pada Allah di setiap masa. Para peserta bersetuju bahawa SRS menyokong Falsafah Pendidikan Negara. Keputusan secara keseluruhan mengesahkan bahawa peserta Sistem Reflektif Spiritual mendapati sistem tersebut adalah berguna dan telah melalui pengalaman pembelajaran yang positif dalam penggunaannya. Walau bagaimanapun untuk memperolehi kecerdasan kerohanian, pelajar memerlukan lebih daripada pembelajaran kendiri, sistem ini hanya merupakan bantuan dalam langkah pertama untuk maju menuju perjalanan kecerdasan kerohanian.

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LIST OF ACRONYMS

ELLI	Effective Lifelong Learning Inventory
GSA	Generic Student Attributes
HAS	Human Activity System
IS	Information System
IT	Information Technology
KWS	Knowledge Worker Systems
LCM	Learning Context Model
LCMS	Learning Content Management System
LMS	Learning Management System
MOOC	Massive Open Online Courses
NEP	National Education Philosophy
OCW	Open Course Ware
OER	Open Educational Resources
PBUH	Peace be Upon Him
PLE	Personalized Learning Environment
RSS	Real Simple Syndication
SCM	Supply Chain Management
SRS	Spiritual Reflective System
VLE	Virtual Learning Environment

CHAPTER 1
INTRODUCTION

The first chapter begins by establishing the basis for the initiatives of the techno-religious research, in addressing the application of information technology (IT), in religious and spiritual development of students during their college years. This study intends to address the spiritual needs of university students and offers a personal learning environment (PLE) as a space and means to support spiritual learning in an informal way. This research is grounded in Islamic tradition that views religion and spiritual growth or maturity as intertwined. The chapter is divided into eight sections. Section 1.1 preludes the chapter with background information related to the research in order to position the problem in context. Section 1.2 traces the motivation that drives this work. Section 1.3 describes the research problem that warrants the design of the spiritual reflective system. Section 1.4 presents the research objectives and research questions. Section 1.5 addresses the scope and limitations of the study. Section 1.6 highlights the significance of the research. Section 1.7 outlines the research methodology. Finally, section 1.8 summarizes the structure of the thesis. A concise explanation of the terminologies used is embedded in related sections where the terms appear.

1.1 Background of the Study

Internet, IT and its applications are ubiquitous in the lives of people today. Ubiquitous or pervasive computing is the current growing digital technology trend. Technology and education, for instance, have become interconnected and turn into inseparable entities. Education becomes more dynamic, networked and increasingly personalized, with Web 2.0 technologies, social networking sites, such as blogs, wikis, video sharing sites, podcasting, web applications and mashups. Educational technology has produced various forms of online education encompassing e-learning, m-learning and

soon u-learning. These online learning platforms has enabled distance education, created blended learning, virtual university, globalized education and open education.

Open educational resources (OER) are free online digital learning resources available openly for educators and independent learners to use, share, combine, adapt, and expand their teaching, learning and research (Hylén, J., et al., 2012). OpenCourseWare (OCW) and Massive Open Online Courses (MOOC) are examples of IT-enabled education courses accessible by self-directed learners. Mihai (2016) expected these seven trends of e-learning to shape the 2017 educational technology setting:

i. Gamification – the application of game elements in learning context to motivate learners. They learnt from mistakes, get rewards for right answers, gain recognition for their results, and have enjoyable experience while learning.

ii. Personalized learning – learning is customized based on learner's level of knowledge and style of learning, making them more receptive, more engaged and can better retain what had been learnt.

iii. Bite-sized learning – long lecture is not effective due to short attention span in learners. To improve learning, lessons are divided into smaller manageable portions to allow them to digest what they have learnt.

iv. Video-based learning - YouTube offers an opportunity for vast selection of short educational videos that can enhance and deepen learners understanding of learning topics.

v. Adaptive learning - using education technology to respond to learners' interactions in real-time by automatically providing them with individual support or scaffold in content, or assessment.

vi. Peer to peer assessment – Learners might want to learn more form their peers. One way to do it is through assessing other learners work and compare it with their own work or level of competency.

vii. Official degrees for online courses – more and more universities are providing online courses, and they will possibly offer official degrees.

The effective use of technologies in teaching and learning has transformed the face of education and open more educational and learning enhancements opportunities. Universities around the world have been using e-learning 1.0 generation of virtual learning environments (VLE), also known as learning management system (LMS), as an interface, which allows lecturers to place learning materials online and provides a range of tools for them to communicate and interact with students. LMS is essentially a coursework centric system that supports management of teaching more than the learning itself (Chatti et al., 2010; Martindale & Dowdy, 2010). Although commercially successful, VLEs provided only a relatively slight impact on pedagogy in higher or tertiary education (Brown, 2010). The higher education age groups between 18 to 24 years old are in the life stage categories of late adolescence and early adulthood (Newman & Newman, 2003). With the arrival of e-learning 2.0, made possible by the emergence of Web 2.0, the central position of VLE domination is challenge by personal learning environment (PLE). PLE can be the remedy to the limitations of LMS. Wilson (2005) built the idea for PLE and visualized it as the VLE of the future. He believes that the VLE should not be institutional but personal to support both formal, informal and life-long learning on-line needs of a learner today.

Life at university revolves around activities and cultures that primarily centered on learning to equip students with specific workplace knowledge, skills and abilities for their future professional lives. Students gain academic as well as social and personal

experiences at this phase of their early adulthood life. The influence of educational experiences matters greatly since it instills lifelong values that will affect the developments of students' intellectual and character. The needs of university students differ from their intellectual standpoint to their social, emotional, psychological and spiritual viewpoint. In order for them to develop as a whole person, all these dimensions need nurturing while they study at the university. This notion encourage the university to produce human capital that is knowledgeable, balanced, harmonious and virtuous. An immediate short-term goal taken by the university is to produce individuals with the knowledge and skills that will meet the needs of the job market. Hence, priority is emphasize towards the intellectual dimension and hardly towards other dimensions, namely the spiritual ones. As such, this study will focus on the often-neglected dimension that is on spirituality.

To help nurture their spiritual and faith development during their university studies, it is possible to employ PLE to provide guidance, resources and environment that values spirituality. The ultimate aim of this learning support space is to shape students mind with the right worldview or paradigm on the purpose of life. With the right worldview, they can live life in its best possible manner; where in long terms would bring benefits for themselves and society. The source to nurture human development should come from the divine guidance, since ignoring attention to godly guidance will corrupt human development. This PLE can act as an informal personal learning space for them on campus.

1.2 Motivations

Moral decline and social problems among adolescents have worsened. In response to the worsening situation, educationalist at universities should come up with an agenda for immediate action to address them. Moral crises have manifested in a variety of

symptoms and problems over the years. Malaysian local newspapers and blogs often report about these crises. Among the social ills plaguing Malay Muslim are disciplinary problems, running away from homes, apostasies, loitering, drug addictions, bullying and premarital sex. The rising numbers of pregnancy out of wedlock and dumping babies are serious moral crises facing the Malaysian youth today.

Some of the factors causing these symptoms include environmental or peer influences, negligence of parents in educating their children, the maloriented educational system and life stress. Social ills among students had received a lot of coverage in the local press. Reference from local newspapers were made since they report social happenings, issues and cultural values of a certain place and time and often contain unique information or cases that cannot be found elsewhere. Among those reported are as follows:

- Students are not trustworthy - no obligation or refuse to pay off the debts they owe. The issue of repayment of the National Higher Education Fund Corporation (PTPTN) has always been a hot topic, following the rigid delinquent borrower for repayment. Approximately 552,000 borrowers do not pay a single cent to PTPTN following their graduation (M. Hamizar & M. Hifzuddin, 2014).
- Less awareness for the importance of the values of integrity among students. Exit survey reported that Generic Student Attributes (GSA) showed Malaysian students achievement in professional ethics and moral elements were at the lowest level,-which is 73.3 per cent for women and 57.7 per cent for men. This means any attempts to increase the value of integrity will develop individuals who are honest, ethical, possessing religious values and spiritual strength. Without all of these values, undoubtedly the next generation will be most destabilized (Rohana Man, 2010).

- Perception on corruption among students

  Studies done in 2002 by Professor Rahimah Abdul Aziz (UKM) on public perception of corruption in Malaysia 's Anti-Corruption Agency (ACA) found that among university students, 30.5 percent thought that if they were given the power and position, they have great tendency to become a corrupt person (Anis Yusal et al. 2013).

- Gender-confused and odd lifestyles

  Signs of damage were very clear when there are people who risk their lives to defend sexual equality, better known as the supporter of Lesbian, Gay, Bisexual and Transgender (LGBT). They are intellectuals and professional but a strong supporter of LGBT (Rohami Shafie, 2012).

- Free sex practices

  There are many issues involving university students, which have raised fears among parents and society, particularly on issues and cases of sexual misconduct practices such as cohabitation, childbearing outside marriage and baby dumping (Abd Rahim, 2001). Results of research conducted in 2006, by Mazlin Mohamad Mokhtar, a lecturer University of Technology Mara (UiTM) exposed that 50 percent of 727 students sampled from higher learning institutions had engaged in sexual activity.

- Colonization of Mind

  Students today are easily tempted with western or foreign ideologies such as secularism, liberalism, socialism, capitalism, modernism, humanism, hedonism and many others.

- Extremist Movements and Heresies

  Universiti Utara Malaysia reported its research findings and stated that 20% of university students in Malaysia are known to be sympathetic towards the Islamic State (IS) or Daesh (Haikal Jalil, 2016).

What could happen if the symptoms linger? If the crises are not quickly and properly addressed, they will spread as contagious diseases for the society, in the form of corruptions, oppressions, injustices, crimes, and innumerable diseases that would erode the welfare of the people and endanger the stability of the country (Loh, 2005; Ahmat, 2008). Today's human problems, which cause turmoil, unrest and immorality in their community, in the long term, will end up into the destruction of the high moral valued civilization. The erosion of spiritual and ethical values causes moral decay. These symptoms and problems are deeply rooted in the real eternal problems of human existence, which relate to spiritual issues. They arise simply because the failure of the families and failure of the education systems in supporting the development of the human soul. This case prompts the calls for everyone in the community to be aware of the youth issues as well as for the university to shoulder the responsibility to eradicate the existing social ills among the youths. All parties must be involved in resolving these social ills, particularly the human right activists to delve deeper into these social issues. These are among the cries often heard and seen in the public media.

The atmosphere enriched by the culture of hedonism is the catalyst that leads to the spiritual lethargy and social crisis among youngsters. Spiritual desolation, which is the soul experience in heavy darkness or turmoil also contribute to these problems. Ignorance and spiritual vacuum, where people are in search for a value system to fulfill their existential void, also placed them in this spiritual darkness. Figure 1.1 lists various symptoms of spiritual problems obtained from the literatures.

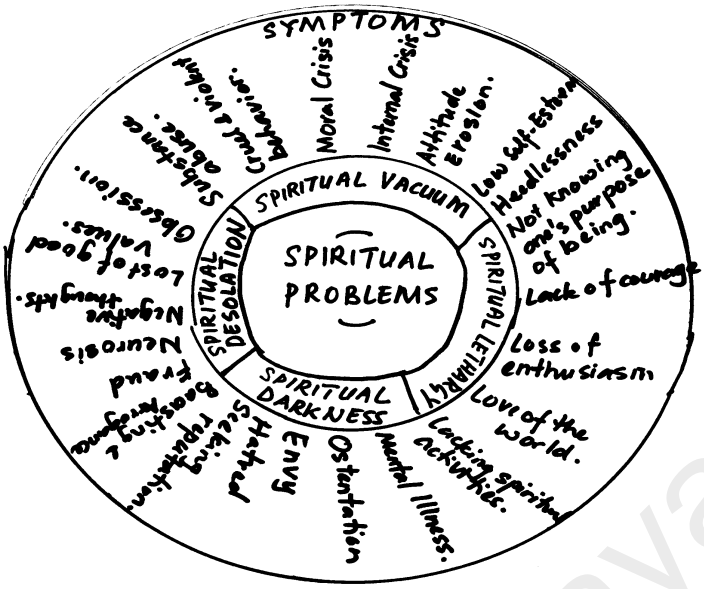

Figure 1.1: The symptoms of spiritual problems

These conditions somehow lead to our wonderment as to why some "highly educated persons" today lacked well-integrated personality. Education by its nature is supposed to humanizes human being. Unfortunately, this does not seem to be the case. When religion is, marginalize in the education system and daily life, the crises pertaining to human spirituality triumph. Hence, the remedy should be of the same nature, which is to restore meaning, purpose and direction in people's conscience and beliefs back to their primordial state. In Islamic view, there is no need for any reformation, but instead to return to the basic of Islamic (religious) teachings.

What is it that is lacking in our education system? The answer to this question lies in the analysis of the direct impact of secularism. Secularism is an ideology that stress only this world is relevant and real, and that the hereafter is irrelevant and real (Cox, 1965). Secular is that which pertains to this present world, or to things not spiritual or sacred. Secular is to relate to temporal as distinguished from eternal interests and not immediately or primarily respecting the soul, but the body. Secular education places high emphasis on intellectual ability besides rationale, until it disregards the moral and religious values. M. Nasir (2005) debated the defect of this secular education, while Asmawati (2009) stressed on the importance of character education, manners and

practices in educating students. We wish to articulate on what it means to be an educated person. A "good" educated graduate is viewed as a new generation of students who are not only equipped with knowledge and skills but who also possesses faiths and morals. In simple term, if they have intellectual (IQ), emotional (EQ) and spiritual (SQ) intelligence, then overall they are intelligent and virtuous. This is synonymous with what Professor Syed Naquib al-Attas mentioned in his book entitled, The Educational Philosophy and Practice of Syed Naquib al-Attas (Wan Daud,1998), as "man of *adab*" (*insan adabi*). Al-Attas argued that an educated man is a good man who is well mannered (has *adab*) in a complete sense. Hence, al-Attas defined a truly educated man from Islamic viewpoint as a man of *adab*. He wrote, "A good man is the one who is sincerely conscious of his responsibilities towards the true God; who understands and fulfils his obligations to himself and others in his society with justice; who constantly strives to improve every aspect of himself towards perfection". Education is to instill *adab* in a person.

The issue of quality education has always been the forefront of education debates and is under scrutiny in many parts of the world, including Malaysia. In the context of higher education, striving for high quality is not a new strategy but a continuous one. Universities, prominently today, are expected to produce quality graduates to feed the needs of professionals in driving excellent progress and prosperity for the country. We do not deny the importance of education to meet the needs of the job markets, but we strongly believed that the function of a university is not just to provide career benefits or employability opportunities for the students, but also personal living and social benefits in life that goes beyond knowledge and skills. The quality of today's students need to be improved and refined from the aspects of thoughts, feelings, attitudes, beliefs and behaviors through holistic education and learning experiences so that upon completion of studies, they are transformed into educated graduates that are useful to themselves, families, communities and country. The efforts towards spiritual improvement and

refinement are important to reduce educational crises. Prioritizing moral, character and personality development in university education, is our main concern as educators if we are to respond to the calls made in the NEP.

1.3 Problem Statement

Spirituality is the essence and basis of life. Negligence of spiritual dimension has raised many problems particularly relevant to the degradation of moral values among students. Lack of spirituality is the root cause of the chaos and crises in the contemporary world. Johnstone (2012) recognized that spirituality is vital in student's development and acknowledged that spiritual matters should be considered within higher education. Lindholm et al. (2011) identified that students entered university with the hopes for spiritual growth and a number of universities such as UCLA have responded to that desire. Figure 1.2 shows people nowadays have more interest or perhaps curiosity on spirituality as compared to interest on intellectual.

Figure 1.2 - Trends on people interest over time on spirituality and interest by region (Google Trends)

Spiritual remedy to these crises, as agreed by many (Forbes, 1996; Kessler, 2000; Al Zeera, 2001; Miller & Yoshiharu, 2002) is to embrace on the holistic education that appreciates spirituality in education (Schreiner, 2010). In Malaysia, the National Education Philosophy (NEP) is holistic in nature. The NEP which was formulated in the year 1987, was inspired by the Mecca Resolution of 1977, had historically evolved from a long process of nation building in the country since the time of Malaysia independence in the year 1957. Pronounced by Osman Bakar (1993) as "in line with Islamic teaching" and "can no longer be treated as secular", the NEP proclaims:

Education in Malaysia is an on-going effort towards further developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm belief in and devotion to God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards, and who are responsible and capable of achieving high level of personal well-being as well as being able to contribute to the harmony and betterment of the family, the society and the nation at large.

Ministry of Education Malaysia – National Education Philosophy. Retrieved from http://www.moe.gov.my/index.php/en/dasar/falsafah-pendidikan-kebangsaan

The essence of the National Education Philosophy (NEP), which envisioned that all national educational processes, is to develop the potential of Malaysian citizens in a holistic and integrated manner to be intellectually, spiritually, emotionally and physically balanced based on a firm belief in and devotion to God (Habsah et al., 2009). The intention to realize NEP is to produce individual student who is balanced and harmonious in terms of intellectual, spiritual, emotional and physical, are facing obstacles due to the globalization and modernization that has brought in various cultures and trends that are conflicting with the local culture (Mat Som et al., 2008). Following this NEP is the support that educators can provide to students. However, the problem with the present secular university system in practice is lecturers are required to discover a suitable possibility, space and time to search for ways to integrate spirituality teaching at the university level. Majority universities in the country do not follow the holistic and God-centered aspirations of NEP in their programs of studies. There is a gap between the actual current practice in the education and the holistic education spelt in NEP, especially in the spiritual development. University education today accentuates solely on the mind for academic commitment and success in the surroundings that honors objectivity and rationality in the pursuit of knowledge.

The emphasis of religion is quite low in higher education. Religious teaching can stabilize students' spirituality and emotion. Religious teachings can save students from falling prey to negative elements, encouraged kindness and enabled them to distinguish between bad and good things. The subject of Islamic Education pursuing the Education Act (1996), Section 50 is a compulsory core subject that is required for all Muslim students in all Malaysian schools. The subject teaches the basics of Islam which is called Fard 'Ayn, the illuminative spiritual knowledge and is personally obligatory knowledge for every Muslim. Fard 'Ayn consist of three main bases which are Tauhid or Aqidah (monotheism faith), Fiqh (Islamic jurisprudence) and Tasawwuf (Islamic science of

spirituality). These three bases can foster good personality and human values in students. This subject is formally taught in their primary and secondary schools, following the primary school integrated curriculum (KBSR) and secondary school integrated curriculum (KBSM). When students moved on to university, religious subject is no longer required in the curriculum. At the universities, the focus of teaching and learning is on Fard Kifayah, pragmatic scientific knowledge useful for survival in this world. Perhaps, on their own initiatives, university students could obtain informal religious knowledge during their studies. However, activities that are not organized and structured thoroughly, in many circumstances would add confusions to one party and the extremes of the other party.

An alternative on how to channel religious understanding at the university level ought to be present. Adhering to the NEP is the alternative channel that educators can consider. Besides the NEP, educators can leverage on Web 2.0 technologies in teaching and learning. Web 2.0 pervasiveness in teaching and learning triggers the idea to constructively harness and integrate the technology-enhanced support system into informal learning to develop individual spirituality. Web pages are no longer static, but have evolved into second generation of web technologies that spur the creation of dynamic interactive online communities with shareable content and social media. Web 2.0 or social computing is an umbrella term encompassing several new web technologies, such as blogs, real simple syndication (RSS), wikis, mashups and many others (Murugesan, 2007). Using Web 2.0, user can generate own content, share content with others, consume others content, as well as able to interact and collaborate with each other in the learning process. With freedom of time and space, Web 2.0 can enhance learning through active learning (where students bear the responsibility of learning and are very much engaged in the learning activities), collaboration and interaction. According to Geith (2008), Web 2.0 and open educational resources (OER) have created abundance of

resources and structures, which enable a rich environment to support individual personalized learning. He further elaborated the rich environment to be an environment whereby learner define and achieve their learning goals; learning where "learners" and "teachers" no longer face a scarcity of expertise and a scarcity of learning resources; and learning where learners are free to choose and co-create their resources and support services. Learners who endure in this environment tend to be self-directed autonomous learner. An in-depth studies conducted by Redecker et al., (2009), reported that based on current practices, Web 2.0 tools used as scaffolds have core impact in supporting, facilitating, improving learning and knowledge transformation. As educators, we should leverage these technologies in educational applications.

The distinctive feature of this research is exploratory on the needs-based design and the developmental approach of Web 2.0 technologies that considers a technology and religious perspective to foster individual student's spiritual dimension. This techno-religious research finds religion, and technology is undeniable partners in the 21st century world (Susan George, 2006). Techno-religious is concerned with the use of technologies on religious as well as spiritual practices. The explored synergy between both technology and religion means that religion could be impacted by technology, both directly and indirectly. The focus of this study is on the indirect impact in providing a new expression of education and a new channel of communication for inherently spiritual activities. IT in the context of this study is viewed as an important tool or means to facilitate change and to stream motivation.

Hence, the main problem to be tackled in this research is to find a proper integration of Web 2.0 technologies with sound principles of religious pedagogy that is useful to inculcate spiritual intelligence among university students.

1.4 Research Objectives & Research Questions

The research objectives are the goals to be achieved through the research. The main purpose of this study is to explore the development of students' spirituality through a space for personal spiritual pursuits.

This research is undertaken to support the following objectives:

(i) To understand the spirituality needs of Muslim students.

(ii) To explore the capabilities of information technology (IT) as a tool for spiritual enlightenment.

(iii) To design a techno-religious framework for spiritual development that will be the basis for the development of a spiritual reflective space or system.

(iv) To evaluate the meaningfulness of the spiritual reflective system in providing spiritual experience.

From the above stated problems, the following main research question is posed:

- How can information technology (IT) be utilized as a teaching and learning tool, to help cultivate university students' spiritual development?

A subsidiary set of questions are devised to enable exploration of the main research question.

1. What are the vital elements to cultivate spiritual development?
2. What are the ways that IT can offer to scaffold students with spiritual values?
3. What is the preferred learning space for students today?
4. What is the suitable pedagogy for learning spirituality?
5. What are the implications of information technology (IT) for meaningful spiritual experience?

A diagram presented in Figure 1.3 is to illustrate diagrammatically the research flow.

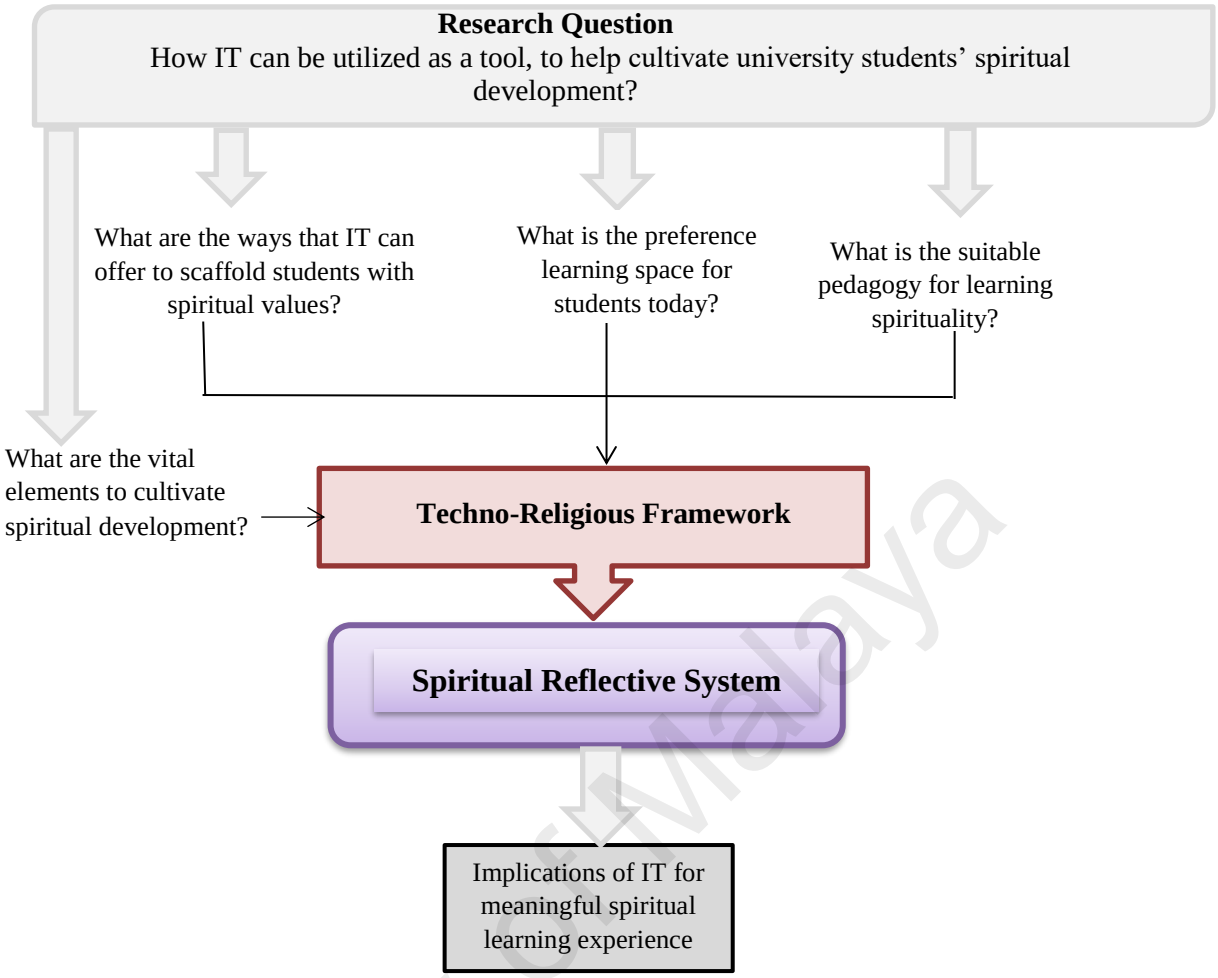

Figure 1.3: Research flow.

1.5 Scope and Limitations of the Study

The scope of the study includes investigations on the undergraduate Muslim students' educational processes at tertiary or university level. What education means here, will be based on the essence of a comprehensive or holistic approach to understanding the absolute truth; which is to enlighten and prepare students to their responsibilities in life and not just to earn a living in order to sustain life with a career. The study is conducted in full accordance with Islamic epistemology that emphasizes on knowledge (*'ilm*) and truth, with the main source guided by the Al-Quran and As-Sunnah, Islamic scholars writing, as well as authentic academic reference materials written by Western

scholars and non-Muslim scholars that do not conflict with the teachings of Islam. The learned Muslim scholars of the past, had divided knowledge into two kinds:

(i) the rational sciences (*al-`ulum al-`aqliyyah*) which is referred to as the intellectual sciences - is knowledge that arises from man's capacity for reason, sense perception and observation, and

(ii) (ii) the traditional sciences (*al-`ulum al-naqliyyah*) also referred to as revealed knowledge - is not knowledge that dispenses with the intellect but was devolved to man via Revelation (IbnKhaldun, 1971: chap. 6).

These rational sciences and traditional sciences will be integrated so that fard 'ayn or individual obligation (legal obligations that must be performed by each individual Muslim) and fard' kifayah or communal obligation (legal obligation that must be discharged by the Muslim community as a whole) are aligned.

As the case in all researches, there are limitations that need to be admitted and stated pertaining to this study. First, the study will only include undergraduate Muslim students at a faculty in University of Malaya, which may not be a true representation of general Muslim students' population throughout the whole campus, country or world. This is unavoidable as it is constrained by the duration of the study. It is however, reasonable to assume that the results are applicable to the university being studied. The samples were chosen at random. This randomization is expected to improve the external validity and thus would be an acceptable generalization. Second limitation concerns the multidisciplinary nature of this research. There is a minimal interaction and sharing of ideas between different disciplines of information technology, education, religion and spirituality that directly involved in this work. Muller et al. (2001) discussed and reflected the many ways that people had significant spiritual experiences during their work with and through technology. These spiritual online experiences were felt through visiting to a devotional website according to one's own faith, receiving email advices during period

of distress, getting spiritual comfort from chatting, joining e-discussion for spiritual boost and searching religious portal for spiritual information

1.6 Significance of the Study

This study has significant implications for inclusion of spiritual dimension towards holistic learning at university level through web-based technology. Holistic learning refers to the process of learning and teaching, which embraces the mind, the soul, the heart and the body. Therefore the purpose of this education is to develop all four following aspects; the intellectual, the spiritual, the emotional and the physical development. Effective Islamic teaching and learning must be integrated too. It must encompass and engage the whole person, spiritually, emotionally, socially, intellectually and physically. This unseen dimension is often over looked or neglected in almost every sphere of life, particularly in the educational sphere, which is an essential core of a person. Fostering spirituality in students using information technology as a result of IT awareness and its effects on our faith and spiritual lives, which provides an opportunity to engage and integrate them into learning in a way that tributes to God. The beneficiaries of this study would be at a micro level, whereas the students and lecturers would be at meso level of the university and at macro level of the society.

Three main types of outcomes are anticipated from this study, which are mainly theoretical, methodological and practical. Theoretical outcome includes theoretical and philosophical issues penetrating assumptions, preconceptions, and concepts. This research hopes to achieve deeper understanding in fostering spirituality and using technology to support the tertiary level learning process. The potential methodological outcomes include development of spiritual reflective system frameworks (SRS Framework), reflection tools and guidelines for lecturers and students for incorporating spirituality in learning. The practical outcomes would be initiation of change towards

ensuring that we are able to affirm, that it is the spiritual learning aspect that makes a difference in providing quality education.

1.7 Research Methodology

Reeves, et al. (2005) recommended design research as a better approach in conducting research on the effect of social computing in higher education. Vaishnavi and Kuechler (2004) pointed out that design research is a suitable approach in information systems research. Design research consists of a set of techniques to design and create artefacts in order to further understand, explain and enhance on certain particular behavior aspects of IS. The output of design research is the artefacts (i.e. system or program) which can includes models, methods, constructs, instantiations and better theories. The general design research methodology follows five major repeatable and iterative phases.

Phase 1: Awareness of problem

Design research starts with awareness of problem. As stated in the problem statement in the sections earlier, the problem is to find a proper integration of Web 2.0 technologies with sound principles of religious pedagogy that is appropriate to inculcate spiritual intelligence among university students.

Phase 2: Suggestion

A spiritual reflective system (SRS) is proposed to solve the current problem by designing a more student-centered platform using Web 2.0 technologies and applications to foster spiritual intelligence among students in an informal learning environment. However, before the design is proposed, a review of recent related literature on Web 2.0 and PLE has to be carried out and data on students' perception on spirituality have to be collected to assist in the design.

Phase 3: Development

The SRS is developed based on the proposed techno-religious framework. It would be a web-based platform that can incorporates Web 2.0 applications to encourage learner autonomy.

Phase 4: Evaluation

A SRS prototype should be available for evaluation by potential users (i.e. current undergraduate Muslim students at the faculty) to examine its effectiveness on learner autonomy being practiced. The result of evaluation is a form of feedback (circumscription) to be used in another phase of suggestion. The continuous improvement is done through iteration.

Phase 5: Conclusion

The result of this research should be able to contribute valuable knowledge in both education and technology domains.

1.8 Thesis Structure

This thesis comprise of six chapters.

Chapter 1 – Introduction

This chapter introduces the research work presented in this thesis. It describes the research background and explains the motivation for pursuing this work. The problem statement, the objectives, research questions, scope, significance and limitation of the study, and the definition of the terms used are discussed in this chapter. In addition, it provides an overview of the approach. Finally, it presents the organization of the thesis in Figure 1.4.

Chapter 2 - Literature Review

This chapter presents review of related literature, which is used as the foundation and reference related to this study. Three distinct sections on the current setting of university education, IT significance in teaching & learning and religion & spirituality are elaborated. This chapter concludes with techno-religious solution for fostering spiritual development at university.

Chapter 3 – Research Methodology

This chapter explains the instrument for research, the research design and justifies the overall research methodology employed in this research.

Chapter 4 – Techno-Religious Framework for Spiritual Development

This chapter describes the formulation of the framework that becomes the foundation to develop the spiritual reflective space or system.

Chapter 5 – Spiritual Reflective System Prototype Evaluation

This chapter describes the evaluation of the spiritual reflective system prototype developed based on the proposed techno-religious framework.

Chapter 6 – Discussion and Conclusion

This chapter presents the findings of this research and discussions on the findings. The findings are based on the data collected from the focus group session to evaluate students' acceptance towards the use of the spiritual reflective system. It concludes the thesis by discussing the overall contribution of the research in the context of related work in the area. In addition, it discusses the limitations of the approach and points to future research directions. The thesis closes with references and appendices.

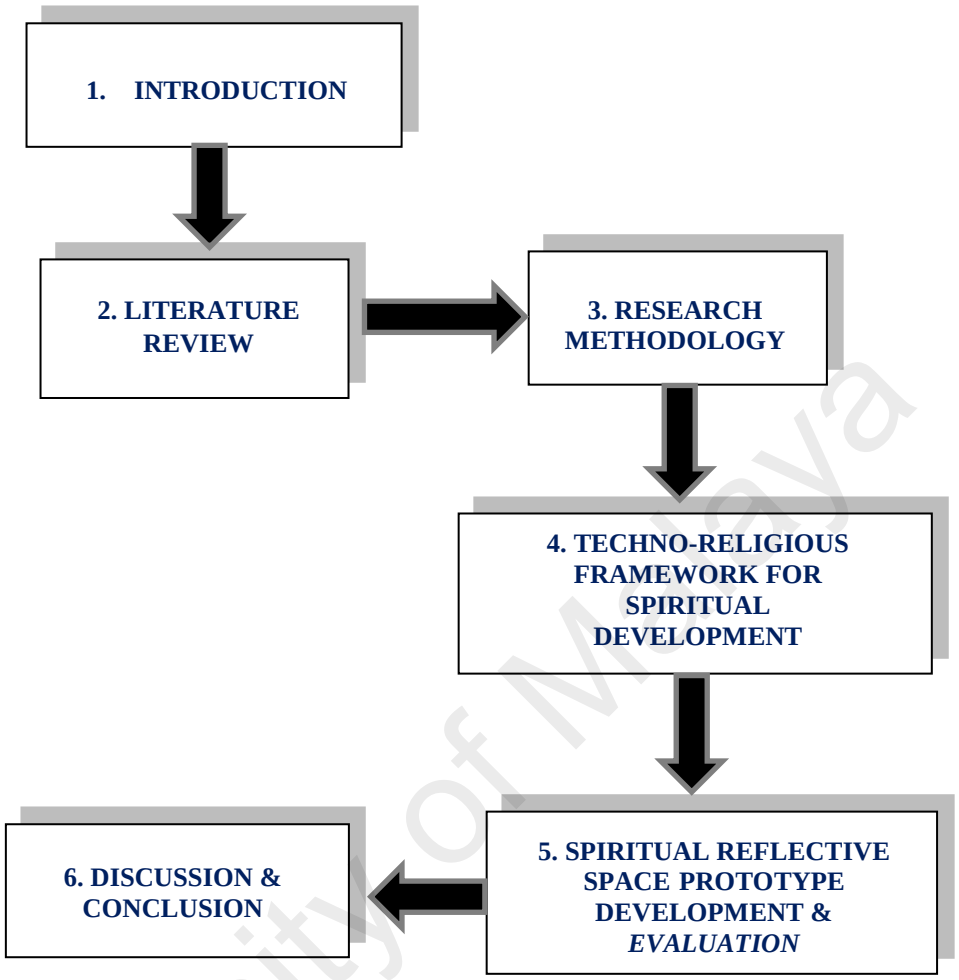

Figure 1.4: Thesis Organization

CHAPTER 2
LITERATURE REVIEW

Current relevant state-of-the-art about the context in which this research has taken place and the reasons for the focus of the research is presented in this literature review. This chapter presents the review of related literature that is focused on three main fields and relevant issues that influenced the undertaken research work. The three main fields are information technology / information system (technology perspective), holistic education at university level (educational perspective) and spiritual aspect of human development (spiritual and religious perspective). Otherwise stated, the education component is the context of the study, the religious & spiritual element is the content of the study and information technology is seen as a support tool in this research.

The first section of the literature review focuses on context of the study that focus on current setting of university education and model of education. The second section of the review investigates the tool part to discuss the significance of information technology. The third section concentrates on the content element, which is religious and spirituality. The last section touches the techno-religious aspect. This chapter ends with a conclusion implied by the reviewed done.

2.1 CONTEXT SECTION: CURRENT SETTING OF UNIVERSITY EDUCATION

2.1.1 Scenario of Higher Education in Malaysia

Higher education also referred to as tertiary education, is the third level education following the completion of a secondary school providing secondary education. The main agenda of the universities in this country today is producing graduates for the job market. Thus in a short period of study ranging from 3 to 4 years, the focus of the study sessions is directed towards the development of academic, technical and professional practice. In

this case, Professor Zaini Ujang acknowledged that the role of the university has now narrowed to only the graduation process and research as specified by Vest (2007). Zaini (2009) noticed that the universities are increasingly marginalized in the context of building a first class mind and a genuine enculturation of knowledge. According to him, the reason was that all the public higher education institutions is more focused on the development of academic programs that are relevant to the current situation, particularly in relation to demand in the job market. Employability, has been the chant that is annually repeated when it comes to determining how successful the Malaysian education system (Yoong et al. 2017). Diplomas are reduced to a paper chase for the purpose of seeking jobs and "being marketable" as dictated by the market. Otherwise, these graduates are labelled as "unemployable" and "incompetent", and thus the purposes of education in this matter according to Professor Tan Sri Dato 'Dzulkifli Abd Razak (former Vice Chancellor of USM) are fixated on "earnings" rather than "learning. He said this is the reality that we have seen and experienced for almost a decade now and urge that the education system to return to its real role. Diploma disease (Ronald Dore, 1976) which has infected by many “ready-to-market” university students must be treated immediately, otherwise the educational impotence will remain.

The next major focus of the universities is now directed to the ranking system. According to Professor Kamal Hassan (former rector, International Islamic University Malaysia), the passion of public universities to enter the international ranking system without taking into account the special mission of the nation, state or community will lead the universities to be plunged into a trap known as an "Excellence Without a Soul", which has become a reality at Harvard University in recent years (Harry Lewis, 2006).

Report by the Review, Make Recommendation on Growth and Direction of Malaysian Higher Education Committee (Wan M. Zahid, 2005), have noted that there are two conflicting schools of thought, the utilitarian and humanity and thus influence the

policy-makers about the goals of education. According to the utilitarian trend, the goal of higher education is to provide technocrats, bureaucrats, scientists, economists and professionals who are highly specialized, which is required by the job market, and consequently contribute to the nation economic, industrial and trade development. Conversely, the humanitarian is of the opinion that the goals of higher education is to produce a balanced development of human physical, intellectual, social, emotional and spiritual, who continuing to explore the development of human knowledge, humans who are loaded with values, and people who support national unity and integration. The Committee believed that both schools of thought are relevant and important, and thus should be integrated in the movement to increase the quality of Malaysia higher education. Current higher education are led by the utilitarian trend, as the value of higher education is often assessed strictly in utilitarian terms. Humanity trend are partially reflected in the NEP. According to Hutchison (2006), "intellectual decadence" in academic, has resulted from the denial of the existence of truth and virtue by today's modern universities and educational theories bankruptcy are among the causes of the increase in educational crisis. Hutchison (2006) believed the ideas that came from a false worldview has hindered the educational process and highlights seven educational theories that should be rejected. Among those listed include the sparking ideas of Jean Jacques Rousseau, Ralph Waldo Emerson, William James and John Dewey.

Each year, in terms of quantity, thousands of graduates are produced by the country's public universities. But what is often questionable is in terms of the graduates' quality. The Royal Professor Ungku Aziz said the students today are learned, but not educated. As an academician for many years, the author found that through her interaction and dealing with students, whether during the classes, whilst marking their assignments, tests and exams that many of them seem to lack the ability or motivation to go beyond factual knowledge to a deeper understanding of the course material. Indeed, they tend to

have difficulty in connecting the basic principles and concepts to their related essential applications. Much of what have been seen as the practice is surface learning, whereby most students tend to learn materials by rote to achieve good grades instead of meaningful (deep) learning that is tied, related and integrated to the previous learning. Most students have prioritized getting a good job and handsome living in the future as their main goal of education and therefore they strife getting good grades rather than good education. This prevalent misconception about the ultimate goal of education should be rectified accordingly in alignment with the NEP. Being educated, mean having thorough grounding that will prepare students intellectually, emotionally and spiritually to face the challenges of the twenty-first century world. Apart from what have been mentioned, students and local graduates nowadays lack the ability to think independently (as well as analytically, creatively and critically), confidence, teamwork ability, communication skills as well as not well-versed in English. They are also deficient in self-motivation to succeed in the complex, fast-paced global knowledge economy of the 21st century. Furthermore, besides all these, the student's attitude, effort and commitment towards studies have great influence on his/her process of learning efficiently and effectively.

2.1.2 Teaching and Learning at University Today

It is obvious that the most traditional and long established method of teaching is lecturing. This universal lecture method, in which the lecturers do almost all the talking and the students sit and listen passively in class, is still dominant as the method of instruction at Malaysian universities today. An extensive period of research indicates that lecturing has limited effectiveness in helping students (Fink, 2013, pg. 3-4):-

- Retain information after a course is over.
- Develop an ability to transfer knowledge to novel situation.
- Develop skill in thinking or problem solving.

- Achieve affective outcomes, such as motivation for additional learning or a change in attitude.

Interest in technology-enabled or in technology-coupled education is spreading in higher education. Multimedia, the web, streaming media, social network has influenced the way teaching and learning occurs today. As a result, the formal face-to-face learning in the classrooms is normally augmented with e-learning environment in many universities. A blended course is a combination of both face-to-face and online environments (Garrison and Kanuka, 2005). Blended learning is straightforward as it is the expansion of traditional face-to-face classroom education (synchronous) by augmenting it with internet-based learning experiences (asynchronous). The blend of face-to-face learning and LMS create what Negash and Wilcox (2008) classified as Type VI learning, which is also known as blended or hybrid learning. This approach to learning is attractive, particularly to students who are heavily influenced by IT and have developed new attitudes and aptitudes for learning and this is the current trend of learning in most of the higher learning institutions.

An e-learning environment is generally a virtual learning environment (VLE) that is an interface, which allows lecturers to place learning materials online and provides a range of tools for them to communicate and interact with students. Among the most popular open source and commercial Learning Content Management System (LCMS) are Moodle, Sakai, OLAT, BlackBoard, Desire2Learn, and LearningSpace. These applications offered common tools but with different degree of flexibility and completeness in specific aspects, such as role assignments, chats management, etc. (Martin-Blas & Serrano-Fernandez, 2009).

Common tool set offered by LCMS, as listed in Table 2.1 below are organizational tools, communication tools, content tools, student tools and activities tools. Recently free

open access social media such as Facebook, Twitter, LinkedIn, WordPress and Schoology has been rolled into LCMS.

Table 2.1: Tool set offered by the LCMS

Organizational tools	Calendar, Search, Syllabus
Communication Tools	Announcements, Chat, Discussions, Mail, Roster, Who's Online
Content Tools	Learning Modules, Local Content, Media Library, SCORM, Web Links
Student Activities	Assessments, Assignments, Goals
Student Tools	My Grades, My Progress, Notes

2.1.3 The Deployment of Moodle at University of Malaya

Moodle, an acronym for Modular Object-Oriented Dynamic Learning Environment has been deployed since 2008 to provide an organized interface for e-learning for all faculties in the university. Its main purpose is to support learning and complement the formal face-to-face teaching. Figure 2.1(a) & (b) below depict previous and latest courses available on the university e-learning Moodle-based platform named SPECTRUM. Most lecturers randomly interviewed, positively perceive SPECTRUM as a channel to increase communication and interaction with students, a space to supplement lecture materials with a variety of formats, an opportunity to increase or replace contact hours with students, and a means for students to be in touch with other course mates. Figures below portray the screen shots of SPECTRUM.

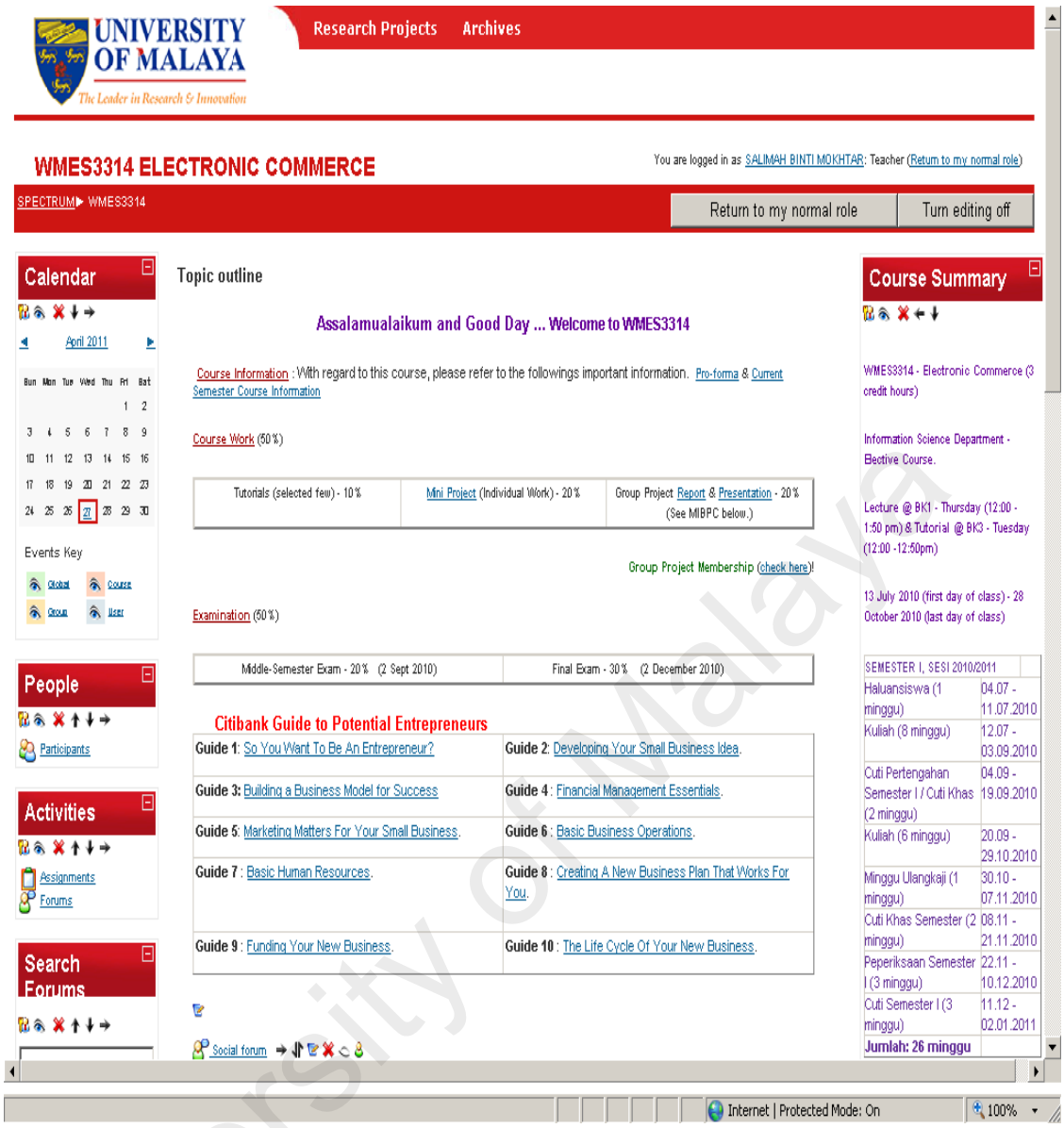

Figure 2.1(a): A screen shot of a course on SPECTRUM.

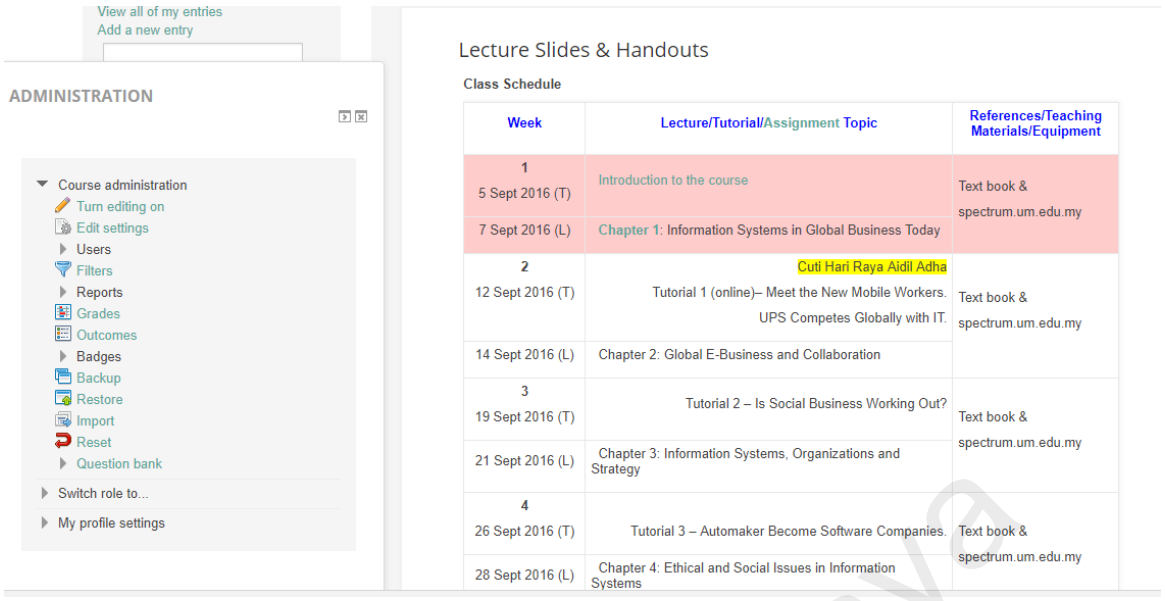

Figure 2.1(b): Screen shot of a newer course on SPECTRUM

The learning support system provided by SPECTRUM encompasses the following features:-

i. Administrative information on the course such as pro-forma, current semester course information, class schedule, the profile of lecturer's teaching the course, methods on course assessment and so on.

ii. Access to core and supplementary course materials and resources. The materials can be text documents, sound, graphic or video, spreadsheet, PowerPoint or any executable file. Spectrum normally presents lecture slides & class handouts, links to essential web resources & e-journals, FAQ's, examinations answer schemes, self-assessment quizzes, etc.

iii. Information sharing such as announcements, updates, reminders, course calendar, etc.

iv. Communication and interaction channels through the use of emails, forums, chat for getting to know course mates, academic discussion, feedback on students' work, queries.

v. Submission of student assignments electronically.

vi. Plagiarism Detector using *Turnitin* Application.

2.1.4 Students' Perceptions on SPECTRUM

SPECTRUM being an integral part to enhance University Malaya's traditional teaching system does somehow bring about a few qualities that may contribute to a meaningful experience for reception students learning. In instructor-centric reception learning which the opposite of active learning is, the facts to be learned are presented to the learner (normally passive listener) in a well-organized manner (Ausubel, 1978). Novak and Gowin (1984) argued that both rote and meaningful learning may be achieved no matter what instructional strategy is used, but most importantly for meaningful learning to take place is how the newly learnt materials are integrated into the student's existing knowledge structure. One way to find out whether students find the SPECTRUM is useful and their learning is meaningful is through a survey. Their feedback is important for lecturers to improve the usage of SPECTRUM. A general survey was done on 38 students who were registered for the e-Commerce course shown on the previous figure 2.1(a). Table 2.2 summarizes students' perception about SPECTRUM:

Table 2.2: Students' Survey Opinions on SPECTRUM

Like factors on SPECTRUM	Dislike factors on SPECTRUM
Complete course file with all course-related information stored at one place (depending on the lecturer's initiative).	Lack of personalized timeliness feedback on students' progress.
Lecture materials & handouts are available online before class (some cases after class).	Guidance or elaboration to guide in project and report preparation is appreciated.
Supplement of course materials are in a wide variety of format.	Rubric on how assessment and evaluation of course work is carried out should be transparent.
Useful web links related to the course are sometimes provided.	Suggestion that urgent announcement to be sent to through SMS or WA instead of email.

Increase contact and communication between lecturer and students.	Suggestion that any class replacement to be replaced with video-based lecture.
Students get to know course mates easily by looking at the class list available online.	Lack sharing of tacit knowledge. Mostly explicit knowledge.
Increase students to students' interaction.	Textbook to be available in e-book format.
FAQ's on course related issue.	Need space for counselling and motivation too. Spectrum is too formal.
Study tips on exam.	

Most students prefer guided learning that is reception learning as opposed to discovery learning such as problem-based learning, which they had experienced at the faculty in the late 1990s (Salimah & Zaitun, 2003). These findings suggest that SPECTRUM should provide e-supports and e-guidance to increase the quality of students learning experience. The enhancement steps, which can improve the SPECTRUM, includes rethinking the learning and teaching approach to deliver effective meaningful learning and providing support to students. Modelling, coaching and scaffolding are among three major roles for facilitators to support students learning as identified by Jonassen (1999). In this study, the focus will be on scaffolding.

The first step in rethinking the teaching approach is to analyze the Learning Context Model (LCM), proposed by Tankeleviciene & Damasevicius (2009) that can facilitate the development of more useful and context-aware learning systems. Table 2.3 describes the aspects in the LCM.

Table 2.3: Levels and aspects of e-learning contextualization.
[Reprinted from Tankeleviciene & Damasevicius (2009), pg. 646]

Level	Aspect	Possible variants
Technological	Hardware	Desktop computer, handheld, mobile phone, interactive board.
	Networking	Availability, bandwidth, stability, connection/transfer price.
	Software	Virtual learning environment for delivering DSC, standard software (such as MS PowerPoint)
	User interface	Textual, graphical, web-based, 3D.
Pedagogical	Learning theory	1) **Behaviourism:** based on training with impact to behaviour; 2) **Cognitivism:** based on analysis and change of processes of thinking; 3) **Constructivism:** oriented to "guiding" students rather than "teaching".
	Instructional strategy	1) **Adult learning:** based on principles, defining how adults acquire new knowledge and skills; 2) **Active learning:** emphasizes active participation of students, instructions must match learner's interests; 3) **Blended learning:** covers different strategies; 4) **Collaborative learning:** based on collaborative work in groups; 5) **Direct instruction:** lecturer-centred instruction which includes lectures, presentations, and receiving rapid feedback; 6) **Drill:** based on practice by repetition; 7) **Problem based learning:** based on solving authentic problems.
E-Learning methodology	Delivery models (time aspect)	1) **Synchronous:** learning activities take place at specific times; 2) **Asynchronous:** learners can access study material and activities at any time; 3) **Self-study:** independent according to time aspect, there is no instructor.
	Delivery models	1) **Self-study:** based on students' workload; 2) **Instructor-led:** based on instructions, provided by lecturer; 3) **Instructor-facilitated:** based on student learning, guided and supported by instructor activities.
	Delivery models (dependence on content)	1) **Content + support:** content is predefined and structured, support is separated from content; 2) **Wrap around:** content is partially predefined. Learners have more freedom and responsibility; 3) **Integrated model:** Content is mostly developed or gathered during learning process by learners.
	E-learning forms	1) With physical presence and without e-communication (**face-to-face**); 2) Without

		presence and without e-communication (**self-learning**); 3) Without presence and with e-communication (**asynchronous**); 4) With virtual presence and with e-communication (**synchronous**); 5) With occasional presence and with e-communication (**blended/hybrid-asynchronous**); 6) With presence and with e-communication (**blended/hybrid-synchronous**).
	Interactivity level	1) **Passive** – not responding to the actions of learner; 2) **Reactive** – responsive only to the last action of user; 3) **Interactive** – responsive to the some previous actions.
Organizational	Studies type (formality)	1) **Formal learning** occurs in an organised environment, and leads to accredited certification; 2) **Informal learning** occurs during daily life activities.
Psychological	Motivation / Stress	1) Low; 2) Medium; 3) High.
	Preferred senses	1) Visual learner; 2) Auditory learner; 3) Kinaesthetic learner.
	Learning style (Kolb's styles)	1) **Activist:** prefers hands-on case studies and simulations; 2) **Reflector:** prefers lectures and then brainstorming; 3) **Theorist:** prefers conceptual readings; 4) **Pragmatist:** prefers field work in the workplace.
	Myers-Brigg types	1) **Attitudes:** extraversion / introversion; 2) **Lifestyle:** judgment / perception; 3) **Functions:** sensing / intuition and thinking / feeling.
Subject domain	Structured-ness	1) Well structured; 2) Ill-structured.
	Didactics	Didactical requirements and methodologies for specific subject areas are different.
Course	The main aims of learning	1) To acquire new knowledge; 2) To acquire practical abilities; 3) To change attitudes, viewpoints, feelings; 4) To acquire transferable abilities (critical thinking, etc.).
	Previous experience	Differences exist in matching previous knowledge and abilities of student and the required knowledge and abilities in particular course.

Lecturers need to be aware of all the twenty aspects, with more consideration to pedagogical and psychological aspects in order to provide rich learning experience and personal learning environments for students.

Scaffolding refers to types of aid provided by instructors to support leaning. Dodge (2000) defined the term as “a temporary structure which provides help at specific points in the learning process." He indicated that scaffolding assist learners to complete a difficult task which they would not be able to accomplish alone without help. Scaffolding usage in the learning process is not only to accomplish the tasks, but also to gain knowledge from the experience. There are many types of scaffold. Table 2.4 presents some particular ways in which in class and online scaffold can be used by students throughout a learning experience.

Table 2.4: Types of Instructional Scaffolds (Greg Sherman, 2004)

Scaffold Type	Description	Common In-Class Examples	Technology-Supported Examples
Procedural	Procedural or functional scaffolds provide guidance on how to utilize instructional resources and tools.	“How-To” Sheets Tutors Introductory remarks and examples from the instructor Well-written instructions	Guided Tours Maps and Overview Diagrams Tables of Content Search Engines Tutorials Well-written instructions
Process	Process scaffolds help learners figure out where they are within an instructional experience. They also help learners figure out what they need to do to get where they want to go within an instructional experience.	"Big Picture" review Daily introduction Daily closure activities	History of user path throughout program or website Explicit directions for navigating the program or website Clear menu structures Site maps Identification of links travelled.
Conceptual	Conceptual scaffolds provide guidance over what the learners should consider or reflect upon throughout the learning experience.	Benchmark lesson(s) facilitated by an instructor Study questions Advance organizers	Course Concept Maps and "Big Pictures" Moderated chat experiences Moderated discussion groups

Meta-cognitive: Planning	Meta-cognitive scaffolds represent mechanisms for learners to receive guidance on how to best think about problem(s) under study. Planning scaffolds allow students to set goals and objectives, chart benchmarks and deadlines for projects, create concept maps, etc.	Organizational schemes ["Activities & Materials," "In-Progress," and "Completed" folders]	Concept mapping software
Meta-cognitive: Regulating	Regulating scaffolds help students monitor their progress and receive feedback on their performance	Individual mentoring Peer tutoring Teacher modelling	Computer quizzes Interactive practice exercises
Meta-cognitive: Evaluating	Evaluating scaffolds allow students to critique one another's work, exchange documents to-from the instructor for revising, etc.	Rubrics and checklists "In" box for reviewing work-in-progress	Rubrics and checklists E-mail with attached documents
Strategic	Strategic scaffolds help learners figure out various approaches to solving problems.	Small group Mini-lessons Textbook assignments Hints and examples	Open chats Open discussion groups and forums Hints
Interpersonal	Interpersonal scaffolds provide guidance for facilitating constructive collaboration and interpersonal interactions.	Specific roles assignments Modelling/examples provided Interaction debriefing	Specific role assignments Modelling/examples provided Mediated discussion and chat environments

The focus of this study is towards online scaffolding.

Students' meaningful learning experience can also be gained following the Effective Lifelong Learning Inventory (ELLI) seven learning dimension (Crick,2006):

i. *Changing and learning* - a sense of oneself as someone who transform over time.

ii. *Critical curiosity* – an orientation to be active rather than passive.

iii. *Meaning making* – building connections about what is learn and what is happening in live.

iv. *Creativity* – able to imagine and innovate.

v. *Learning interdependence* – appreciate social learning.

vi. *Strategic awareness* – being aware of one's thoughts, feelings and actions as a learner and able to use that awareness to plan and manage learning processes.

vii. *Resilience* – endure in the development of one's own learning power and welcome challenges.

Claxton's *Building Learning Power* (2002) dealt with the practical application of his ideas. In it, he introduces four 'Rs', which he identified as:

- **Resilience**: 'being ready, willing and able to lock on to learning'. Being able to stick with difficulty and cope with feelings such as fear and frustration.
- **Resourcefulness**: 'being ready, willing and able to learn in different ways'. Having a variety of learning strategies and knowing when to use them.
- **Reflection**: 'being ready, willing and able to become more strategic about learning'. Getting to know our own strengths and weaknesses.

LCM, scaffolding and ELLI are some useful elements that should be considered to be included in the techno-religious framework.

2.1.5 Millennial Students

Generational issues also play a role in education. The digital revolution has ushered in a generation shaped by the integration of technology into everyday life. The majority of students who attend universities today are from the Millennials generation. The Millennials is the term used by demographers to describe a segment of the population who was born between 1982 and 2002 (Howe & Strauss, 2000). They are also known as the Digital Natives (Prensky, 2001), Generation Y (Lancaster, 2003), the Net Generation

(Oblinger & Oblinger, 2005) and Screenagers (Rushkoff, 2006). They are technology savvy young people that see technology as simply a tool for getting things done and to facilitate relationships. Howe and Strauss characterized them as follows:

- Experiential and discovery learning, rather than being told.
- Short attention span and able to shift their attention rapidly from one task to another and may choose not to pay attention to things that do not interest them – attentional deployment.
- Multitasking and are comfortable when engaged in multiple activities simultaneously.
- Staying connected and they want a fast response time.

Teaching and learning for these students differs from the older generation who treated instructors or educators as authority figures. The Boomers and Generation X being their educators are most comfortable with lecture-oriented, text-heavy and PowerPoint-centric lecturing formats, whereby the courses tend to be linear with lots of structure, a clear beginning and ending. On the contrast, students today are generation Z or also known as Digital Natives (born: 1995-2010) comprise the dominant cohort of students' currently entering university (Seemiller and Grace, 2016). As characterized by Seemiller and Grace, Digital Natives are comfortable with technology and embraced it almost universally, except they may need supervision in how to filter, categorize, and blend information with assistance in avoiding overload, checking accuracy, and assessing information. They bring both challenges and opportunities for the future of higher education.

Kathleen and Eric (2017), encourage university lecturers to understand more about their students and their values. Lecturers should make their major assignments valuable and appeal to students. Besides these, lecturers may want to check the way their

planned educational experiences and motivate them as beneficial to students and their futures.

2.1.6 Higher Education Age Group

Learning time at university is a crucial moment for students to discover themselves by exploring the meaning in life and examine their spiritual beliefs and values. In fact students should be the one in search of meaning, valuing education and developing self-knowledge and life skills. The more they have these qualities, the more they can take responsibility for their own learning. The higher education age group is between 18 to 24 years old are in the life stage categories of late adolescence and early adulthood (Newman and Newman, 2003). The table 2.5 describes several areas of development for this age group.

Table 2.5: Areas of Adolescent Development (Tracey L. Hurd, 2005)

Area of Development	Late Adolescence (age 18 to 22) → Early Adulthood (22 to 34)
Physical Growth	• Achieves full physical development. • Gains more assurance about body image. • Engages in sexual activity; more likely to be partnered. • Learns to manage stress and maintain health.
Cognitive, Intellectual Development	• Particularly open to learning; a time ripe for formal / informal education. • Expresses ideas with more linguistic skill. • May see many points of view and may claim multiple realities as the truth (relativism). • May claim self as a "producer" of knowledge (not just a consumer).
Social, Affective Development	• Increases self-reliance. • Develops sense of identity and intimacy. • Expresses interest in vocational and personal life choices. • Brings to realization sexual identity of self. • Makes choices (either explicitly or not) to claim sexual identity. • While relationships with peers are still important, they do not define the self. • May feel pressures to claim racial/ethnic identity in different spheres. • May reject alliances based solely on race. • Negotiates more knowledgably racism as a system of privilege and oppression.

	• Needs involvement with diverse peers to continue healthy racial and ethnic identity development.
Moral development	• Wrestles with personal morality and life choices. • Expresses interest in moral and philosophical thinking, for self and wider world.
Spiritual, Religious, Faith Development	• Claims authority around issues of faith. • Further develops spirituality as an important part of self. • Engages in "faith" beyond traditional organized religion. • Considers the role of faith in identity. • Main questions: Who am I? Where do I come from? Where am I going?

During this transition into early adulthood, as the adolescent students seek to establish their individual identity, they attempt to find meaning in their lives. They tend to think about intangible things like beliefs, trust, faith and spirituality, they reflect on their thought, feelings, experience and concern about existential questions such as "Who am I?; Where do I come from?; What am I made of?; Where am I going?", as pointed out by Gardner (2000). These questions are of spiritual nature and signal the awakening of spiritual awareness among students (O'Murchu, 1999). In a study done by Austin et al. (2010), the group of researchers discovered that students' level of spiritual quest, or seeking meaning and purpose in life, rose during college. A priori knowledge (rational knowledge) and a posteriori knowledge (empirical knowledge) are not capable of answering such questions. Religion according to Islamic view is the ultimate criteria of truth that can answer all these questions that cannot be answer by the minds of philosophers nor senses of the scientist.

2.1.7 Model of Education

- **Knowledge Taught in Universities**

University education rejoices the spirit of the mind. Academic specialists teach and research in an environment that honours objectivity and rationality in the pursuit of truth (Groen & Jacob, 2006). The branch of knowledge taught and researched at the

university level is known as academic discipline or disciplinary knowledge. Disciplinary knowledge can be multi-disciplinary, inter-disciplinary, trans-disciplinary, or cross-disciplinary. Multi-disciplinary refers to knowledge associated with more than one existing academic discipline or profession. Inter-disciplinary refers to new knowledge extensions that exist between or beyond existing academic disciplines or professions. Trans-disciplinary refers to knowledge that exists in every individual, thus eliminating the need for discipline boundaries. Cross-disciplinary refers to knowledge that explains aspects of one discipline in terms of another. For instance, information systems (IS), as an academic discipline, is tied to the use of information and communications technology in organizations (Davis, 2006). The domain of information systems can be described as:

- The core knowledge that is fundamental to information systems in organizations. This core knowledge includes modelling of organization transactions and behaviours, modelling of data and design of databases, and systems concepts (including socio-technical systems).
- Knowledge of the activities, operations and management of the information systems function. The activities assume understanding of communications and information processing technologies.
- Knowledge of the applications and services provided to individuals, groups, and functions in the organization. This domain is shared with the users of the applications and services.

Two critical features of Information Systems as an academic field today are its organizational context and its international orientation.

The knowledge and skills that graduates for undergraduate degree program in Information Systems are expected to have can be divided into three categories (IS 2010 curriculum guidelines):

1. Information Systems Specific Knowledge and Skills

2. Foundational Knowledge and Skills

3. Knowledge and Skills Related to Domain Fundamentals

Western Model of Education: Education for Career

The Western model of education has now become a global standard for education. The Western influence in the Asian higher education system came through the colonization process (Altbach, 1989). The colonialist brought in the western and modern influence in education and in social life through science and technological advancement to this region. A variation of the Western university model predominates all universities in the world. Altbach (1989) stated that the faculty-based medieval University of Paris is the basic academic framework. The Western education model is a total secular system that separate life and religion and emphasize on materialism and reasoning from intellectual and social dimension. Spiritual dimension, morality and character building and revealed knowledge are disregard in the curriculum. As agreed by Miller (2002) where an emphasis on spiritual dimension is quite rare to be given attention in education. Zhang (2015) explains, "There is no way to educate without including the whole person. Yet there is no 'whole person' without the spirituality." An education for the whole person requires that instructors attend to all developmental domains including the social, emotional, physical, and spiritual.

Abu Bakar and Abdullah (2015) in their paper pointed that western education acts as an engine for individual and nation development, that prioritize on the importance of knowledge in science, technology and business. The shortcoming of this secular system has to do with the authenticity of the main source, method and the aims of education. Western education generally depend on human reasoning, logical thinking, sheer observation, experimentation and investigation through theories or practice. According to Hashim (2004), "the modern secular system does not consider the relationship between

God and the human being as intellectually or socially relevance, hence revelation or the revealed knowledge is not regarded as a source of knowledge, they are ignored". Disregarding revealed knowledge has caused the western tradition unable to find an established foundation to lay its aims of education. A study by Zainulabideen (n.d.), on the evolution of Western educational thought presents "a picture of reactionism: each new solution immediately begs a corresponding new problem, and always threatens to bring the older edifice down". The exclusion of direction from the revealed knowledge and ignoring the spiritual dimension has caused the western educational model to constantly, become the subject to changes, corrections and improvements. The main interest for modern universities today is to equip their graduates with a wide variety of skills required for the global job market.

Islamic Model of Education: Education for Transformation

In Islam, the goal of education is to equip students with knowledge about this world and the next world and to lead "each individual and society as a whole, to the Ultimate Truth" (Ali, 1987, p36). For this world, one needs through reasoning and logic to acquire intellectual or academic knowledge and for the next world one needs to develop spiritual knowledge derived from divine revelation. Islam view that provision in education must be made equally for both. The role of Islamic education is perceived as giving meaning to life and enriching it, instilling discipline and preserving human values, and strengthening and advancing human societies. These perceptions contribute to enhanced expectations of Muslim learners and communities from educational institutions and leaders. The nature of knowledge (revealed and acquired) and its contribution towards individual's holistic development are some such elements that shape the approach, and determine the role of knowledge and the knowledge-givers. The stress on seeking and acquiring knowledge is one of the basic tenets of Islam (Al-Bukhari, vol. 1), emphasising

that only those who have knowledge 'tread the path of righteousness (taqwa)' (Qur'an 35:28), and it is linked to elevated status. Righteousness is attained through knowledge and by application of that knowledge to every aspect of life. The aim of education in Islam is to prepare human beings for leading a life of 'righteousness' in a social context which underpins relevant conceptualisations on educational sites.

In Islam, education is for the holistic development, and religion is not a mere set of moral principles, but a complete system encompassing and integrating the political, social and economic, as well as personal, moral and spiritual aspects of life (Dabashi,1993, p. 439; Maududi, 1980; Nasr, 1985). Learning and knowledge are not a matter of individual choice or priority, determined by personal needs or market forces. It is a duty imposed by God and defined as the path to 'righteousness' (Tibawi, 1972; Al-Attas, 1979; Ashraf, 1995). Seeking knowledge is jihad, an effort in the way of God (Al-Bukhari, vol. 1), aiming at the development of the individual as a whole being so that s/he acts for the sake of God: If any do deeds of righteousness, be they male or female, and have faith, they will enter paradise (Qur'an 4:124). Acquiring knowledge is intended as a means to stimulate a more elevated moral and spiritual consciousness, leading to faith and righteous action.

2.1.8 Analysis of Students' Needs

Some thoughtful discovery was made based on the author's observation, opinion survey and review of literature analysis done in this section. Firstly, although students prefer guided learning, they should also be exposed to independent learning. Independent learning is important in higher education; students need to be self-directed and self-determined learners. Secondly, not only their mind should be developed with academic knowledge which stress on building knowledge, skills and attitudes for the mind to be literate, but also their soul. Religious knowledge and spiritual values are important for

soul development so that the heart becomes literate. Heart literacy is about knowing the value beyond something and this is the essence of holistic education. Astin (2004) noted the need for balance education that devotes to the exterior and interior aspects of learners and lives. He stated that, "*while we are justifiably proud of our "outer" development in fields such as science, medicine, technology, and commerce, we have increasingly come to neglect our "inner" development the sphere of values and beliefs, emotional maturity, moral development, spirituality, and self-understanding."*

UCLA (rank 14, THE World University Rankings 2016-17), being aware of the importance of spirituality in higher education was awarded a $1.9 million grant by the Templeton Foundation to its Higher Education Research Institute. This grant is to support a large-scale longitudinal study of spiritual development in college undergraduates.

Thirdly, students should have common space as well as personalized learning space, either with or without the support of technology. This learning space can support their lifelong learning with no binding to any programs or universities. Blended learning and blended spaces are necessary in today's learning and teaching environment. This personalization of students' learning space can act as repositories or future place of reference for their personal development and reflection from previous learnings.

2.2 TOOL SECTION: INFORMATION TECHNOLOGY (IT) SIGNIFICANCE

2.2.1 Diffusion of Information Technology in Society

Advances in information technology has led to a phenomenon which wipe out the boundaries of space and time, has now pervades all aspects of life that delivers all kinds of e-facilities as a universal solution. For many of us today on-line life is an essential part of us. We communicate on-line, study and research on-line, get services on-line, find entertainments on-line, shop on-line, vote on-line and do many other activities that bring

values such as convenience, support, flexibility and dependability on-line. The expectation of the nation is to be able to work, learn, and study whenever and wherever they want to.

IT, which is by right, should be regarded as necessity tools, is the key technology in the information age today that has changed and transformed our culture and life styles. Together with the emergence of these tools came along with them many forms of challenges including personal abuse and misuse of technology.

Information Technology (IT) and Information System (IS) are being diffused, used and adopted within society. In modern society, IT has become prevalent in the daily home lives of many people in forms such as social networking and participation in virtual worlds, e-commerce, e-government, e-learning, e-health and e-working. The penetration and diffusion of IT and IS in all facets of our lives and doings today has brought about a revolution, transformation, challenges and issues in our society. The "IT-ization" effects and on-line influences has opened new avenues both positive and negative very much depend on the IT adoption intention. IT has brought unique capabilities to learning and has altered the learning spaces. E-learning, learning that is facilitated by any electronic means is one of the prominent tools that emerged from IT that has brought significant changes to education. A subcategory of e-learning, which is online learning, is defined by Ally (2004) 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.5). Larsen and Vincent-Lancrin (2005) demonstrated that technology has had a tremendous impact on higher education. Collecting, analyzing, displaying, and disseminating knowledge typically involves IT. Retrieving information has become an IT function; students consider the Internet, not the library, their information universe. Moreover, rather than trying to know everything, students and

faculty rely on networks of peers and databases of information. Despite the e-learning challenges, students and instructors in Malaysia today leveraged on the benefits and potentials of e-learning and have accepted it as one of the practical delivery modes of learning (Anuwar, 2004). Successful implementation of e-learning is dependent on the extent to which the needs and concerns of the stakeholder groups which encompass students, instructors, educational institutions, content providers, technology providers and employers involved are addressed (Wagner et al., 2008). E-learning has evolved rapidly in the last few years enabled by significant growth and remarkable advancement in instructional technology. Gonella and Panto (2008), in their paper on didactic architectures, have traced the following four stages in the evolution of e-learning: Web-based Training → E-learning 1.0 → Online Education → E-learning 2.0. The conventional e-learning approach emphasizes a learning system more than a learning environment. While traditional e-learning systems continue to be significant in many universities programs to support and transform the teaching and learning process according to different pedagogic approaches, there is a new set of services emerging, embracing the philosophy of Web 2.0 to bring into being what is known as e-learning 2.0. It views online learning tools as a platform and not a medium and are transforming teaching and learning through what has become known as Personalized Learning Environments (PLE's), an IT-rich learning spaces. Personalization is the process of making a generic content specific to the requirements and traits of the user. Attwell (2007) anticipated that personal learning is the future of e-learning as more people create their own personal learning environments.

2.2.2 Information Technology (IT) Capabilities

A good way to understand IT is to consider the entire uses of digital technology that already exist to help individuals, groups, businesses and organizations to improve

their performance. Lee and Lim (2005) provide the mapping of IT functionalities, its benefits and examples of application systems, as shown in Table 2.6.

Table 2.6: IT Capabilities (Lee and Lim, 2005)

IT Functionalities	Organizational Benefits	Application System Examples
Analytical	IT can bring complex analytical methods to bear on a process (Davenport and Short 1990) through proper information technologies (Sambamurthy et al.2003).	Customer Relationship Management (CRM), Decision Support Systems (DSS), Executive Support Systems (ESS).
Automation	IT can replace or reduce human labor in a process (Davenport and Short 1990) by supporting procedural activities not requiring alternative choices (Zmud 1983).	Accounting Systems, Inventory Management Systems, Office Automation (OA), Transaction Processing Systems (TPS)
Collaboration	IT can enable organizational members to engage in collaborative activities (Keen 1991) through the ability to coordinate and support organizational co-works (Watson-Manheim and Belanger 2002).	Application Sharing Systems, Electronic Document Management Systems, Group Decision Support Systems (GDSS), Virtual Learning Systems, Whiteboard
Communication	IT allows organizational members to communicate with each other via different media, usually computer-mediated communication channels (Born 2002; Watson-Manheim and Belanger 2002).	E-Mail, Internet Chatting Systems, Group Support Systems (GSS), Video Conference Systems, Voice Mail
Control	IT can ensure security of the organization's data (Born 2002) and give the capability for the organization to protect its IT assets as well as information assets from external or internal computer or Internet abuse (Lee and Lee 2002).	DB Security Systems, Firewall, Monitoring Systems, Network Security Systems
Disintermediation	IT can be used to connect two parties within a process that would otherwise be communicated through an intermediary (Davenport and Short 1990).	CRM, Electronic Data Interchange (EDI), Enterprise Resource Planning (ERP), Product Data Management (PDM), Supply Chain Management

		(SCM).
Geographical	IT can transfer information with rapidity and ease across large distances, making processes independent of geography (Davenport and Short 1990; Keen 1991; Teo et al. 1997)	Automatic Tele Machine (ATM), EDI, File Transfer Systems, Networking Systems, Point of Sales (POS)
Informational	IT can bring vast amounts of detailed information into a process (Davenport and Short 1990).	Database (DB), Data Warehouse Systems (DWS), DSS, ESS, File Server Systems, Intranet
Knowledge Creation	IT can help employees, especially knowledge workers, to create knowledge by analyzing or combining the existing data and information (Alavi and Leidner 2001; Laudon and Laudon 2004).	AI Systems, Data Mining Systems (DMS), DSS, Expert Systems, Market Analysis & Sales Forecasting Systems, Text Mining Systems
Knowledge Storing	IT allows the storage of explicit knowledge and expertise through knowledge filtering and codification (Alavi and Leidner 2001; Davenport and Short 1990).	Enterprise Knowledge Repository (EKR), Knowledge Retrieval System, Knowledge Worker Systems (KWS)
Knowledge Distribution	IT allows the dissemination of explicit knowledge and expertise stored in an organization to improve business processes (Alavi and Leidner 2001; Davenport and Short 1990).	Intranet, Office Systems, KWS
Routinization	IT can transform unstructured processes into routinized transactions (Davenport and Short 1990).	Information Reporting Systems (IRS), Management Information Systems (MIS), Production Planning Systems, Use-Case Tools
Tracking	IT allows the detailed tracking of task status, inputs, and outputs (Davenport and Short 1990).	ERP, MIS, Monitoring Systems, Production Management Systems (PMS)
Work Flow Management	IT can enable management of the sequence of tasks in a process, optimizing process flow by allowing multiple tasks to be worked on simultaneously (Davenport and Short 1990; Nambisan 2003).	Electronic Signature Systems, Groupware, Workflow & Scheduling Systems

The existing IT capabilities can be utilized to generate new capabilities for e-learning purposes.

2.2.3 Technology Transforming Education

The Internet along with related learning also known as education technologies is often portrayed as a solution for educational and societal issues. However, in order to treat the technology as a remedy, we need to understand how to use it in order to exploit its full potential in a positive manner as a tool for understanding that rewards personalized and satisfying learning experience. This could be achieved, as advanced by Laurillard (2008), through relating the needs and requirements of education, and the capability of technology to meet them; that is to match what students might need with what the technology has to offer. An essential requirement is to understand the students and the aspects of the Internet or technology that can support their learning needs. An unfortunate trap to avoid is the transformation of existing material and practices into alternative medium, with no or little gain. Several studies found that there is convincing evidence that information technologies can:

(i) enhance learning when pedagogy is sound, and when there is good match of technology, techniques and objectives (Kadiyala and Crynes, 2000);

(ii) enhances students' perceptions of their learning (Carbonaro, et al, 2008);

(iii) enable personalized learning (Atkins et al. 2010);

(iv) facilitate better learning by providing supplemental materials in multiple forms (Shams & Seitz, 2008) and

(v) cause the rise of social media for informal learning (Sato et al., 2013).

Vance (2011) concluded that technology is now accepted as a key driver for both efficiency and effectiveness in the learning space. Stephen Gilfus, the president and CEO of Gilfus Education Group, believed that the ‘dot edu’ era will inspire and transform students, instructors, institutions to reach new horizons (http://www.gilfuseducation.com/dawn-of-the-dot-edu-era/).

2.2.4 Learning Space for Formal and Informal Learning

Studying at university is a formal education, while learning throughout life is normally regard as informal education. Lifelong learning is ontologically a concept that explains the plain fact that "people learn many things in a variety of spaces throughout their lives, both inside and outside educational institutions" (Schugurensky and Myers, 2003). Colley et al. (2002) present an extensive theoretical explanation about formal, non-formal and informal learning after examining and analyzing a wide range of pertinent literatures.

Formal learning: learning typically provided by an education or training institution, structured (in terms of learning objectives, learning time or learning support) and leading to certification. Formal learning is intentional from the learner's perspective.

Non-formal learning: learning that is not provided by an education or training institution and typically does not lead to certification. It is, however, structured (in terms of learning objectives, learning time or learning support). Non-formal learning is intentional from the learner's perspective.

Informal learning: learning resulting from daily life activities related to work, family or leisure. It is not structured (in terms of learning objectives, learning time or learning support) and typically does not lead to certification. Informal learning may be intentional but in most cases it is non-intentional or incidental, (p32-33). Informal learning describes a lifelong process whereby individuals acquire attitudes, values, skills and knowledge from daily experience and the educational influences and resources in his or her environment, from family and neighbors, from work and play, from the market place, the library and the mass media. Informal learning is based in conversations, social interactions, and team projects, in which learning is part of the interactions between people. It has been acknowledged as one of the key reasons for forming communities of practice, networks, and other forums that allow people to network and socialize. Informal

learning is not limited to a predefined body of knowledge, but rather emerges from the interaction of people. At the heart of it is the transfer of tacit knowledge, knowledge that is not articulated but is acquired by individuals through experience.

The use of social technologies (i.e. digital tools, personal devices and social networking software) can help strengthen the links between informal and formal learning in higher education, to the benefit of both. These tools are means to make learning more interactive and experiential, boost reflection and encourage collaborative learning.

Learning Spaces are Personal Digital Spaces

Digital learning space where all personally relevant learning resources are accessible anywhere, anytime and via multiple devices and media. This personal space would make it possible to go back and forth, without loosing track of what has been learnt in the past. The personal learning space is a virtual work desk, where everything is organized according to one's needs, in an easily accessible way. This personal learning space supports learning throughout life, without binding resources and experiences to specific learning programs.

2.3 CONTENT SECTION: RELIGION AND SPIRITUALITY

2.3.1 Conceptualization of Spirituality

Spirituality is an important dimension of human self, but are often neglected because it cannot be seen by the naked eye and beyond the reach of thought and is therefore treated as a “black box” subject matter. Due to this issue, spirituality has the tendency to be disconnected from the people. The word “spirituality” originates from the Latin root *spiritus,* signifying breath, the soul or life. It is hard to get a standard or commonly agreed-upon definition with definitive meaning of spiritually since perception on spirituality varies according to one’s beliefs and culture. This results in its multitude meanings. McSherry, Cash and Ross (2004) pointed out that there is no universal

definition of spirituality and the theoretical likelihood of producing one is practically not viable. In Islamic tradition spirituality is viewed as inseparable from religion, in-line with McGhee & Grant (2008) assertion that religion and spirituality are characterized by similar components at an ontological level. However, numerous definitions of spirituality can be found from the literature being reviewed. By analyzing some of the selected definitions on Table 2.7, several conclusions can be made.

Table 2.7: Definitions of spirituality found in the review of literatures

	Spirituality Definitions	**Authors**
1.	*Relating to or affecting the human spirit as opposed to material or physical things; or relating to religion or religious belief.*	Oxford English Dictionary
2.	*Spirituality is the essence of human beings and their personal characteristics. It is not something that is affixed to the human or alien to them, because when spirituality become the essence of human, it becomes the center of life and center of all human activities. Thus, in this context, we have to understand precisely that the material aspects or the human body was created only as a saddle horse to the spirit. That is the body is made for the sake of the soul and not the reverse.*	Al-Bahi (1979)
3.	"*Spirituality relates to a universal and fundamental aspect of what it is to be human-to search for a sense of meaning, purpose, and moral frameworks for relating with self, others, and the ultimate reality".* *"As a universal quality of human nature", the authors persist, "spirituality is not the property of any religion and need not express through any religious context. The drives, functions, processes, and contents of spirituality need not be discussed in religious terms".*	Canda and Furman (1999), p.37 & 57
4.	*Awareness of something greater than ourselves, a sense that we are connected to all human beings and to all of creation.*	English & Gillen (2000) p.1
5.	*Spirituality is a state of interconnectedness, an intangible reality and animating, integrating life-force that cannot be comprehended by human reason alone but is nonetheless as important as reason, intellect, and emotion in accounting for human behavior. It is the center of our devotion, loyalty and concern, the worship of which constitutes our god-whether that god be our self, sex, race or ethnic group, church, money, ideological beliefs, another person, nature, Allah, Buddha, the Great Spirit or Jesus Christ. It is the object of our ultimate love,*	Rosado (2000)

	human drive, commitment, source of power, and our interconnectedness with the other-the divine, the self, the human, the natural, or any combination thereof-that nourishes the soul (the integration of mind, will and emotions), resulting in a state of security with a sense of worthful purpose in life.	
6.	*Spirituality has both a religious and an existential component that share the concepts of meaning in life, hope, self-transcendence, and rituals.*	McCormick, Holder, Wetsel, & Cawthon (2001)
7.	*"The personal quest for understanding answers to ultimate questions about life, about meaning, and about relationship with the sacred or transcendent, which may (or may not) lead to or arise from the development of religious rituals and the formation of community".*	Koenig et al., (2001)
8.	*Spirituality expresses the awe we feel in the presence of the transcendent, and provides the individual with an inexhaustible source of faith and will power, because spirituality and (religious) faith are inseparable.*	Brown (2003)
9.	*They separated spirituality into two categories:-* *"Pure spirituality refers to a silent, unbounded, inner experience of pure self-awareness, devoid of customary content of perception, thoughts, and feelings".* *"Applied spirituality refers to the domain of practical applications and measurable outcomes that automatically arise from the inner experience of pure spirituality".*	Heaton, D.P., Schmidt-Wilk, J., Travis, F. (2004), p.63
10.	*Drawing on these four overarching ideas, "a sense of inner self, a sense of meaning, a sense of interconnectedness, and a notion of the Beyond (or God)", the author define spirituality as "the engagement to explore-and deeply and meaningfully connect one's inner self-to the known world and Beyond".*	Kale, S.H. (2004), p.93

The above listed definitions are made based on several researcher's own interpretation or worldview as spirituality is understood differently in different religious and cultural contexts. Several keywords are derive from these definitions:-

- Ultimate values, ultimate questions, ultimate reality
- Meaning [a sense of meaning, meaning in life],
- Relatedness or interconnectedness [with inner-self, others, nature, life, higher power or transcendent, God]

Spirituality, as offered by Gibbons (2000) can be categorized into three kinds:

i. Religious spirituality is agreed as authentic in the major religious of the world, such as Islam, Christianity and Judaism. Its beliefs are theistic and its practices are demonstrated in ritual and ceremony both within the sacred place and also in life daily activities.

ii. Secular spirituality or non-religious spirituality includes earth-centered, nature-centered and humanistic spiritualities. Its beliefs may be pantheistic or atheistic, and its practices include social and environmental activism. This kind of spirituality usually posits no God and is very much accepted by the atheist, agnostic and secular individuals have the greatest difficulty with religion.

iii. Mystical spirituality is grounded primarily in various meditative practices and posits a non-dual ultimate reality.

Traditionally, spirituality was a sacred aspect sees as an essential part of particular religious belief and as such it is closely related to religion. But today, it is no longer the case when spirituality is totally detached from religion and has revolved into the new age spirituality (Ferguson, 2010). Contemporary spirituality, according to Aupers and Houtman (2006) is referred to by various labels such as "do-it-yourself-religion", "pick-and-mix-religion", a "spiritual supermarket" or "religious consumption 'a la carte" which all seem to be like religious experimentation. Most of the Western nation who view spirituality through the secular lenses declared themselves as "spiritual" or even as "spiritual, but not religious" and they are rising in numbers (Zwingmann, et al, 2011). We are now witnessing that the religious spirituality has been marginalized and secular spirituality is gaining widespread attention in many fields. The integration of spirituality in various disciplines can be witnessed in the areas such as:

- Education (Palmer, 1998; Tisdell, 2001; Riera, 2016; Bush et al., 2016)
- Health sciences (Coyle, 2002; Pesut, 2013; Weathers and Coffey, 2015)
- Business (Uno, 2016; Muhammad, 2016)

- Management (Gaur, 2017; Sohail et al., 2017)
- Technology (Vitullo, 2016; Braun et al., 2016)
- Workplaces (Washington, 2016)
- Leadership (Siddiqi et al., 2017) and many others.

2.3.2 Why spirituality?

Renewed interest on spirituality emerge to counter the ills of modern society and to address individual and social problems as discovered by Gray (2006) in his analysis that reemergence of spirituality to be a direct outcome of modernity. Several authors (Coates, 2003; Henery, 2003; Nagler, 2005) in Graham et al. (2007) argued the emergence of spirituality in modern society is a response to the spiritual emptiness and search for meaning that arise from values, beliefs and lifestyles crucial for the continuation of modern society such as materialism, consumerism, dualism and individualism. Nagler (2005) viewed modern society is in a state of spiritual crisis (a state of distress in which the existing belief system is "becoming obviously unworkable but the new one has not yet, at least for most people, appeared over the horizon to replace it" (p.6)). He proclaimed that the violence and dehumanization of our culture spring from spiritual impoverishment.

Between the arrogance of scientism and the irresponsibility of commercial advertising, we are conditioned to believe that the fundamental reality matter. The importance of spirituality in life can no longer be denied and thus there is an urgent need to revive spirituality in the world of education. Considerate effort to make it part of the building block in the curriculum design will pose a challenge.

2.3.3 Addressing the Spiritual Dimension of Students

Addressing spirituality in our adult education practice means bringing our whole selves – mind, heart and spirit to our work' (Hill and Johnston, 2003, p. 23).

Colleges and universities have recently been interested in the development of the whole student, though during the past few decades, higher education has become more focused on preparing students for a career and thus has given less attention to preparing them for life. Recently there has been increased interest in holistic student development, particularly in the religious and spiritual development of students (Bowman & Small, 2010), (Bryant, et.al, 2003). Human, as stated by Riley-Taylor, (2004, 67) are "creatures of both reason and emotion, mind and body, matter and spirit". Educating the whole student requires addressing spiritual development and is best accomplished through an integration of academic and student affairs (Capeheart-Meningall, 2005). Souza (2006) advocated an educational process that addresses the whole person. Spiritual education, therefore, implies the existence of an emotional relationship with the divine or personal object of one's worship and devotions and also the divine luminaries (Geula, 2004). Parker J. Palmer (1998, p.66) after analyzing the current situation in education, asserts that the world of education is filled with 'broken paradoxes', which he illustrated as follows:

- *Head is separated from heart*, which end up with minds that do not know how to feel, and hearts that do not know how to think.
- *Facts are separated from feelings*, which end up with bloodless facts that make the world distant and remote, and ignorant emotions that reduce truth to how one feels today.
- *Theory is separated from practice*, which end up with theories that have little to do with life, and practice that is uninformed by understanding.
- *Teaching is separated from learning*, which end up with teachers who talk but do not listen, and students who listen but do not talk.

An integrated education of this nature will enable the students to connect through shared emotional experiences and to reach their full potential as the images of their higher selves,

the divine. The worldview that development and education should be chiefly measured in materialistic and economic terms is beginning to be challenged. More holistic educational systems and approaches offer a much needed antidote to this excessively materialistic approach and it narrow conceptions of what learning is and how it should be measured. Exploring the opportunity of information technology (IT) applications and associated technologies is a viable option for this endeavour.

2.3.4 Spiritual Intelligence

Spiritual persons seek to live an authentic life sourced in meaningful relationships. The process of self-transcendence, of affirming the spirit and transcending the ego results in a growing awareness and acceptance of interconnectedness (McGhee & Grant, 2008). Zohar and Marshall (2004, p.3-4) called spiritual intelligence "our ultimate intelligence". They defined it as, "the intelligence with which we address and solve problems of meaning and value, the intelligence with which we can place our actions and our lives in a wider, richer, meaning-giving context, the intelligence with which we can assess that one course of action or one life-path is more meaningful than another".

Wolman (2001, p.84-85) described spiritual intelligence as, "the human capacity to ask ultimate questions about the meaning of life, and to experience simultaneously the seamless connection between each of us and the world in which we live". Both the subjective world which deals with spirituality and the objective world which intelligence seeks to comprehend, reside within an individual. Seven factors spectrum of spiritual experience and behaviour:

i. divinity (the sense of connection with God figure or divine energy source),
ii. mindfulness (awareness of the interconnection of the mind and body, with emphasize on practices that enhance that relationship),

iii. intellectuality (a cognitive, inquiring approach to spirituality, with a focus on reading and discussing sacred texts),

iv. community (the quality of spirituality enacting connection to the community at large, whether in charity or politics),

v. extrasensory perception (spiritual feeling and perceptions associated with non-rational ways of knowing),

vi. childhood spirituality (a personal, historical association to spirituality through family tradition and activity) and

vii. trauma (a stimulus to spiritual awareness through experiencing physical or emotional illness or trauma to the self or loved ones).

Wigglesworth (2006) defined spiritual intelligence as the "the ability to behave with Compassion and Wisdom while maintaining inner and outer peace (equanimity) regardless of the circumstances".

Halstead & Taylor (2000, p.169), define values as the "principles and fundamental persuasions, which act as general guides to behaviour, the standards by which particular actions are judged as good or desirable".

From Islamic perspective, as pointed out by Abdullah (2011) that soul purification is a prerequisite for closeness to God. Knowledge of God (*makrifatullah*) purifies the human soul and eliminates negatives qualities and actions (Al-Ghazali, 1983). Besides having a close relationship with God, being conscious of God, self-control and spiritual maturity shape one's good heart and directs positive actions and good behaviour (Badri, 2000). Rahman and Shah (2015) expressed that spiritual intelligence has a close relation with Islam and it guides human beings to live their life meaningfully.

2.3.5 Spiritual Development

The main resources for the work in this section that are used in discussing Islamic perspective on worldview are based on Qur'an, God's revelation and supported by

Hadith, containing Prophet's Muhammad tradition. Most of the work also is based on extensive work done by these Muslim theologian, scholar and author. Al-Ghazali, Syed Muhammad Naquib Al-Attas and Zahra Al-Zeera.

Abu Ḥamid Muḥammad Ibn Muḥammad Aṭ-ṭusi Al-ghazali (born 1058, died 1111), Muslim theologian and mystic whose great work, Iḥyaʾ ʿulum ad-din ("The Revival of the Religious Sciences"), made Sufism (Islamic mysticism) an acceptable part of orthodox Islam (source: https://www.britannica.com/biography/al-Ghazali). He was widely known as *Hujjat al-Islam* (the Proof of Islam), has always occupied a special position in the tradition of Islamic thought.

Syed Muhammad al Naquib bin Ali al-Attas (born September 5, 1931) is a prominent contemporary Muslim philosopher and thinker from Malaysia. He claims to be one of the few contemporary scholars who is thoroughly rooted in the traditional Islamic sciences and who is equally competent in theology, philosophy, metaphysics, history, and literature. He considers himself to be the pioneer in proposing the idea of Islamization of knowledge. Al-Attas' philosophy and methodology of education have one goal: Islamization of the mind, body and soul and its effects on the personal and collective life on Muslims as well as others, including the spiritual and physical non-human environment (source: http://perwadahusim.blogspot.my/2012/12/biography-syed-naquib-al-attas.html).

Zahra Al Zeera Is the author of books such as Wholeness and Holiness In Education - an Islamic Perspective.

Islamic Worldview: The Theoretical Framework of Education in Islam

In general, worldview, which are also known as mental framework or mind set, is viewed also as philosophy of life or principle of life. Worldview designates "set of beliefs about fundamental aspects of Reality that ground and influence all one's perceiving,

thinking, knowing, and doing" (Funk, 2001). Funk stated seven elements of one's worldview, the values about certain aspects of Reality, are one's

i. **epistemology**: beliefs about the nature and sources of knowledge;
ii. **metaphysics**: beliefs about the ultimate nature of Reality;
iii. **cosmology**: beliefs about the origins and nature of the universe, life, and especially Man;
iv. **teleology**: beliefs about the meaning and purpose of the universe, its inanimate elements, and its inhabitants;
v. **theology**: beliefs about the existence and nature of God;
vi. **anthropology**: beliefs about the nature and purpose of Man in general and, oneself in particular;
vii. **axiology**: beliefs about the nature of value, what is good and bad, what is right and wrong.

Each of us has our own worldview, which help us to configure meaning that inform our perception on life experiences. Our worldview is normally influenced by our nation, traditions, faith, or civilization. Other than the English term "worldview", it is sometimes referred to as *weltanschauung* (German) or paradigm.

In Islamic thought, there are few terms used to refer to the Islamic worldview, such as *Ru'yat al-Islam lil wujud* (Al-Attas), *Tasawwur al-Islami* (Syed Qutb), *Nazariyat al-Islam* (al-Maududi) and Islamic Paradigm (Al-Zeera). Worldview, in Islam is the vision of reality and truth. It reveals all about existence beyond the mind's view of the physical world. The worldview of Islam is based on Tauhid with its epistemic original source being the Revelation, confirmed by religion and affirmed by the intellectual and intuitive principles. Tauhid is the belief of accepting and recognizing the oneness of Allah and not associating any partners with Allah. This worldview encompasses both this world (here now) and the next world (here after). This world is seen as the preparation for the next

world, which is the ultimate focus of Islam, but without neglecting this world (Al-Attas, 2014).

The core elements that constitute the Islamic worldview, includes among which are the following (Al-Attas, 2014):

i. The nature of God,
ii. The nature of Revelation (i.e the Holy Qur'an),
iii. The nature of creation,
iv. The nature of religion,
v. The nature of knowledge,
vi. The nature of human and the psychology of the human soul,
vii. The nature of freedom,
viii. The nature of values and virtues,
ix. The nature of happiness.

These elements act as integrating principles that place all our systems of meaning and standard of life and values in coherent order as a unified system forming the Worldview. The absolute principle of true reality that is articulated by these elements is focused on knowledge of the nature of God as revealed in the Qur'an.

Zarkasyi (2010) pointed three significance of a worldview, which acted as, (i) as the vehicle for social change, (ii) as the basis to understand reality and (iii) as the groundwork for academic or intellectual activities. In the context of this study, understanding Islamic worldview as a set of beliefs that one considers as true knowledge about the essential aspects of reality, is important as it will be the foundation of one's action and education for Muslim students.

For production of Islamic knowledge, a holistic, comprehensive, integrated and Tauhidic Islamic paradigm that encompass the wholeness of Islamic thought is necessary (Al Zeera, 2001). Al Zeera expressed the Islamic paradigm to include (i) Islamic spiritual

psychology; (ii) epistemology; (iii) ontology; (iv) eschatology; (v) sociology; and (vi) methodology.

If we compare Al-Attas *Ru'yat al-Islam lil wujud* with Al Zeera's Islamic paradigm, the elements in both worldview seems to be corresponding to each other. This means that they are similar in meaning but different in terms used. Some of the elements that pertaining to education will be described in detail, while the rest will be touched in much broader sense. Figure 2.2 depicts a summary summary of Al Zeera's Islamic paradigm mapped to Al-Attas *Ru'yat al-Islam lil wujud*.

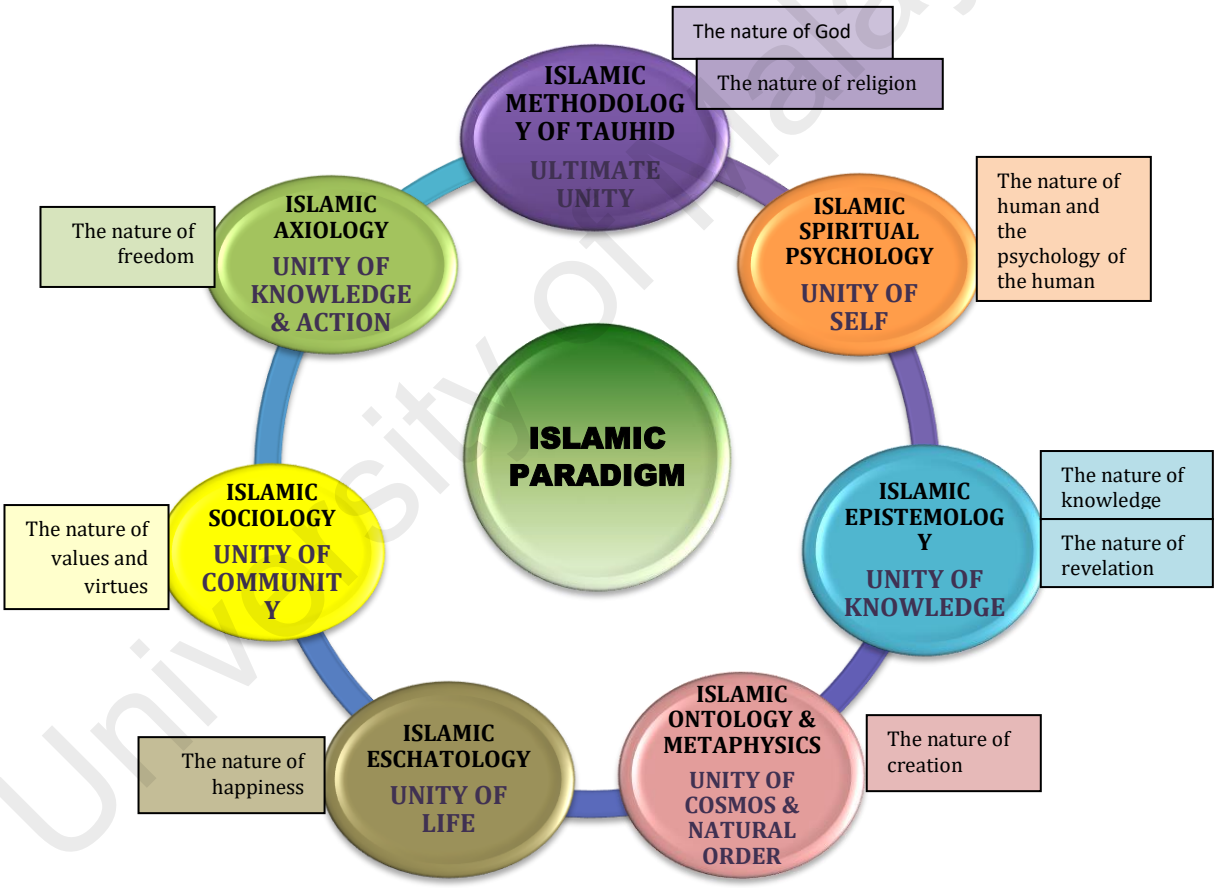

Figure 2.2: A summary of Al Zeera's Islamic paradigm mapped with Al-Attas *Ru'yat al-Islam lil wujud*

The Nature of Human Being

A student being a human has a dual nature, that is having both a material body and

a transcendent non-material immortal spirit or soul (Qur'an, 15:29; 23:12-14)[1], and this make him or her a physical being as well as a spiritual being at the same time. Human nature during life on earth consist of the unification of the seen tangible outward part, the body that is associated with the evil and base desire (is subject to corruption, composite, made up of parts and earthy) and the core of human being which is the unseen intangible inward spirit (substantial, simple, enlightened, comprehending, acting and moving). The permanent separation of the spirit from the body will result in physical death, a transition from this physical world to the non-physical world. The essence of a person is actually is the soul referred too as the Self, which is a spiritual entity, and not a physical one. According to Al-Ghazali, there are four inter-related terms used in the Quran and Hadith of the Prophet (peace be upon him), which are used in relation to the soul; spirit (ruh), soul or self (nafs), heart (qalb) and mind or intellect (aqal). For Al-Ghazali, human personality is founded in the state of the soul, therefore the disciplining of soul is a vital human activity which must be pursued constantly throughout one's life. Al-Attas (1990) elaborated and paraphrased al-Ghazali's explanation on the four inter-related terms superbly:

> "Thus when it is involved in intellection and apprehension it is called 'intellect'; when it governs the body it is called 'soul'; when it is engaged in receiving intuitive illumination it is called 'heart'; and when it reverts to its own world of abstract entities it is called 'spirit' (Al-Attas, 2014, p.148). Indeed, it is in reality always engaged in manifesting itself in all its states."

All the four terms each have two meanings. Description about seven domain of spiritual intelligence from Islamic perspective can be referred to the work of Baharudin & Ismail (2015). According to Islam, the religion that declares human as the most superior of the

[1] Numeral in brackets refer to the chapters and verses of the Holy Qur'an; numerals preceding the colon refer to the former (i.e. surah) and those that come after to the latter (i.e. ayat).

creatures and the masterpiece of the Creator, the human being is born with an innate nature called fitrah, the original inherent nature of the human being (Hashimi, 2004). This innate nature is neutral, clean and good. At birth, the infant is purely innocent and as he or she grows up the environmental and other external influences keep on modifying his / her blueprint. The Holy Prophet (peace be upon him) said: “Every child is created in the state of fitrah, it is the parents, culture, and society that make him a Christian, a Jew, or a fire-worshipper.”

Man was not created without a purpose as indicated in the Qur’an, "Did you think that We had created you in play (without any purpose), and that you would not be brought back to Us?" (Qur’an, 23:115). The purpose of human life in this world is to worship Allah as stated in the Qur’an (51:56), and also to be His vicegerent on earth (Qur’an, 2:30) which designates humankind as a trustee and custodian of its’ environment. Al-Quran and its substantiation in as-Sunnah had perpetually insisted the position of man as Allah’s servant. Hence, the prime object of education is generally to prepare man as the humble servant of Allah SWT. In other words, the main purpose of Islamic education is to fulfil the obligation of total submission towards Allah SWT. The mission to cultivate and deliver a servant of Allah SWT is very challenging, thus the weighty attention given by the Prophet SAW on the matters of education reported in many hadith. Prophet Muhammad (peace be upon him) has also reminded his followers on the importance of the vicegerency role: All creatures are God’s dependents and the best among them is the one that is most useful to God’s dependents.

The very nature of the human body has a persistent need for the worldly material fulfillment. Thus, the body tends to be the focus of attention of man in his life, which man usually transgresses his bounds to satisfy his bodily needs. On the contrary, the nature of the spirit is inclined towards goodness and submission to God. Every spirit has recognised

and acknowledged God as his Lord (al-Rabb) and object of worship, through a covenant as stated by Allah in the Qur'an (7:172):

> "And (remember) when your Lord brought forth from the Children of Adam, from their loins, their seed (or from Adam's loin his offspring) and made them testify as to themselves (saying): "Am I not your Lord?" They said: "Yes! We testify," lest you should say on the Day of Resurrection: "Verily, we have been unaware of this."

The spiritual aspect of man can help to offset these potentially destructive tendencies of the body as spirituality links the human being to his Creator. A person who forgets his spiritual calling submits himself to the accumulation of worldly possessions and clings to material satisfactions. According to Al-Ghazali man's indifference to God results in the failure to fulfill the basic human needs, whereby the human spiritual need is not satisfied (Mat Akhir, 2008).

Education and Knowledge

This thesis will delve into the concept of education that holds the essence of al-Quran and al-Hadith. The purpose for seeking knowledge in Islam is to inculcate goodness or justice in man and individual self. The aim of education in Islam is therefore to produce a good man (Al-Attas, 1993) by equipping students with knowledge about this world and the next and to lead them as individual and society as a whole to the Ultimate Truth (Ali,1987). A good man is a God conscious man. Islamic education is a process of educating, training and moulding an individual holistically in the entire spiritual, physical, emotional, intellectual and behavioral aspects, based on religious principles and values (Al-Nahlawi, 1979). Hence, it is an instrument important to the materialization of every object deliberated in the perception of life of worldview. Islam, in its dominant sphere, comprises every single aspect of human life purported to imbue acknowledgement of the Creator and gain His proximity, therefore, this similar all-inclusive manner is

highly due in the Islamic education that holds the essence of al-Quran and as-Sunnah. In the opinion of Imam al-Ghazali, "the objective of education is to attain nearness to Allah SWT, not status and fame, and a learner should be discreet in his course as to avoid any ill-intention to pursue status, wealth, commit fraudulence upon the ignorance or display vanity amidst his friends" (Yussof, 2003).

Rasulullah SAW had urged considerably on spiritual education that he had named it as the foundation to comprehensive education. Said Rasulullah SAW in a hadith:

Meaning: *"Hell is ornamented with elements fancied by cardinal desires, whilst paradise is surrounded by elements detested by cardinal desires"*[2]

Paradise, the pinnacle of every Muslim's aspiration, is fenced by elements much disliked by carnal passions which have made it impossible to anyone's reach unless they possess unwavering faith-driven spirits and souls. And those kinds of spirits and souls seemed far-fetched unless they went through effective process of education and tarbiyyah. The following hadith exerts the call for education upon the spirits and souls to secure them from yielding to the lure of cardinal cravings. Rasulullah SAW had said:

Meaning: *"How extraordinary of a believer, for everything that comes his way is regarded goodness and it is not so for anyone but a believer. Whenever bestowed with prosperity, he shall be grateful and that is good for him, whenever tried with adversity, he shall forbear and that too is good for him."*[3]

Only willing and tough spirits are able to smile in times of calamity and be thankful when blessed with bounties. Education is thus a twin process – acquiring intellectual knowledge (through the application of reason and logic), and spiritual knowledge (which is derived from divine revelation and spiritual experience). According to the educational worldview

[2] See *Sahih al-Bukhari* (hadith no. 6487)
[3] See *Sahih al-Bukhari* (hadith no.7500)

of Islam, provision must be made equally for both. Acquiring knowledge in Islam is not meant to be an end unto itself, but only a means to stimulate a more elevated moral and spiritual consciousness leading to faith and righteous action (Cook, 1999).

What *will* distinguish their actions will be the nature of their relationship with *Allah* and the aims behind their actions. Whatever a religious man does, will be done with the feeling that he is answerable to *Allah*, that he must try to secure Divine pleasure, that his actions must be in accordance with *Allah*'s laws. A secular person will be indifferent towards *Allah* and will be guided in his actions only by his personal motives. This difference makes the whole of the material life of a man of religion a totally spiritual venture, and the whole of the life of a secular person an existence devoid of the spark of spirituality.

There are a few universities worldwide that provide formal program of studies in spirituality. Among the universities which offer Islamic education and spiritual study are:

- California Islamic University (http://www.calislamic.com/) offers curriculum that emphasize on the balance between an intellectual and spiritual study of Islam and its sources.
- University of Spiritual Healing & Sufism (http://sufiuniversity.org/) ,in California, USA creates spiritual professional paths for those wanting to spread the Sufi message of unity through their work in the world.
- International Islamic University Malaysia (www.iium.edu.my/) does impart Islamic values and ethics in their Computer Science program of studies. Students are also required to enrol for university required courses such as Islamic Worldview, Ethics and Fiqh for Everyday Life, Methods of Da'wah and Tilawah Al-Quran.

2.4 Techno-Religious

2.4.1 When Technology and Spirituality Meet

In emergency, worrying periods, people often turn to God and religion for strength, hope and encouragement. Their inner feelings whisper and believe that there is a super power that will make a miracle happen. People will normally google to search for words of comfort, prayers and online advice during their critical moments. Computers and Internet, like any technology, can be both a help and a hindrance to those who seek spiritual sustenance. Technology and religion or spirituality is neither naturally clashed nor naturally complementary. Computers viewed tools, can be used for good or for evil. On the negative side, information technology can become a weapon that destroys. On the positive side, it can become weapon that saves. More agreeably, IT can help people find religion or pursuing spiritual goals. Over the years, people have study religious text online. One download copyright free text books, holy books at The Project Gutenberg, initiated in 1971 by Michael Hart (http://www.promo.net/pg). Reading e-book online may not be comfortable, but the availability of search function make finding certain topic or keyword instantly available at fingertips. Buie and Blythe (2013), presented a review of techno-spirituality apps. They revealed that there were not many research done on techno-spirituality as compared to the drastic growth on the development of spiritually oriented apps. Susan et al., (2006) began empirical process to explore questions regarding the religious uses of technology, specifically those related with spiritual development. Bell (2006) studied the religious usage of technology, provided an account of dominant visions of technology's futures, and suggested a very different path for ubiquitous computing's technology envisioning and development.

There are numerous websites on religious and spiritual matters. Some examples of faith-related websites are http://www.islamicity.com/, http://bilalphilips.com/,

www.spiritualityhealth.com, www.islamicspirituality.org/, http://risconvention.com/ and www.religionfacts.com/religions.

Local faith-related websites from Malaysia are http://www.ismaweb.net/ , http://iluvislam.my/ , http://al-ahkam.net/home/ and https://www.imuslim.my/ .

The blend of techno-religious or techno-spirituality, which are increasingly spreading online, proved that the demand is high for these subjects.

2.5 Conclusion

In this chapter, issues relevant to higher education students' learning and development have been examined. Basically, the review has been divided into two perspectives: (i) technology perspective that enable students' learning and their learning environment and (ii) perspective on spiritual needs in students. Review of technology informed that information technology has gained its place in the world of education and has transformed educational process. People around the globe began to realize the importance of spirituality and has applied them in various spheres of life, especially in education. With the availability of IT, the spread of these subject matters online becoming more common. Therefore, it can be concluded that this study is significant and need to be explored.

CHAPTER 3
RESEARCH METHODOLOGY

The first two chapters of this thesis set out the background underpinning this study, stated the main research problem, which needs a solution, and a review of related literature that provides a context for this work. This chapter sets out to discuss the development of procedures and logical arrangements required to undertake this study.

It begins with an important part of research methodology that is research philosophy and paradigm. To get an insight of why and how the researchers chose the methodological approach in this study, a preliminary discussion on research philosophy and paradigm is presented. Following this discussion, the aim of this chapter is to discuss how this research is to be conducted, the research design and methodology adopted in this study. In order to describe the variety of research activities undertaken during this study, the data collection activities and associated analysis methods will be systematically discussed.

3.1 Philosophical Dimension and Research Paradigm

Assumptions about how the world is perceived, is the basis for all research works and how researchers understand it. In fact, every researcher has their own philosophical stance, that is a set of different beliefs and distinctive way in observing, interacting and experiencing the reality surrounds them. Normally their philosophical stance is without doubt, influenced by their belief system, and values they uphold in life. Consequently, the ways they carry out researches differ. However, there exist certain rules and principles that direct a researcher's beliefs and action. These principles can be referred to as a paradigm. The philosophical dimension of research which influences the practice of research is addressed by the research paradigm, which is a thinking framework that guides the behaviour of the researcher based on a set of fundamental assumptions and beliefs as to how the world is perceived (Jonker and Pennink, 2010).

Easterby-Smith et al (2008) identified three factors that reveal the importance of philosophy to a researcher,

(i) They argued that a clear understanding of research philosophies will help the researcher adopt the most suitable research strategy,

(ii) Knowledge of research philosophy will save the researcher from unnecessary work and help him choosing the most appropriate methodology easily.

(iii) They argued that a better understanding of research philosophies will open new exploration frontiers in the choice and adoption of research methods.

Ontology, epistemology, axiology and methodology characterize research philosophy. These philosophical dimensions respectively raise the following questions (Guba and Lincoln, 1994):

- What is the form and nature of reality and, therefore, what is there that can be known about it?
- What is the nature of the relationship between the knower or would-be knower and what can be known?
- What is valued or considered right?
- How can the inquirer go about finding out whatever he or she believes can be known?

Ontology is the study of being (Crotty, 1998, p. 10). Ontological assumptions are concerned with what constitutes reality, or in other words, *what is*. Researchers need to take a position regarding their perceptions of how things really are and how things really work. The fundamental ontological question is concerned with *what* exists. The manner in which this question is answered determines what can be accepted as a fact and can be known.

Epistemology is concerned with the nature and forms of knowledge (Cohen et al., 2007). Epistemological assumptions are concerned with how knowledge can be created, acquired and communicated, in other words, *what it means to know*. Guba and Lincon

(1994, p. 108) explained that epistemology asks the question, "what is the nature of the relationship between the would-be knower and what can be known?" Epistemology, which refers to the theory of knowledge, is concerned with what could be regarded as acceptable knowledge. The fundamental epistemological question is *how* we know what we know. Every paradigm is based upon its own ontological and epistemological assumptions. Since all assumptions are speculation, the philosophical underpinnings of each paradigm can never be empirically proven or disproven. Different paradigms inherently contain differing ontological and epistemological views; therefore, they have differing assumptions of reality and knowledge which underpin their particular research approach. This is reflected in their methodology and methods.

Axiology is the science of people's choice of basic fundamental values (Engle, 2009) and the science of inquiry into human values. This inquiry enables people to identify the internal valuing systems that influence their perceptions, decisions and actions. This help researcher understand, "What do I value? How do I value, and how do I make value decisions?" (Schoof, 1999). He emphasized that axiology explains and measures the thinking (the valuing) that forms the foundation for, and leads to, human behaviour (Schoof, p.3). Values do not give people a sense of what is or what is not but of what is valuable (able to have worth or merit) and what is not valuable (Cicovacki, 2004). It brings order to everyday moral decisions and value judgements including to people's value world (Hartman, 1967). Axiology tells people what to pay attention to, what is important to them, and it helps clarify their prejudices and biases. It measures how people think and perceive things rather than what they are thinking (Hartman, 1967; Schoof, 1999).

Methodology is the strategy or plan of action which lies behind the choice and use of particular methods (Crotty,1998. p.3). Thus, methodology is concerned with why, what, from where, when and how data is collected and analyzed. Guba and Lincon (1994, p.108)

explained that methodology asks the question: "how can the inquirer go about finding out whatever they believe can be known?"

3.2 Western Theoretical Paradigms

There are two major research philosophies, namely positivism, which is also known as empiricism or scientific and interpretivism, which is also called anti-positivist (Galliers, 1991). Positivist philosophy originated from the natural sciences. Positivists believe that reality is stable and observable and can be described from an objective viewpoint that is without interfering with the phenomena in the study. Positivist studies attempt to test a theory, in an attempt to increase the predictive understanding of phenomena. Interpretivism argues that only through the subjective interpretation and intervention in reality can that reality be fully understood. The study of phenomena in their natural environment is key to this research philosophy together with the acknowledgement that scientists cannot avoid affecting the phenomena they study. They admit there may be many interpretations of reality but maintain that these interpretations are in themselves a part of the scientific knowledge they are pursuing. Wahyuni (2012) outlined in Table 3.1 the four fundamental beliefs as they relate to the positivism and interpretivism research paradigms. These paradigms represent the western worldview.

Table 3.1: Western Worldview (Adapted from Wahyuni, 2012, p.70)

Fundamental Beliefs	**Research Paradigms**			
	Positivism (Scientific, Empirical, Naive Realism)	**Post-positivism** (Critical Realism)	**Interpretivism** (Constructivism or Anti-positivist)	**Pragmatism**
Ontology *– assumptions about the nature of what exist; what is reality.*	External, objective and independent of social actors,	Objective. Exist independently of human thoughts and beliefs or knowledge of their existence, but is interpreted through social	Socially constructed, subjective, may change, multiple.	External, multiple, view chosen to best achieve an answer to the research question.

		conditioning.		
Epistemology *– assumptions about the nature of knowledge; the view on what constitutes acceptable knowledge.*	Only observable phenomena can provide credible data, facts. Focus on causality and law-like generalisations, reducing phenomena to simplest elements.	Only observable phenomena can provide credible data, facts. Focus on explaining within a context or contexts.	Subjective meanings and social phenomena. Focus upon the details of situation, the reality behind these details, subjective meanings and motivating actions.	Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focus on practical applied research, integrating different perspectives to help interpret the data.
Axiology *– assumptions about ethics; the role of values in research and the researcher's stance.*	Value-free and etic. Research is undertaken in a value-free way, the researcher is independent of the data and maintains an objective stance.	Value-laden and etic. Research is value laden; the researcher is biased by world views, cultural experiences and upbringing.	Value-bond and emic. Research is value bond, the researcher is part of what is being researched, cannot be separated and so will be subjective.	Value-bond and etic-emic. Values play a large role in interpreting the results, the researcher adopting both objective and subjective points of view.
Methodology *- assumptions about appropriate methods of systematic inquiry; the model behind the research process.*	Quantitative	Quantitative or qualitative	Qualitative	Quantitative and qualitative (mixed or multi-method design)
Goal of inquiry	To explain, predict and control.	To emancipate.	To understand, making sense.	To make better decision.

3.3 Islamic Paradigm

Unlike the Western traditions of science that undermine religious knowledge, Islam is a knowledge religion. Being a Muslim, the researcher has certain obligations to fulfil as part of her work, which include Islamization of knowledge that aims at preserving authentic Islamic knowledge in an environment where modern knowledge is dominant. Contemporary Islamic scholars, Al-Attas, Nasr and Al-Faruqi argued that modern knowledge is not neutral; having an intrinsic secular value system or Western worldview that means it should be considered separately from Islamic values and the Islamic worldview (Dzilo, 2012). Human knowledge will only be completed and true by taking into consideration the ultimate reality (knowledge of God) and divine will. The first major step toward Islamization of knowledge is to ensure that the sources for this research are drawn from Islamic worldview or paradigm. Other sources which are free from secular and Westernized elements that are alien to Islam, are also acceptable.

Table 3.2: Islamic Worldview

Fundamental Beliefs	Islamic Paradigm
Ontology – *assumptions about the nature of what exist; what is reality.*	There is a material world with a unified objective reality. All objective knowledge lies with Allah. Related with the existence of Allah SWT through the signs that portray His supreme qualities through the Qur'aniyyah and al-kawniyyah verses. • The Qur'aniyyah verse explicitly shows the narrations of Allah SWT on matters contained in the Qur'an, • The al-kawniyyah verse is about Allah's creations in the universe that is visible and discernible by man (Basri , 2012, p.22) Human beings bring multiple perspectives and interpretive frameworks to our understandings of this world.
Epistemology – *assumptions about the nature of knowledge; the view on what constitutes*	Consists of two main sources, which are the naql (divine revelation) and 'aql or intellect (ijtihad or reasoning on the basis of Qur'an and al-Sunnah). Revealed knowledge (absolute knowledge) - Its sources are revelation (Qur'an and Sunnah). Both Qur'an and Sunnah are proof that has legitimacy, which cannot be challenged (Zarkasyi,

acceptable knowledge.	2007). Acquired knowledge (relative knowledge) – Gain from senses through empirical observation, experimentation, and human reasoning, guided by revelation. Inspiration (ilham) and intuition are also recognized as source of knowledge in Islam. Islam are between the two extremes of both objectivist-subjectivist epistemology.
Axiology *– assumptions about ethics; the role of values in research and the researcher's stance.*	The value system of Islam is absolute and universal, applicable at all times and places. Wherever we go, the values remain the same. These values are determined by Allah (s.w.t.). Even though man is given a basic instinctive knowledge of right and wrong, he has no authority of determining the values. There are five categories of Islamic values in Islamic axiology. The values are: a) Obligatory (واجب) b) Recommended (سنة) c) Permissible (مباح) d) Not recommended (مكروه) e) Forbidden (حرام) Allah SWT set all those values. They are not invented by human beings and are not based on culture and custom. Muslims should act according to those values to get Allah's SWT pleasure. Therefore, Muslims must always control themselves from doing what are forbidden and at all times to do what are directed by Allah SWT.
Methodology *- assumptions about appropriate methods of systematic inquiry; the model behind the research process.*	Islamic tradition accepts varying methods of scientific inquiry in accordance with the nature of the subject in question and modes of understanding that subject. > Muslim scientists, in their cultivation and development of the various sciences, have relied upon every avenue of knowledge open to man, from ratiocination and interpretation of sacred scriptures to observation and experimentation (Bakar, 1991, p.15) Reason was always linked to revelation and sense perception was never made the source and verification of all knowledge In Islamic methodology, facts must be distinguished from truth. While proofs from sense experience have certain authority, in Islamic epistemology, secondary sources cannot escape the criteria and proofs from revelation. Reality will include revelation.
Goal of inquiry	Seeking truth

In order to free knowledge from its interpretation based on secular ideologies, meanings and expressions, ones must understand western worldview. The western only focus on the physical seen world and leave out the metaphysical unseen world from their paradigm. Epistemologically speaking, sources of knowledge must include divine revelation to help comprehend the metaphysical realms. The limited human mind cannot attain totality of knowledge. Nevertheless, it is through seeking external and internal knowledge that we fulfil our purpose. The search for truth leads ultimately to Allah.

3.4 Rationale for Choice of Research Approach

There are a few research on developing students' spirituality (Lindholm and Astin, 2008; Kiessling, 2010; Bowman and Small, 2012; Achour, 2015), however there is none thus far a research done specifically on the concept and topic of this thesis. Since the situation is exploratory, where the important variables to study are unknown, qualitative approach is deem appropriate for this work. Qualitative research is about exploring thought and behaviour.

Orlikowski and Barley (2001), explained that IS research examines how organizations use technology, in contrast to how technology shapes organizations. As a result, IS research often focus on the design, deployment and use of artifacts that solve organizational problems. Therefore with IS, research occurs in the form of design research, whereby artifacts, such as software and application systems are created and evaluated to solve known organizational problems.

3.5 Design Research Concept

Design research is the foundation to creating products, services and system that respond to human needs. Design research, previously known as "Design Science", provides new form of knowledge creation methodology, first appeared and explained in Herbert

Simon's book 'The Sciences of the Artificial' in 1969 (Simon, 1996). In 1990, Takeda et al. (1990) in their publication formalized a research method focused on design called Design Cycle. Since then, there were many other main contributors to design science, and most often cited includes the works of Nunamaker et al. (1991), Walls et al. (1992), Hevner et al. (2004), Van Aken (2005) and Peffers et al. (2008).

Described concisely as 'learning and investigation through artefact construction' (Vaishnavi and Kuechler, 2008), the design research goal is utility (Hevner et al, 2004) rather than a generalized knowledge, since design research usually involves a limited number of applications in organizations. Artefact is defined as something artificial, not built by nature (Simon, 1996). Artefacts' which are the output of design research can be classified into eight types (Vaishnavi and Kuechler, 2008):

i. Construct – the conceptual vocabulary of a domain or definitional knowledge, like terms, notations, definitions and concepts.
ii. Model – set of statements expressing relationships between constructs. A model is built up from constructs that are related to each other.
iii. Frameworks – real or conceptual guides to serve as support or guide.
iv. Architectures – high level structures of systems.
v. Design Principles - core principles and concepts to guide design.
vi. Method – how-to knowledge defining a set of steps (an algorithm or guideline) used to perform a task, solve problems and achieve goals.
vii. Instantiation – a realization of an artifact in its environment or working system that can be used in a practice.
viii. Design Theories – prescriptions for design and action.

To clearly differentiate 'design research' from 'design', the focus on design research is in the knowledge gained from designing the solution and the consequence of the designing

action, not the action itself and the resulting knowledge must be field tested (Van Aken, 2005). Theories could be developed but only after the application and usage of artefacts (Hevner et al, 2004). Design Research is a relatively young research method compared with other research methodologies.

Table 3.3 depicts the philosophical assumptions of design research perspectives.

Table 3.3: Philosophical Assumptions of Design Research Perspectives
Reprinted from: Vaishnavi, V. S. and Kuechler, W. (2008)

Basic Belief	**Design**
Ontology	Multiple, contextually situated alternative world-states. Socio-technologically enabled.
Epistemology	Knowing through making: objectively constrained construction within a context. Iterative circumscription reveals meaning.
Methodology	Developmental. Measure artifact impacts on the composite system.
Axiology what is of value	Control; creation; progress (i.e; improvement); understanding

3.5.1 Design Research Methodology

This design research approach is adopted in this doctoral work because the objective of design research which is to provide solution to solve a business need in the form of either constructs, models, methods or instantiations (March and Smith, 1995), or a combination of these outputs (Zimmerman et al., 2007) fits the objective of this study.

Takeda et al. (1990) work is preferred since it provides a general methodology of design research as lay out in Figure 3.3.

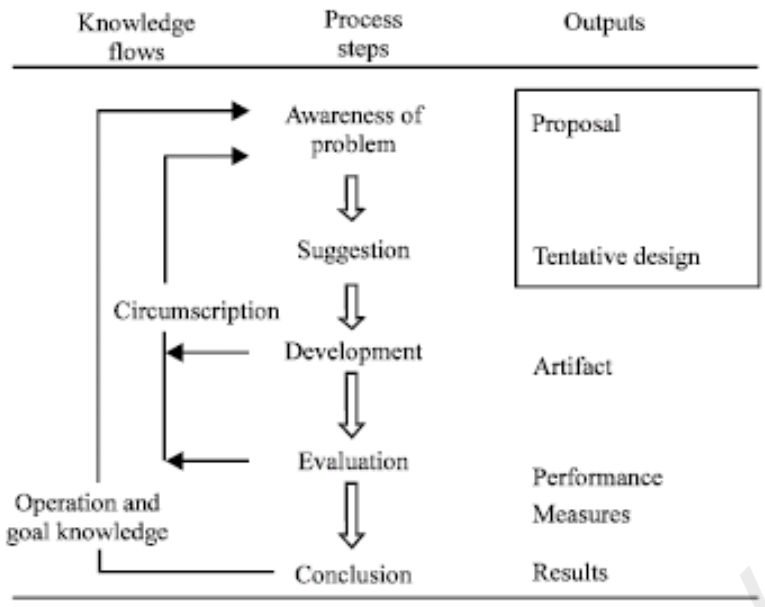

Figure 3.3: Methodology of design research (Takeda et al.,1990)

A research starts with the **Awareness of a problem**. The goal of design research is to provide a solution to a problem. Generally, the output of this stage is a research proposal. With the proposal and effort on findings, a tentative design is proposed in the **Suggestion** stage. Creativeness at this stage plays a major role where the tentative design initiate idea from the researcher as the solution to the problem. Following this the tentative design is input into the **Development** to generate an artifact i.e. the system prototype. This artifact is implemented and evaluated, in accordance to the initial design requirements done during the suggestion stage.

Deviation is expected in this **Evaluation** stage, as more requirements are likely to appear during implementation. Feedback on new requirements are documented and put as input into Suggestion stage again as part of the **Circumscription** process. Circumscription may occur at any stage when necessary as the research project evolves.

After going through multiple cycle of circumscription, a specific research effort (as defined as the goal in the Awareness of problem stage) is concluded and the result of the design research project is reported in the **Conclusion** stage. The artifact is never a complete system as more deviations are expected over time of use and changes of requirement or technology

trend. If major changes are expected, the artifact can go through another new cycle of design research for another specific research effort (research goal).

Each stage requires some research activities and outputs. The table 3.4 shows the research activities proposed at each stage for this research project and the projected outputs in design research.

Table 3.4: Research activities at each steps in design research

Design Research Stage	**Activities**	**Outputs**				
		Construct	**Model**	**Method**	**Instantiation**	**Better Theories**
Awareness of problem	✓ Formulate problem ✓ Review literature	Problem statement and solution proposal (Chapter 1)	Islamic paradigm (Chapter 2)	Research method (Chapter 1)		
Suggestion	✓ Collect data ✓ Analyze data collected ✓ Identify requirement		Techno-religious framework (Chapter 4)	Analysis of students' perception on spirituality (Chapter 4)		
Development	✓ Select development tool ✓ Identify constraints		Tentative SRS design (Chapter 5)	Development procedure (Chapter 5)	SRS prototype (Chapter 5)	
Evaluation	✓ Select control group ✓ Select evaluation method			Subjective evaluation of SRS (Chapter 5)		
Conclusion	✓ Evaluate accomplishment of research objectives ✓ Recommend future improvement					Recommendations (Chapter 6)

3.5.2 Effectiveness of Design Research

As this research aims to solve real-world problems and Design Research methodology aims at the utility of the artifact designed, therefore effectiveness evaluation through demonstration is crucial (Adomavicius et al, 2008). There is some literature that provides a set of guidelines to ensure Design Research effectiveness with different focuses. The major ones are Hevner et al (2004) and Gregor & Jones (2007). Hevner et al (2004) provided seven guidelines for design science research in information, as shown in Table 3.5. These guidelines provide the checklist of what needs to include when conducting design research and can be used to evaluate the research effectiveness from the utility of the research through artifact construction. In other words, this guideline was developed from a problem-solving paradigm of research (McKay and Marshall, 2004).

Table 3.5: Design Science Research Guideline (Hevner, et al., 2004)

Guideline	Description
Guideline 1: Design as an artifact	Design-science research must product a viable artifact in the form of a construct, a model, a method, or an instantiation.
Guideline 2: Problem Relevance	The objective of design-science research is to develop technology-based solutions to important and relevant business problems.
Guideline 3: Design Evaluation	The utility, quality, and efficacy of a design artifact must be rigorously demonstrated via well-executed evaluation methods.
Guideline 4: Research Contributions	Effective design-science research must provide clear and verifiable contributions in the areas of the design artifact, design foundations, and/or design methodologies.
Guideline 5: Research Rigor	Design-science research relies upon the application of rigorous methods in both the construction and evaluation of the design artifact.
Guideline 6: Design as a Search Process	The search for an effective artifact requires utilizing available means to reach desired ends while satisfying laws in the problem environment.

Guideline	Description
Guideline 7: Communication of Research	Design-science research must be presented effectively both to technology-oriented as well as management-oriented audiences.

3.6 Data Collection and Data Sources

Research data is a critical requirement of any type of research work. These data are collected, observed or created for analysis purpose in order to produce novel research results. Data collection is a systematic approach to gathering information from a variety of sources to get a complete and accurate picture of an area of interest. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results. Different ways of collecting data are useful for different purposes, and each has advantages and disadvantages. Various factors will influence the choice of a data collection method.

In this study, the data collection activity is to answer the research questions 1 to 4. This study apply a qualitative survey interview (QSI) form prepared by the researcher to get university students' ideas on the notion of spirituality from an Islamic perspective and also to find out how they use IT for their spiritual activities. The survey consists of a set of 13 open ended-questions and 2 closed-ended questions.

Surveys would be worthless and inadequate without thinking of the target population. It is impossible for a survey to cover the entire population if it is too large. As an alternative, sampling techniques become necessary. Since this research is qualitative, non-probability purposive sampling is used. The sample respondents required for this research must be available Muslim undergraduate students, preferably final year students from the faculty where this research is conducted. Therefore, this study sample includes twenty (20) volunteered FCSIT undergraduate Muslim students. The gender frequency distributions of the participants were as follows: 8 males and 12 females.

Yin (2014) stated that the grounds for generalizations from research based on non-probability samples are based on the notion of data saturation and analytical

generalization. Guest et al. (2006) viewed that data saturation can occur within the first twelve interviews and after that very few new phenomena are likely to emerge. Gonzalez (2009) perceived when undertaking research that is reliant on a phenomenological approach, the sample size is usually driven by the need to uncover all the main variants within the approach, he suggests that within conditions such as this, small survey samples of less than twenty are common. Finally the view of Creswell (2011, p. 209) regarding sample size is that "normally within qualitative research it is typical to study a few individuals or a few cases". These views justified the sample size of twenty for this work. This size helps the researcher build and maintain a close relationship and therefore improve the open exchange of information (Crouch and McKenzie,2006).

Other source of data collection comes from the researcher direct observation on students' experience using current LMS system at the university. Refer to Table 2.2 on students' opinion using Spectrum. Participant observation is the process that enables researchers to learn about the activities of the people under study in the natural setting through observing and participating in those activities. The researcher's personal experience as a lecturer also contributes to this data collection. Major source of information for this work come from literature review, "a systematic search of published work to find out what is already known about the intended research topic." The literature review for this research was carried out to provide information relating to the general background and context of the study. The evaluation of the system prototype is carried out through focus group of 20 participants. These participants were also involved in the earlier qualitative survey interview.

3.7 Data Analysis

Data analysis involves organizing what has been seen, heard, and read so that sense can be made of what is learned (Glesne & Peshkin, 1992). This includes sorting through data to identify patterns and establishing relationships in the research. Essentially, during

data analysis and interpretation the researcher draws conclusions about the research objectives based on the evidence collected. At this stage suggestions and recommendations need to be made. The data collected from the survey questionnaire are tabled and analyzed using descriptive analysis and tabulation of responses. Visualization graphs are created wherever appropriate to better illustrate a finding and to enhance understanding. Responses from interview are recorded and transcribed based on question numbers. Besides that, the responses are coded and placed in reasonable categories. Interpretation, sense making and significance in findings are made through rich descriptions.

3.8 Conclusion

In this chapter, we have presented a detailed account of the research philosophy, strategy and methodology according to which this research is conducted. Also, research methodologies were explained and Design Research was selected as the most appropriate to the research problem. Design Research methodology literature was reviewed, integrated, and harmonized into the process used for this particular research. Lastly the data collection and data analysis were explained.

CHAPTER 4

TECHNO-RELIGIOUS FRAMEWORK FOR SPIRITUAL DEVELOPMENT

This chapter describes how the idea of the spiritual learning space was conceived and how the techno-religious framework was formed. The emphasize of spiritual development is aimed at educating the soul of students through spiritual computing. Spiritual computing denotes a technology that enhances the spiritual experience of digital users. Based on the researcher's personal experience as an academician, comprehensive findings from the literature review, and her observation on student' behaviour using e-learning, and also from the survey findings, the techno-religious framework is proposed. This framework can be used as the basis for building the prototype of Spiritual Reflection System (SRS). This chapter also answers the first four research questions posed in chapter one.

The central research question is, "How can information technology (IT) be utilized as a teaching and learning tool, to help cultivate university students' spiritual development?" Five subsidiary questions have been set up to enable exploration of the main research question. These questions are:

(i) What are the vital elements to cultivate spiritual development?

(ii) What are the ways that IT can offer to scaffold students with spiritual values?

(iii) What is the preferred learning space for students today?

(iv) What is the suitable pedagogy for learning spirituality?

(v) What are the implications of information technology (IT) for meaningful spiritual experience?

The answers to these questions should inform the creation of techno-religious framework.

4.1 Conceiving the Idea for Techno-Religious

The purpose of pairing technology in the context of religion or spirituality as in other context is because of the unique features such as its ubiquity, global reach, richness, interactivity, information density, personalization and social networking.

Its ubiquitousness make it practical for students to access the system just about everywhere and at any time. Being global reach, students can access materials or attend cyber-class from anywhere in the world, without the need to travel. IT can deliver complex and content-rich information fusion with multi media.

These technologies allow interaction between the teacher and the students and their peers. The amount and quality of information available to students is abundance and easy to deliver. Personalization allows students to adopt, modify the learning materials from various sources. They can also generate content and share with others via social technology. They can create social communities focused on religion/spirituality.

Students seen as a whole person, as the physical being and also as the spiritual being can only be developed through education. Holistic approach is needed to shift the higher education paradigm by uniting body and spirit that make up the human, and associating the meaning and the purpose of education. Holistic learning is focused on the principle of interconnectedness and wholeness. The interconnectedness of experience and reality, and the wholeness in a person as integral being with four essential elements, physical, spiritual, intellectual and emotional. All these need activation if learning is to be more effective (Laird, 1985). Holistic education rest on four pillars of: learning to learn, learning to do, learning to live together and learning to be (Mahmoudi, 2012).

4.2 Assessing the Needs for Spiritual Learning Space

Qualitative research is about exploring thought and behaviour. A qualitative survey interview (QSI) was conducted to get university students' ideas on the notion of spirituality

from an Islamic perspective and how IT can be used to cultivate their spiritual development. The survey, which consist of a set of 13 open ended-questions and 2 closed-ended questions, was distributed to a sample of 20 volunteered FCSIT Muslim students, and each respondent wrote a few sentences as the answer. The survey is attached in the Appendix. Understanding the needs of students in this area is quite important step to begin with. The findings from this survey contribute to the building of the conceptual framework and justify the needs for spiritual learning space.

The survey indicated that 80% of respondents agree that religious knowledge gained at primary and secondary school level, is not sufficient for a person to be and behave as a good Muslim in his/her life. In line with Tauhidi (2001) observation that Islamic education has been taught primarily "as a body of information (teaching about Islam), rather than as a body of experiences (teaching about being Muslim)" and thus failed to inspire and capture the heart of students. Simply having information about Islam is insufficient to transform students into being a true practising Muslim in their life. A renewed continuous approach in teaching about religion is needed in order to capture their hearts and minds to adopt and adhere to Islam as a way of life and a system of personal and social values.

All respondents agree that they should continue to learn about Islamic religion while studying at university. Knowledge about Islam for individual obligation (*Fardh Ayn*) is dynamic in nature and need further explanation and depth at the tertiary level in accordance with the age and maturity level of students' thinking. Every student must realize that inculcation of *Fardh Ayn* knowledge is throughout a Muslim's life and at every stage and level of his/her development. Various attacks of foreign thoughts, which creep in the university such as pluralism, liberalism, modernism and false teachings, can be repelled with the right knowledge, so that students would not be easily influenced. Furthermore they should be able to filter academic knowledge which is considered to be communal obligation (*Fardh Kifayah*) studied at the university, if it is not in line with the teachings of Islam, and this

involves what is known as Islamization of knowledge process. Since religion is not taught at university level, students should take the initiative to learn it on their own. They search for books, online reference materials, social media blogs to gain Islamic knowledge. Some of them participate in *usrah*, attending religious talk at the mosque, listen to podcasts, watching YouTube and so on during their leisure time. Learning is a lifelong quest for knowledge.

All respondents (100%) feel that learning about Islam is important at university level. Various justification were given by respondents as to why learning Islam is vital at university level, and are presented in Table 4.1 below.

Table 4.1: Respondents Justification on Vitality of Learning Islam at University

Justification why learning Islam is important at university level
So that you will not be a bad Muslim
So that students are not easily influenced by the environment and peers
In the phase of growing from teens to adult, they really need guidance based on syariah.
Continuous learning process
Learning is the way of life
Life-long learning, as guidance in this world to be a good person.
Balance academic knowledge with religious knowledge
Learning about Islam should be continuous life-long learning.
Current challenges should have strong defenses to deal with it
So not to be influenced by bad crowds.
Learning should be continued
Increase knowledge
Attitudes built at university should be based on Islamic values.
To build good character
Increase knowledge
Can relate with what they learnt at university.
More mature to study religion

Exposed to new things regarding Islam.
Dynamic knowledge, so life-long learning
To remind ourselves of the importance of religion in life.

The semantic themes extracted from the justification as to why learning Islam is important at university level, embodies the following:

- To be a good person
- Life guidance
- Lifelong learning and knowledge advancement.

The main aim of education is to produce a good man (Al-Attas, 1980) or complete human beings (Ashraf, 1988). Muslim students should have belief and devotion to God, knowledgeability, possession of high moral standard, competence and responsibility. The lack of emphasis on religion and spirituality at the university has initiated this idea to provide a learning space for educating students in these non-existing areas. The researcher believes that there is a need to help nurture their spiritual and faith development in tandem to their educational development, throughout the university. Spirituality provides the inner strength to cope with life's problems and adversities. Spiritual education is the foundation of all education. These findings, up until now indicate that learning religion and spirituality at university level is required.

One of the essential problems to explore is the goal of life. When asked about their goal of life, about 55% of respondents emphasize on having a balance lasting goal between this world and the next world. 45% of respondents stress on worldly goal such as career goal, financial goal and relationship goal as their life goal. The goal in life must be aligned to the purpose of life according to Islam. From an Islamic perspective, the purpose of human life is to worship God, by leading this worldly life in harmony with the Divine Will, and thereby achieve peace in this world, and everlasting success in the life of the hereafter.

In Islam, religion is about the practice of virtue, morality and good manners, which is known as *akhlaq*. The orientation of Islam is value-based, action-oriented, rather than simply ritual-oriented. Values bring quality and meaning to life and give a person his identity and character. Figure 4.1 below displays the important values expressed by the respondents in the survey.

Figure 4.1: Word Cloud of Important Values Expressed by Respondents

Honest, hardworking, sincere, trust and punctual are among values that are considered important by the majority of respondents. The aim of Islamic education is to produce "good human beings". Accordingly, instruction should focus on values and considering the ethical dimensions of topics. In this way, Islamic education becomes powerful vehicle for character development, thus achieving its true goal. Every aspect of the teaching and learning experience must convey values and provide opportunities for students to learn about values. The Prophet Muhammad (peace be upon him) said, "The best amongst you are those who have the best manners and character" (Related by al-Bukhari). Values education can be described as a way of conceptualizing education that places the search for meaning and purpose at the heart of the educational process. It recognizes that the recognition, worth and integrity of all involved in the life and work of the school, are central to the creation of a

values-based learning community that fosters positive relationships and quality in education (ALIVE, 2007). Value based education has impact in strengthening the spiritual conduct of an individual's.

Spiritual activities, which is essential for spiritual development, is any activities in the form of worship and servitude that activate the heart, mind and action to seek proximity to God. The type of spiritual activities that respondents normally do during their life at university includes the following: performing obligatory prayers, performing voluntary prayers, reading Quran, fasting, giving charity, attending religious talk and sacred gathering, listening to reminder (*tazkirah*) online and sharing religious information with others. Islam does not separate spiritual actions from materialistic/ or body actions but considers them knotted with each other. Therefore, every actions affect ones spirituality, and ones spirituality affects the life and the happiness or depression and tranquillity.

The majority of respondents (70%) could not define the term "secular". This indicates that students are unfamiliar of the secular concept, and thus do not even realize the western world influence on their life. Gauhar (1978) has described the secular concept as an ideology which refers to the denial of spiritual things, denial of the existence of the afterlife, the separation between religion and spiritual values, power as absolute freedom to plan and organize life without any reliance on God and religious institution are limited solely to divine matters only.

Face-to-face learning, followed by e-learning is the preferred learning space for 90% of respondents. Only 10% preferred personal learning online. Applications respondents either use in their social life or for learning purposes is presented below. These are the tools available to the students for creating a PLE.

Table 4.2: Respondents usage of applications

Web 2.0 Applications	Percentage of Usage
Email (e.g. GMail, Yahoo, etc.)	100
Social Networking (e.g. Facebook, LinkedIn, etc.)	100
Wiki (e.g. Wikispaces, Wikipedia, etc.)	95
Media Sharing (e.g. Flickr, YouTube, Vimeo, etc.)	90
Document Sharing (e.g. GoogleDocs, Dropbox, etc.)	85
Microblogging (e.g. Twitter, Plurk, etc.)	75
Blog (e.g. Blogspot, Wordpress, MySpace, etc.)	65
Instant Messenger (e.g. MSN, Yahoo, etc.)	60
Video-conferencing (e.g. Skype, etc.)	40
Slide Hosting (e.g. Slideshare, Prezi, etc.)	25
Others (e.g. Radio)	25
RSS (e.g. Google Reader, etc.)	10
Social Bookmarking (e.g. De.lici.ous, Diigo, etc.)	0
Social Citation (e.g. Zotero, Mendeley, CiteULike, etc.)	0

Drexler (2010) introduced Networked Student Model that list the tools available to the student for constructing a personal learning environment on a specific topic of study. The model consists of four primary categories:

(i) academic social contacts,

(ii) synchronous communication,

(iii) information management, and

(iv) really simple syndication (RSS).

Social contacts include lecturers, course mates, peers, and subject matter experts. Synchronous communication refers to video conferencing and instant messaging. Information management activities include locating experts, evaluating resources, accessing scholarly works, and finding other open educational resources (OER). RSS encompasses blogging, subscription readers, podcasts, wikis, social bookmarking, and

other social networks. Students will not necessarily make use of every tools available in their learnings.

When respondents usage of applications from Table 4.2 is mapped to Networked Students Model shown in Figure 4.2, it can be interpreted that they mostly use the applications for collaborating and socializing, followed by synthesizing and creating purposes. None of them uses the applications for organizing contents.

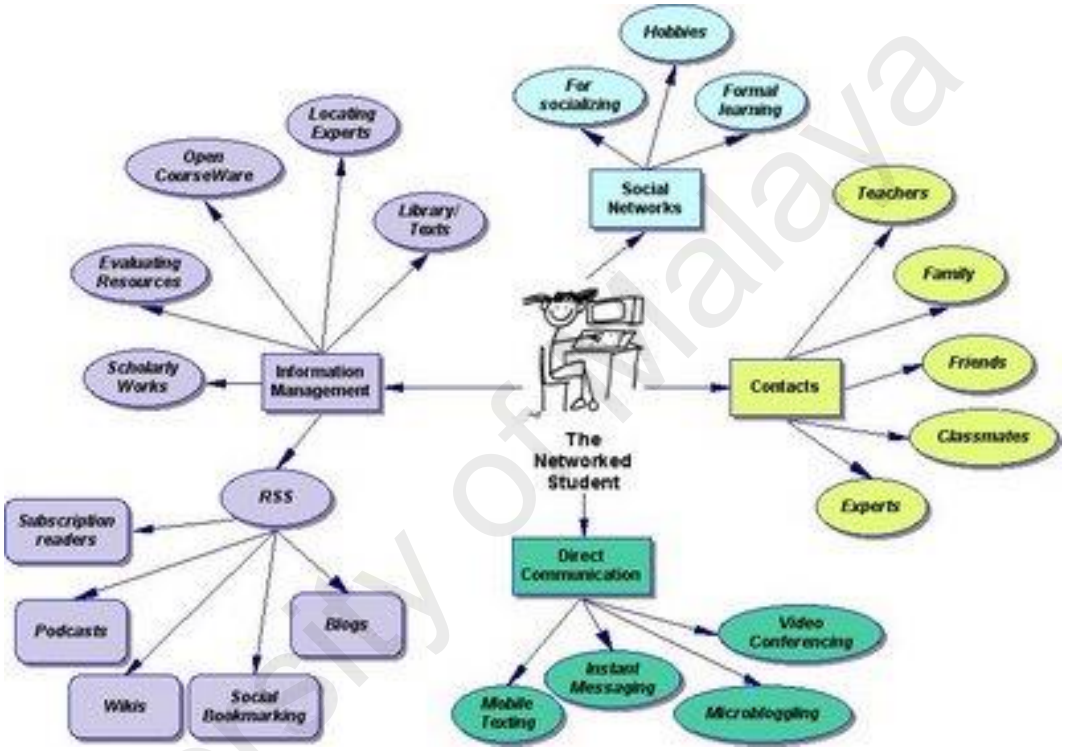

Figure 4.2: The Networked Student Model (Drexler, 2010)

According to respondents, beneficial knowledge they gained from social networking sites that had made some positive impacts on them, include, among others, the following: practical knowledge, useful information, uplifting inspiration, motivation to distress, advice to be a better person, awareness, stories that teach a lesson, good values and Prophet's Sunnah. Indications that knowledge is beneficial are that it leads to practice, fine character, good manners and praiseworthy attributes. Allah described the people of knowledge saying:

> "Say believe in it (the *Qur'an*) or do not believe. Verily! Those who were given knowledge before it, when it is recited to them, fall down on their faces in humble

prostration. And they say, 'Glory be to our Lord! Truly, the Promise of our Lord must be fulfilled.' And they fall down on their faces weeping and it adds to their humility." (Qur'an 17:107-109)

According to the respondents, IT capabilities that can somehow help increase faith, clean the heart and motivate to do good deeds, include watching online video, listening to online lecture, reading related blogs, using Quran apps, and utilizing search tools to find information. All respondents agree that they cannot be more religious by studying religion merely online all by themselves. The trustworthy sources of information online is very important. Verification of the retrieved Islamic information played an important role to determine the credibility, authenticity, reliability and relevance of the information.

When asked if they feel that university education has transformed them into becoming a better person, 65% of respondents agree that they had become a better person. They remarked that they became knowledgeable, matured, disciplined, confident, hardworking, and better in terms of academic. One of the respondent commented that university education has no direct contribution on spiritual development.

The survey ended up with a request for respondents to rate themselves based on feeling if they are “religious / spiritual” on a scale of 1 to 10, where “1” is “not religious / spiritual” and “10” is “very religious / spiritual. In this random rating, the range in which they rated themselves, lies between 4 to 8. Average rate is 7. A more accurate ratings can be obtained if there is a religious or spiritual index available.

4.3 The Development of Proposed Techno-Religious Framework

In general, a framework is “a real or conceptual structure intended to serve as a support or guide for the building of something that expands the structure into something useful”. This definition is derived from, http://whatis.techtarget.com/definition/framework.

It is widely accepted that any system development process has to start with the conceptual specification defining "what" the system under consideration should do (IEEE-830, 1984). This specification focuses on the domain the system has to work in. It thus has to specify clearly the domain specific requirements in a language providing domain specific concepts, which enable this specification.

Following Zachman (2002), framework is "a logical structure intended to provide a comprehensive representation of an information technology enterprise". It allows for multiple perspectives and categorization of business artefacts. Broad overview, outline, or skeleton of interlinked items which supports a particular approach to a specific objective, and serves as a guide that can be modified as required by adding or deleting items. Review of related literature, students' feedback as discussed in chapter 2, and author's analysis of students needs and her personal experience contribute to the development of the framework.

Grounded on several studies done, the researcher found that there is convincing evidence that information technologies can:

(i) enhance learning when pedagogy is sound, and when there is good match of technology, techniques and objectives (Kadiyala & Crynes, 2000);

(ii) enhances students' perceptions of their learning (Carbonaro, et.al, 2008);

(iii) enable personalized learning (Drexler,2010);

(iv) facilitate better learning by providing supplemental materials in multiple forms (Shams & Seitz, 2008) and

(v) cause the rise of social media for informal learning (Yasar & Karadeniz,2011).

Based on class students' survey on their opinion using e-learning system (Spectrum) at a faculty, the researcher discovered that students want (i) timeliness progress feedback; (ii) guidance or scaffold in academic activities; (iii) rubric on how assessment and evaluation of course work is carried out; (iv) tacit knowledge sharing; (v) space for counselling and motivation. They also suggested that urgent announcement to be sent to through short

message service (sms), now Whats App, instead of email and that any class replacement to be replaced with video-based lecture. Price, (2009) recommended to include the 5 R's (i.e. Rapport, Relevant, Research-based methods, Relaxed and Rationale) for ideal learning environment for the Millennials. The researcher made some thoughtful discoveries. Firstly, although students prefer guided learning, they should also be exposed to independent learning. Independent learning is important in higher education, in order to transform students into self-directed and self-determined learners. Secondly, not only their mind should be developed with academic knowledge which stress on building knowledge, skills and attitudes for the mind to be literate, but also their soul. Religious knowledge and spiritual values are important for soul development so that the heart become literate. Heart literacy is knowing the value beyond something and this is the essence of holistic education. Thirdly, students should have common space as well as personalized learning space, either with or without the support of technology. Blended learning and blended spaces are necessary in today's learning and teaching environment.

The researcher believes that lecturers should double their effort and be innovative, if they want students to benefit greatly from e-learning. Different approach need to be considered when dealing with Millennials students. Besides formal learning, both informal and non-formal learning can add value to learning opportunities. The use of social network can help strengthen the links between informal and formal learning in higher education. Personal connection and encouragement is very much needed in online learning. Online Learner Support model which is based on Providing Academic and Relational Support (PARS) model (Lowe, 2005), showed two categories of support, which are relational support and academic and technical support depending on the students level of dependency. Relational support takes the form of personal interaction and social connection, which creates a foundation for student motivation and engagement. The academic and technical support

requires competent and responsive faculty, technical support, quality materials, tutorial assistance, knowledgeable support staff and orientation to the learning platform.

The researcher concluded that the essential elements for spiritual development consists of:

i. The human aspects or main stakeholders, whom are a dedicated and encouraging spiritual conscious teachers, and students who are willing and sincere to learn;
ii. The religious aspects, consist of authentic, relevant educational materials and resources and also Islamic or Prophetic pedagogy for teaching methods and practices,
iii. The technological aspects, IT and Web 2.0 tools to support teaching, learning, and creating the personal learning space.

4.4 Significance of the Proposed Techno-Religious Framework

The framework consists of two main parts, namely, technology and religion. Technology is the context to support teaching and learning of spirituality by providing the learning space, while religion formed the content part of the framework. The technology context that are made-up of a collection of loosely coupled tools, including Web 2.0 technologies form a personal learning environment, a technology-rich learning space. Personal learning environment support individuals in developing their own learning environment based on a set of tools which allow personal access to resources from multiple sources, to support knowledge creation and communication (Attwell et al., 2008), as well as appreciating the relevancy of what they learnt and applying it in their real life. The unification between context and content can create a meaningful learning experience for both students and teachers. The proposed framework has several significant features that are described in the following sections. Figure 4.3 shows the proposed techno-religious framework.

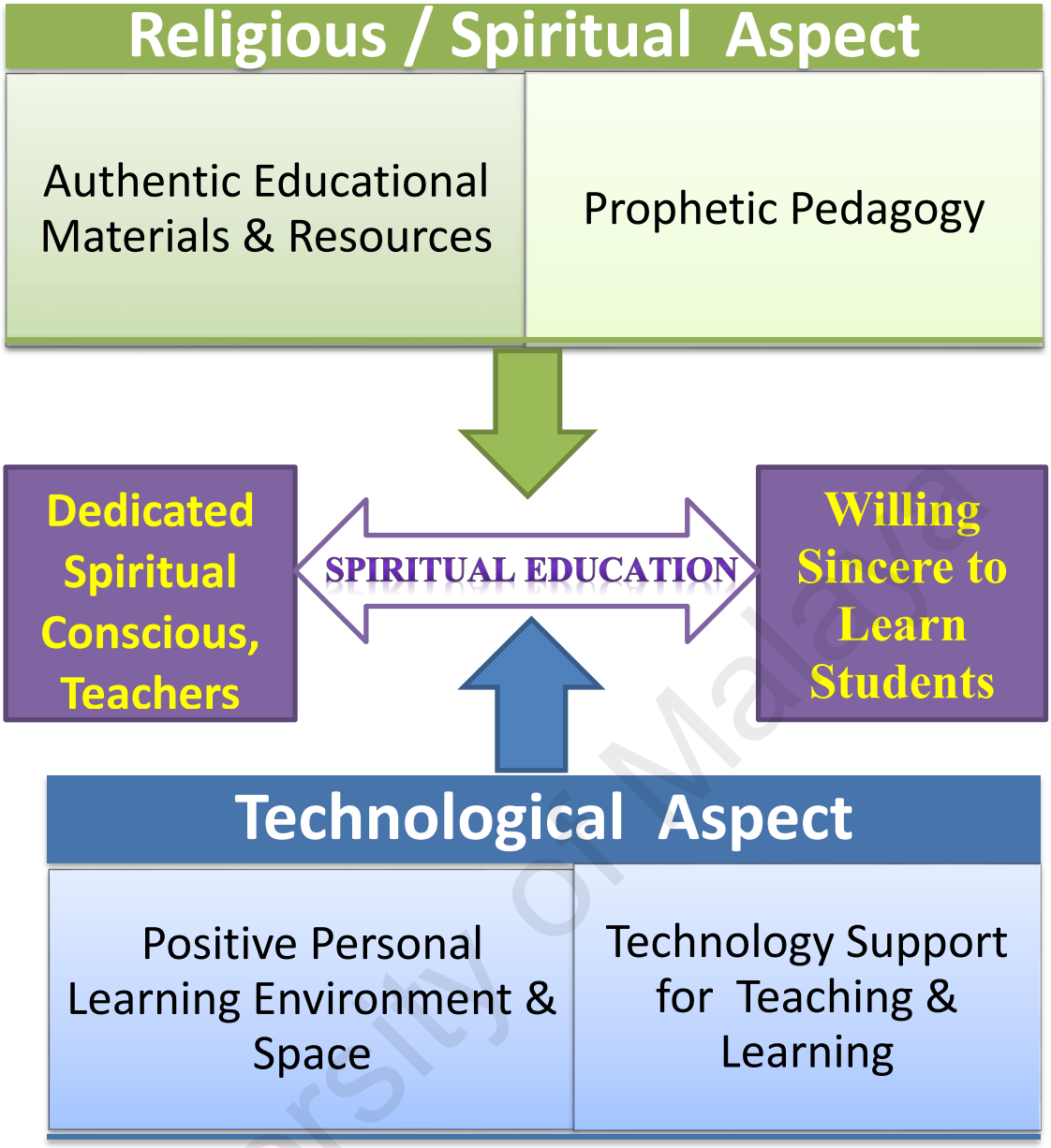

Figure 4.3: Proposed Techno-Religious framework

The framework illustrates IT and Web 2.0 tools can be utilized to create an informal and non-formal personalized learning space to help cultivate students' spiritual development. Each component that made up the framework is interrelated. For discussion purpose, each component will be discussed individually. The discussion will begin with the goal of the framework that is for spiritual development. Then followed by the techno components, in this case the technology and learning space are regarded as belong to techno category. After that, the religious components, which are the pedagogy and educational materials. The teacher and the students are main stakeholders.

4.4.1 Spiritual Development

Everything that a Muslim says or does must be in accordance with God's pleasure, and therefore everything in Islam is considered to be spiritual. In Islam, human personal development comes from spiritual development which emphasis on purification of the soul and the heart in order to get closer to God. This means that every Muslim should establish a constant awareness, mindfulness and consciousness of God in all their actions throughout their life span. The level of God consciousness is dependent upon the closeness the person is with God. Spiritual development is guiding students towards the truth, opening the path to know God and transforming them into virtuous and noble human being. Knowledge development and knowledge application in Sufism are criterion for spiritual development.

Islam regards knowledge pertains to God as the most important kind of knowledge. True knowledge, in al-Ghazali's view, is knowledge of God, His books, His prophets, the kingdoms of earth and heaven, as well as knowledge of *shari'a* as revealed by His Prophet. This useful knowledge will lead human to know his Creator, his purpose of existence and so on for ultimately the real purpose of him seeking knowledge is to know all these things. Knowledge is closely related to intelligence. Intellectual intelligence (IQ) is normally related to mental ability. In academic world, IQ is related to academic achievement and is determined by cumulative grade point average. IQ is the proof of academic intelligence, confined to academic criteria. In this study, higher level IQ is seen as an enabler for learners to learn and acquire knowledge through the mind and five senses. This knowledge penetrates the heart and strengthens the faith, which then moves into the body and spiritual organ to activate action. The goal of spiritual development is to cultivate spiritual intelligence (SQ) and induce action intelligence (AQ). Spiritual intelligence is the application of spirituality into right action, the nexus of experience and knowledge, mediated by the human being's capacity for meditation, contemplation and meaning making culminating in manifested behaviour worthy

of God's pleasure. The Prophet Muhammad (peace be upon him) said: 'Faith is knowledge in the heart, words on the tongue and action with the physical faculties (Ibn Majah). Al-Ghazali quoted that knowledge without action is vanity, and action without knowledge is insanity. Knowledge, faith and deeds must exist in unity as shown in Figure 4.4.

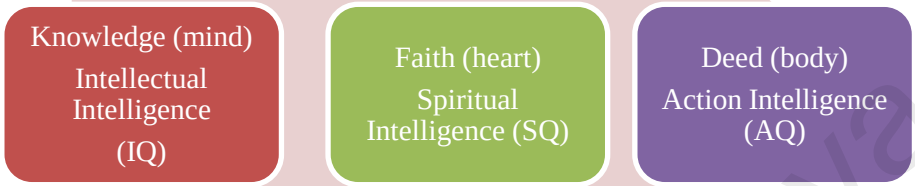

Figure 4.4: Spectrum of Intelligence

One of the ways to develop the soul in Sufism is through purification of the soul (*Tazkiyatun Nafs*). This agent of spiritual development is a disciplined and continuous process that gives birth to the seed of awareness in the heart. It is related closely to the function of heart itself, which is to know the Creator, to love Him, and to seek closeness to Him (Farid: 1993). *Tazkiyatun nafs* also means the process to ascend the *nafs* from the level of *Nafs ammarah bi al-su'* to the level of *Nafs al-mutma'innah* and to maintain it in this level through spiritual exercise. The process of purification the soul involves the process of *takhalli* (eradication of the self from ignoble characteristics and *tahalli* (implantation of noble characteristics in the self to form autonomous personality traits) (Daud Hamzah and Kadir Arifin, 1980). In this process, according to Al-Ghazali, ten spiritual stations or maqamat marks the route of ascendancy, which starts from repentance (*tawbah), patience (sabr), thankfulness (shukr), hope (raja'), fear (khawf), poverty (faqir), renunciation (zuhud), unity (tauhid), trust (tawakkal) and love (mahabbah*).

Al-Ghazali (450 - 505 AH; 1058 - 1111CE) , in his book "Ihya Ulum Addin" (Revival of Religious Learnings) Volume 4, identified 6 stages as the way of developing this tauhidic

personality and intellectuality, apart from studies, devotions, remembrance, and reflection. These are the stages of self-purification:

Figure 4.5: Al-Ghazali Six Stages of Spiritual Efforts

Adapted from Uzma Mazhar (2002), each stages involve the following:

Stage 1 **Musharatah:** to make an agreement or contract.

In this stage, one must identify and set standards, conditions, limits, terms and guidelines for one's own thoughts, feelings and actions one is trying to achieve.

Stage 2 **Muraqabah:** to guard.

In this stage, one must meditate before one's actions. This involves that one must think, contemplate, be introspective and keep watch over one's own self. We function as our own observer.

Stage 3 **Muhasabah:** to evaluate self, taking account.

This step involves self-examination and one takes account of one's own actions and continuously checks if one is upholding the agreement.

Stage 4 **Muaqabah:** to punish, to control.

For the contract to work we set consequences for ourselves when we have done something wrong and fail to keep the stipulations we agreed to uphold.

Stage 5 **Mujahadah:** to make effort, striving.

In this step one is fighting against one's own lower self and inclinations. This is the stage of continuous and consistent struggle to overcome one's nafs (desire).

Stage 6 **Muatabah:** to rebuke.

In this step, if one has failed to maintain the contract, we make the effort to turn around, regretting and changing one's ways on recognizing the error.

4.4.2 Technology

IT allows learners to adopt multiple perspectives on complex phenomena by presenting rich learning environments, to foster flexible knowledge construction in complex learning domains, and to cater for individual differences (Godfrey, 2001). Learning Context Model proposed by Tankeleviciene and Damasevicius, (2009) and Greg Sherman (2004) instructional scaffolds are incorporated in this part. Activities assisted by IT tools and services is summarized in Table 4.3.

Table 4.3: Activities assisted by IT Tools & Services

TOOLS & SERVICES	Planning / Organizing / Motivating / Tracking
	Communication / Knowledge Sharing
	Reminders / Reflections
	Applications

There are many systems that Web 2.0 tools could be integrated with, including:

- Virtual Learning Environments (VLEs), which are typically structured around courses.
- Portals, which are typically structured around information sources.
- Electronic-portfolios, which are structured around the individual and his or her activities.

Portals and electronic-portfolios are suitable for this study.

4.4.3 Learning spaces

Technology is now accepted as a key driver for both efficiency and effectiveness in the learning space (Vance, 2011). The increasing availability of online learning and the proliferation of mobile devices have provided higher education an effective and flexible opportunity to deliver quality learning experiences to all students. The integration of the standard face-to-face classroom learning and online learning, known as blended learning is currently a common practice at higher education today. However, successful blended learning does not merely means a simple integration between technology and classroom learning. It can means a whole lot of things, be it the blend of formal, non-formal and informal learning, unification of IQ, EQ and SQ, combination of VLE and PLE, a shift from pedagogy, to andragogy and heutagogy, a change from education 1.0, to education 2.0 and education 3.0 and so on with particular emphasize on Millennials. The proposed blend of learning made by this study is focus on PLE to support present face-to-face learning and existing e-learning accompanying the subjects taught. The idea of PLE is to take advantages of the web 2.0 applications to support a learner's self-regulated learning process, not only limited to formal learning but informal learning and ultimately a lifelong learning (*McLoughlin and Lee, 2009*). PLE include the following features (Graham Attwell, 2007)

- Allow learners to declare the own learning goals.
- Support the learners in their learning process.
- Connect and interact learners with others in the learning process

Attwell, et al., (2008) suggested list of possible PLE functions that include:

- Access/search for information and knowledge;
- Aggregate and scaffold by combining information and knowledge;
- Manipulate, rearrange and repurpose knowledge artefacts;
- Analyse information to develop knowledge;
- Reflect, question, challenge, seek clarification, form and defend opinions;

- Present ideas, learning and knowledge in different ways and for different purposes;
- Represent the underpinning knowledge structures of different artefacts and support the dynamic re-rendering of such structures;
- Share by supporting individuals in their learning and knowledge;
- Networking by creating a collaborative learning environment.

4.4.4 Teachers – with different roles

The role of teachers or lecturers to implement effective teaching is an important factor to improve the learning of students towards the physical, emotional, spiritual and intellectual development. Most important requirement is for the teacher or lecturer must belong to the saved group that is the group of Ahli Sunnah Wal Jamaah. As mentioned by Prophet Mohammad (peace be upon him) that out of 73 sects of Muslims, only one will be on the right path and the rest will be thrown into Hell fire on the day of judgement (Tirmidhi). Their role is to act as a facilitator and system administrator. As a facilitator, the lecturer has several roles to play in order to boost different types of intelligence in students.

The roles of educator in Islam are as follows:-

Mu'allim - Referring to the role of a teacher to inform, teach, transfer and convey various types of information, discipline and knowledge to students either through lectures, exercises, practice, drills, instruction or any sort of planned teaching.

The process of *Ta'lim* include knowledgeable manners that will mould the formation and development of students as pious individuals.

Murabbi – Referring to the role of a teacher to build a common sense, developing identity and integrity, spurring minds, pour love, educate, teach, nourish and protect defamation of students and nurturing the talents and abilities that exist within them gradually, gradually in order to grow in accordance with the maturity experienced by the students.

Muaddib – Referring to the role of a teacher to nurture, educate, develop, guide, grow, purify, and to inculcate noble, discipline, behavior, personality and good manners throughout the building and personal development of students / pupils. *Ta'dib* process is derived inspiration of Almighty God. *Ta'dib* value is absolute in nature and is based on a strong faith.

Besides playing these roles, the lecturer also is the e-content creator, provider and filter.

As content provider, the lecturer will recommend the authentic must have references and recommended resources to be placed on the learning space.

As content filterer, the lecturer will need to filter all the common content uploaded by the students. This filtration is important to avoid misleading and confusing information.

Table 4.4: Different roles of teachers

ROLE **Lecturer / Admin**	Mu'allim – Islamic Worldview → Islamic Conscious	IQ
	Mu'allim – Islam (syariah) → Muslim	AQ
	Murabbi – Iman (aqidah) → Mukmin	SQ
	Mu'addib – Ihsan (tasawuf) → Muhsin	EQ & SQ

4.4.5 Students – seeking guide

Being a good student is possible only through being a good student in the school of Prophet Muhammad (peace be upon him). God draw attention to the model of His prophet based on His words: "Surely there was a good example for you in the Messenger of Allah, for all those who look forward to Allah and the Last Day and remember Allah much" (Qur'an 33:21). Students must first be self-prepared with the right intention to study, learn manners towards teachers, possess good discipline and able to self-regulate and become proactive in their learning process. Students must not be a blind follower of faith. Mastery of knowledge should be the main principle in the life of every student. They need to be an active constructor, discoverer and transformer of knowledge. Students being the content consumer can personalized the content or share user-generated content with others.

4.4.6 Educational materials and resources

E-content is the core component of this learning space. The lecturer who is the creator, provider and filterer of knowledge content provides default and optional contents, references and recommended resources. The type of content can be categorized into two main types, which are goal-based and value-based content. In order not to overburden students with unnecessary content, goal based learning content is necessary. Each student must be clear about the goals of life and education. Awareness of these goals will help them prioritize and balance between the temporary worldly goals and the eternal afterlife goals. Goal-based learning works best when there is a mechanism to allow learners to connect socially and learn from each other. Pull learning rather than push learning and is student-centred that begins with their existing understandings and experience.

4.4.7 Prophetic Pedagogy

An effective teaching can only be realized with the science and art of teaching, which is pedagogy. Spiritually engaged pedagogy integrates the cognitive (head), affective (heart), and behavioural (hands) aspects of learning and development, and posits that all are teachers and learners in the process. The process of becoming educated is not a forward motion toward things unknown, rather it is a search for knowledge that will bring an individual back toward their *fitrah* (natural state of purity). "All education is a re-education – a reclamation" of a pure state of being again (Murad, 2001). It is a process of recognizing the magnanimity of the Creator – of His Oneness (*Tawhid*). All forms of knowledge that bring an individual closer to that state of understanding are considered educative. Islamic pedagogical principle is foundation for system of teaching that is grounded in the intellectual and spiritual tradition of the Prophet Muhammad (peace be upon him), the premier model in education (Abd Fattah Ghuddah, 2009 & Said Hawa, 1990). Pedagogy of the Prophet (peace be upon him) scope is described in the Quran, "As also We have sent in your midst a messenger from among you,

who recites to you Our verses, and purifies you, and teaches you the Book and the wisdom, and teaches you what you did not know." (Qur'an 2:151)

Self-empowerment has a direct bearing on lifelong education because it is the desired result. As part of efforts to strengthen themselves, one should be self-directed and self-determined in learning. **Self-directedness** is a personality trait referring to self-determination, that is, the ability to regulate and adapt behaviour to the demands of a situation in order to achieve personally chosen goals and values (Cloninger et al.,1993). This self-directedness should exist by itself in the students as studying is an obligation. The following hadiths confirm the order.

"Seeking knowledge is an obligation upon every Muslim."

(Ibn Majah 224)

"If Allah intends good for someone He bestows understanding of the religion".

(Bukhari and Muslim 71)

Andrade and Du (2007) viewed self-assessment as "feedback for oneself from oneself". They viewed self-assessment as an opportunity for students to reflect on their own work with the goal of learning more, making the work better, and thereby improving the chances for a good grade.

Teaching methods and techniques inspired by Prophet Muhammad (peace be upon him) as in Antonio, et al., (2007):

i. Learning conditioning (ask for silence to remind, direct calls and commands to listen and be silent in an indirect way);
ii. Active interaction (interaction hearing: engineering speak, not long-winded in speech and not too pitched poetic, pay attention to intonation, pauses in the midst of an explanation; the interaction of view: eye contact in teaching, utilizing facial expressions, smile);
iii. Applied-learning (practical methods applied by the teacher and carried out by

students);

iv. Scanning and leveling (understand student individually according to the level of intelligence);

v. Discussion and feed-back (logical method in providing answers and create a simple example that is easily understood);

vi. Story telling (storytelling);

vii. Analogy and case study (provide imagery and real case studies around life);

viii. Teaching and Motivating (increase the passion of learning and curiosity are high);

ix. Body language (making delivery grew brighter, more definite and clear; attract the attention of listeners and make meaning is attached to the mind; to shorten the time);

x. Picture and graph technology (explanation is reinforced by drawing or writing);

xi. Reasoning and argumentation (disclose the reasons for going to clarify something hard and heavy in order to be understood by students);

xii. Self-reflection (giving the opportunity to the students to answer itself a question for students to optimize the work of the brain and sharpen the mind);

xiii. Affirmation and repetition (repetition of sentences and words name);

xiv. Focus and point basis (using techniques based formulations large or points will help the students to absorb knowledge and keep from forgetting);

xv. Question and answer method (questioning techniques to draw the attention of the audience and make the listener ready for what will be delivered to him);

xvi. Guessing with question (it is important to strengthen and enlarge the understanding of curiosities);

xvii. Encouraging student to ask (the teacher give the opportunity and motivation to students to dare to ask the question: can ask the elimination of ignorance and improving the understanding and thoughts and become a teacher evaluation

instrument upon the submission of the lesson);

xviii. Wisdom in answering question (addressing the people who ask the question in accordance with the level of knowledge);

xix. Commenting on student question (to comment on the students' answers);

xx. Honesty (a teacher must inculcate noble gesture dare admit ignorance into their students. Utterance 'I do not know is part of the science').

The Prophet Muhammad (peace be upon him) said: “Bind knowledge by writing.” One of the best practices in education is to write what is learned. The writing process draws attention to focus on the subject, and to avoid forgetting what has been learnt. Through writing, one not only writes on paper but also on the hearts and minds.

4.5 Conclusion

This chapter presented the description on the formation of the proposed framework known as Techno-Religious framework. Three aspects, which are listed as human, religious, and technology are the main component of the framework. Each component has its own features as pre-requisite for it to succeed.

CHAPTER 5

SPIRITUAL REFLECTIVE SYSTEM PROTOTYPE EVALUATION

Fostering spirituality in students using information technology is an opportunity to engage and integrate its effectiveness into learning in a way that tributes to God. Thus, this Spiritual Reflective System (SRS) is developed as the means intended to illuminate and activate ones heart, mind and action moving to the path of God. Being closer to God bring joy to the soul. This chapter describes the design rationale underlying it. The researcher stress that the Spiritual Reflection System is an initial prototype, which can be enhanced and extended to include other tools based on feedbacks received. SRS is designated for students and facilitated by the lecturers as an informal education platform, in online personal learning environment to foster students' spiritual development. Taking into account students' learning preferences and the Techno-Religious framework, a tentative design is proposed in the Suggestion phase of the design research phase. A prototype system is built in the Development phase. The bulk of this chapter, however describes the process of SRS evaluation, done in a focus group meeting. The evaluation criteria are presented, followed by results and findings from the process.

5.1 Spiritual Reflective System Prototype

The Techno-Religious framework proposed in Chapter 4 is transformed into a working prototype for potential users to evaluate and determine its contribution and effectiveness. This prototype is a working model, which appears and functions similarly to the completed intended web-based system known as Spiritual Reflective System (SRS). The main objective of SRS is to help its users to foster spiritual intelligence. With the support of Web 2.0 interactive tools such as Twitter, YouTube, Facebook, SlideShare etc., the users' learning experience will be enhanced. The Techno-Religious framework is the basis for the

foundation of this system. The system is made up of three aspects; human, religious and technology. The characteristics of each aspect have been derived from an extensive literature review done in the earlier chapter. For human aspect, a dedicated spiritual conscious teacher is a pre-requisite to educate a willing, sincere to learn student. Authentic educational materials and resources which are free from elements that deviate from the traditional Islamic teaching, coupled with instructional method based on prophetic pedagogy. Web-based technology with embedded social media, are used in teaching and learning process and also to create a positive personal learning space.

The development of this prototype goes through the standard system development life cycle; which is system analysis, system design, system development, system testing and system evaluation. The system design is based on Human Activity System (HAS) model, is discuss in the next section. The detail aspects of the prototype development are not the concern of this work. The focus is on prototype evaluation.

5.2 Spiritual Reflective System Design Modeling

Peter Checkland (1999) classifies systems into five types:

i. natural systems – systems that exists in nature, independent of any human involvement.
ii. designed physical systems – systems with conscious design and exist to serve some human purpose.
iii. designed abstract systems - systems do not contain any physical artifacts but are designed by humans to serve some explanatory purpose.
iv. human activity systems - systems are observable in the world of innumerable sets of human activities that are more or less consciously ordered in wholes as a result of some underlying purpose or mission.

v. transcendental systems - systems beyond knowledge or metaphysical system.

The SRS being an information system fits in the classification of human activity system. Engestrom's Human Activity System model shown in Figure 5.1, is adopted as the methodological framework in the design of SRS with the objective to better understand human activity. As explained by Hasan & Kazlauskas (2014), the relationship between subject (human doer) and object (the thing being done) defines an activity, which is mediated by tools and community through rules and division of labour. The object of an activity encompasses the activity's focus and purpose while the subject, a person or group engaged in the activity, incorporates the subject's/s' various motives. The outcomes of an activity can be the intended ones, but there can also be others that are unintended. The outcomes are distinct from its object or purpose.

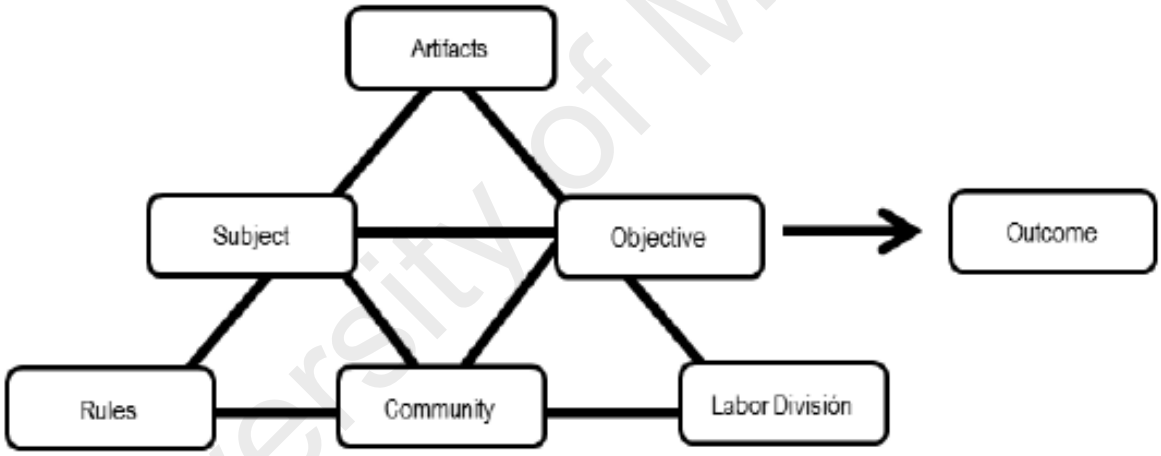

Figure 5.1: Engestrom's (1987) Human Activity System model

We apply the eight step Human Activity System (HAS) model, suggested by (Mwanza and Engestrom, 2003) to the activity of fostering spiritual intelligence, as shown in Table 5.1.

Table 5.1: Application of HAS 8-steps to spiritual education

Steps	HAS Modelling Questions	Applications on Spiritual Education
1. Activity	What sort of activity am I interested in?	Fostering spiritual intelligence through spiritual education. Learners in the process of learning will be able to browse and read, collect for own reference, modify / create, network with co-learners and teachers, communicate, and share ideas, knowledge, etc.
2. Object	Why is the activity taking place?	To provide knowledge in order to create awareness in learners which can intensify their faith and moves their body to take actions and practice what they learnt.
3. Subjects	Who is involved in carrying out the activity?	Teachers and learners
4. Artefacts	By what means are the subjects performing the activity?	Using Spiritual Reflective System (SRS), with learning content provided, and utilizing the tools to facilitate learning spiritual matters.
5. Rules and regulations	Are there any cultural norms, rules or regulations governing the performance of the activity?	Abiding to the manners, rules and Islamic guidelines. Both teachers and learners must have sincere intention in teaching and learning effort.
6. Division of labor	Who are responsible for what, when carrying out activity and how are those roles organized?	Voluntary effort for teacher as mentor to provide this educational channel and invite learners, advisors to the group.
7. Community	What is the environment in which this activity is being carried out?	The learning group, with invited members.
8. Outcomes	What is the desired outcome from carrying out this activity?	To provide real and meaningful learning for learners spiritual well- being and intelligence.

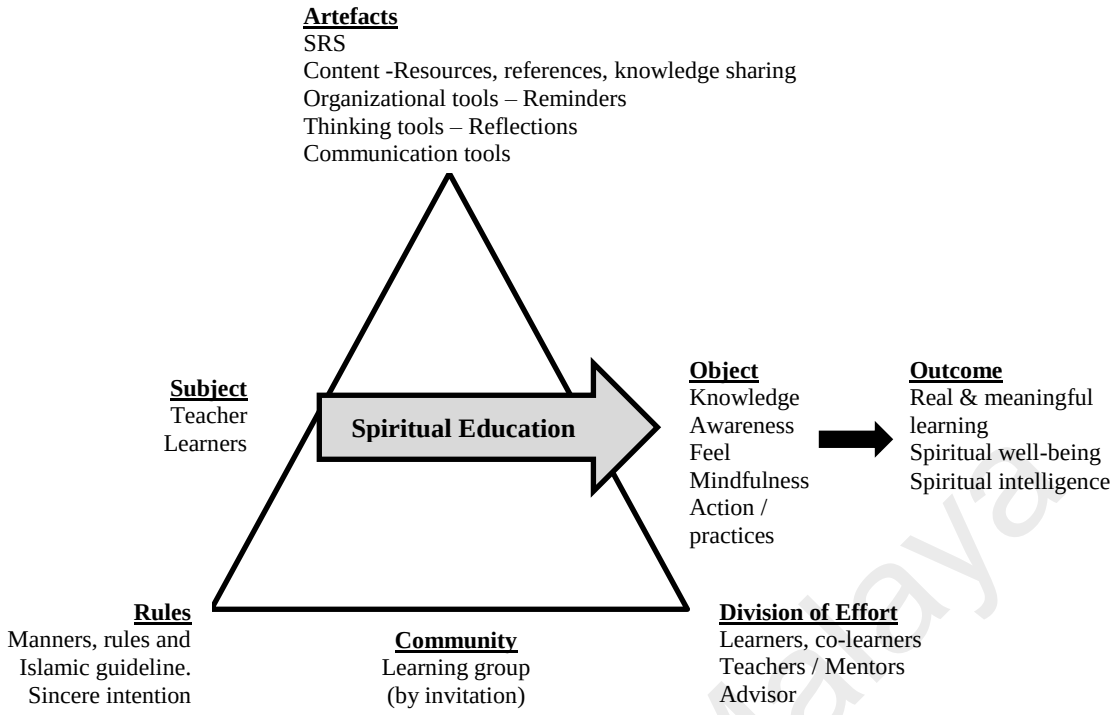

Figure 5.2: Human Activity System model for spiritual education

5.3 **Spiritual Reflective System Learning Environment and Content**

Two aspects that are seen as important in this fostering endeavor are positive learning environment and useful content. Susan et.al. (2015) described ways to form a positive learning environment that make students feel expected, welcome, supported, excited, have autonomy and clear about their roles. SRS offers personal space for students to learn about spiritual matters. This space alone is not an alternative to leave students to explore the subject on their own. The use of the space is based on guided instruction. More importantly, before they are allowed to access the SRS, face-to-face meeting with the teacher is required. During this first meeting, students are informed about the aim, expectation, roles, learning autonomy and provide clear understanding and entertain their questions. The mode of learning is blended, meaning that they will have to attend regular enlightenment sessions first and only after each session they can access the system as support for their face-to-face learning session. Learning religion directly from books or online media without a teacher is

strongly discouraged in Islam. A competent teacher is able to provide a true understanding of knowledge to students, whereas direct knowledge from books or other online media may lead to confusion or false understanding of knowledge. Not all information found on the internet was authentic despite allegedly claimed that it came from the right source. Moreover, Islam is divided into 73 sects and only 1 sect is saved, that is Ahl as-Sunnah Wa'l Jama'ah.

"*Allah's Messenger (peace be upon him) said: There will befall my Ummah exactly (all those) evils which befell the people of Isra'il, so much so that if there was one amongst them who openly committed fornication with his mother there will be among my Ummah one who will do that, and if the people of Isra'il were fragmented into seventy-two sects my Ummah will be fragmented into seventy-three sects. All of them will be in Hell Fire except one sect. They (the Companions) said: Allah's Messenger, which is that? Whereupon he said: It is one to which I and my companions belong.*

(Hadith book Tirmdhi Hadith no. 171 Narrated by Abdullah ibn Amr)

In Malaysia, the Muslim is holding steadfast in Ahl as-Sunnah Wa'l Jama'ah; following aqedah from the theological traditions of al-Asya'irah and al-Maturidiyyah; Fiqh practices based on mazhab Imam Syafi'i and teaching of Sufism-morality based on the guidelines of Imam Ghazali. All the learning contents and materials presented and used in our work are strictly based on the path of Ahl as-Sunnah Wa'l Jama'ah.

Five existential questions are placed on the home page of SRS for reflection purpose. These questions are:

- Who am I?
- Where do I come from?
- Why am I here, in this world?
- What am I made of?
- Where am I going?

The contents are categorized into six groups. Main resources shown in Table 5.2 are Al-Quran and Al-Hadith as the real source of knowledge for spiritual awareness and progress. From stories of Prophet Muhammad (PBUH) and companions students can learn about manners

and morals, gain religious knowledge, source of optimism and increase the love for the Prophet and his companions. References include recommended books to read, lectures to enhanced understanding in video and audio format, useful web links to reliable online sources, daily supplications & zikir, knowing Allah through His attributes and names. Students may also attend cyber retreat, discourse, and sermon online. Content from the time dimension include call for prayers time, calendar, self-reminder, etc.

Reflection is vital to reinforce learning. What one have learnt, have practiced, have questions or intent to do can be written in the self-note. Students can also share the books they read by extracting the central points and share with those who have not read it. Six stages of Iman Al-Ghazali is the tool that can help student to exercise what they have learnt. Interaction between students and teacher and between their peers also has a place in the system.

Table 5.2: Spiritual Reflective System Content

RESOURCES	**REFERENCES**	**REMINDERS**
• **Al-Quran** Quran Transliteration / Reciter / Quran Memorizer • Authentic **Hadith** • Stories (*seerah*) of Prophet Muhammad • Stories of Companions • Book of Adab as a student Quran Transliteration - For Non Arabic Speakers who are looking for an easy way to pronounce the Arabic words. Reciter - A Program which allows you to listen to verses multiple times to facilitate memorization. Quran Memorizer - Another program which allows you to repeat certain verses. (http://www.islamicity.com/education/quranreciter/)	• Recommended Readings (e-Books) • Videos Lectures / Tazkirah • Audios Lectures / Tazkirah • Words of Advice • Islamic Databases • Web links • Who is Who in Islam • Islamic Holy Places • Dictionaries • Doa • Zikir • 20 Attributes of Allah • 99 Asma al-Husna • Retreat • Discourse • Sermon *"When the son of Adam (human being) dies, his deeds are stopped except for three things, namely, his good deeds, his knowledge, and his pious child who prays for him."* *- Prophet Muhammad (PBUH)*	• Prayers Time • Calendar (include Hijrah Calendar) • Schedule • Reminder for myself (Do and Don'ts) • To do's list • Checklist & Templates • Islamic Posters **Time Management** (S.Al Asr) Forgetfulness has been the natures of men. Allah knows our weakness and Allah has ordered us to constantly reminding other Muslims about Allah and the orders of Allah. Allah has said in the Quran in meaning that the work of reminding is beneficial to those who believe but it gives no benefit to those who has no believe in Allah and the life hereafter. So remind, if the reminder should benefit; He who fears [

	In this context, '*his knowledge*' means knowledge that benefits others (including written materials such as articles, papers, books, etc.). Not only what has been learned, but more importantly what has been shared. So, sharing knowledge is not only a good thing to do, it is a form of worship in Islam.	Allah] will be reminded. But the wretched one will avoid it. (S. Al-'A`lá [87]:9-11)
REFLECTIONS • Self-notes • Book points • Six stages of Imam Al-Ghazali **Question Bank –** How are we spending our life? Evaluate yourself daily before going bed. Thank Allah for good deeds, repent to Him for your mistakes and sins.	**COMMUNICATIONS** • Question & Answer Session (Interaction between students and teacher) • Chat • Collaboration • Discussion • Charity online	**SOCIAL MEDIA TOOLS** • Presentation Tools (SlideShare, Prezi, Coggle) • Video Tools (YouTube, Animoto) • Productivity tools (GoogleDocs, Dropbox, Evernote)

Spiritual Reflective System is designed to be openly accessible only to selected students who are mentee to the lecturer. Students practice their autonomy when using SRS as they have the choice to choose what to read, what to share, what to discuss, what tools to use, and etc. According to the findings in Chapter 4, many students preferred certain level of scaffolding. Spiritual Reflective Space is designed to encourage learner to follow knowledge from basic to intermediate and then to advance knowledge.

5.4 SRS Interface

Based on the designs, Spiritual Reflective Space is developed accordingly, with continuous previews and testing of functionalities. The following screen captures show the web site interface.

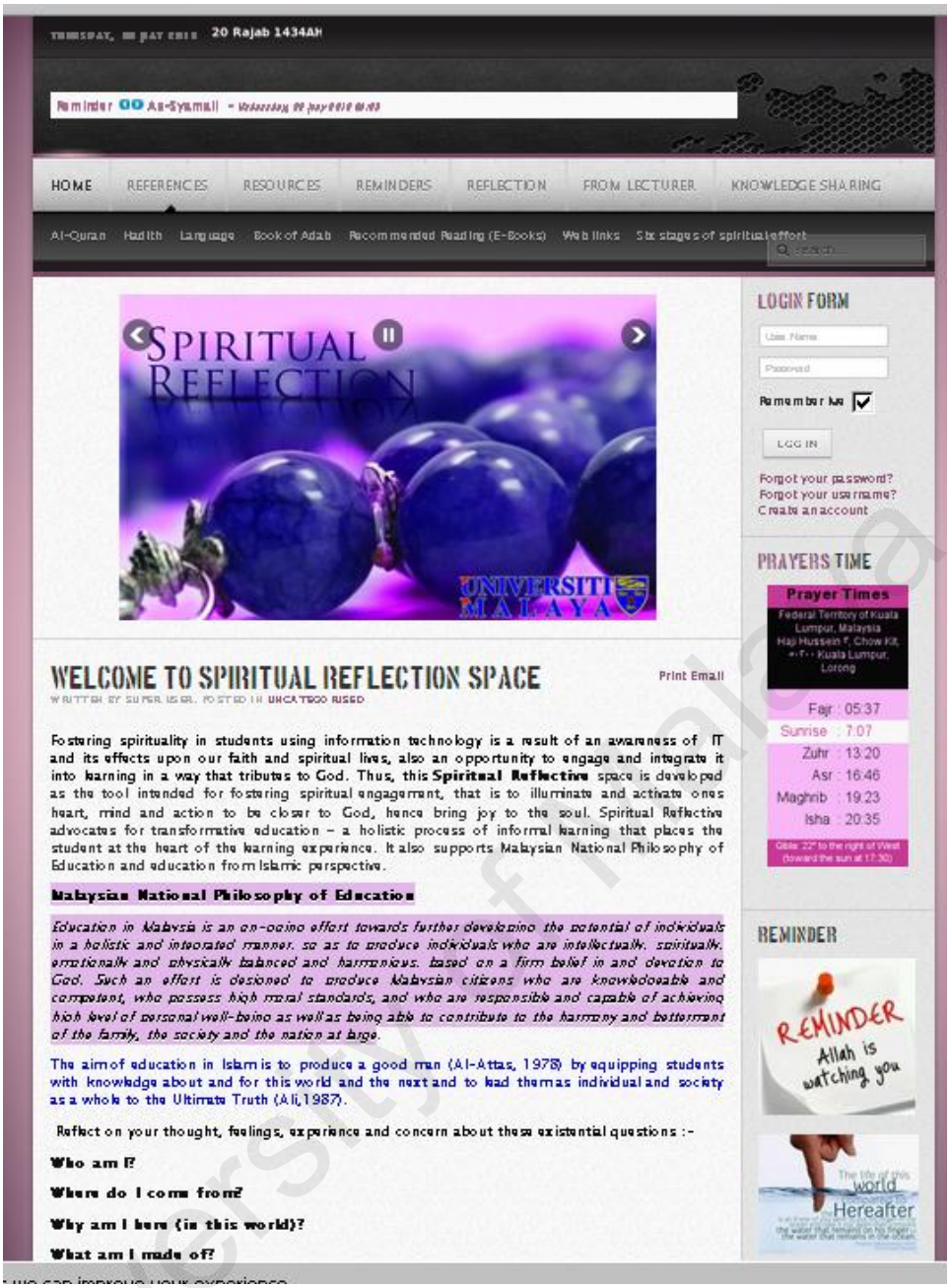

Figure 5.3: Screen capture for SRS home page

5.5 Key Criteria for Evaluation of the Spiritual Reflective System

The SRS does not require an assessment of immediate learning outcome. It rests on the optional support provided to students when they voluntarily access it rather than the instruction itself. The system could also be embedded in the formal e-learning system at the university. Thus, the evaluation is based mainly on its meaningfulness, and possible to include validity, practicality and effectiveness as stressed by Van Den Akker (1999).

- "*Validity refers to the extent that the design of the intervention include "state of the art knowledge" (content validity) and the various components of the intervention are consistently linked to each other (construct validity).*
- *Practicality refers to the extent that users (teachers and pupils) and other experts consider the intervention as appealing and usable in normal conditions.*
- *Effectiveness refers to the extent that the experiences and outcomes from the intervention are consistent with the intended aims*."

5.5.1 **Why evaluate meaningfulness?**

The main aim to evaluate meaningfulness is for students to sense that the content presented by the system is worth learning and important to students' lives, and they can see the potential application of this spiritual knowledge to their daily lives.

What are the elements that constitute meaningful in this work? Spiritual knowledge is based on taste or **feel** experience that is positive or negative feeling, naturally felt in the spiritual heart, known as *qalb*. These senses have connection with the spirit, whereby if there is spirit, there is taste. The core of feeling is in the soul / spiritual organ, not in the physical body. Feeling of love, happy, calm, scare, hate, and patience is some instances of feelings felt by the *qalb*. Feelings like fear and hope for God, grateful to God, feel the sweetness of faith normally radiate from the mindful spiritual person.

Awareness must exist before any change can happen. In the context of this study, we define **awareness** level as the learning process from unknown to known. Our obligation is to understand Islam as it must be understood, not according to our own understanding. As human we are the slave of Allah. To position ourselves a true servant, we must:

- Oblige to all practices and actions commanded by Allah, such as prayers, fasting, paying zakat,
- Have Islamic thought (*fiqrah*) – (i) conform to all the rules and prohibitions of Allah; (ii) serve Allah religion and (iii) looking for the love of Allah, by loving what Allah loves and hate what He hates.

Spiritual thinking means to look at things from its real (*hakikat*) perspective with the inner eye, not just with the outward/ naked eye. What is happening in the world and this life has its reality. However, the veil of ignorance and lust often hides the reality (hakikat). Imam Al-Ghazali said; "People who do not get his thoughts on the reality of something, will not feel the love with true love and will not feel hatred with true hate". Hassan Al-Basri said, "Servant whose knowledge does not reach at the reality of something, probably will love what he should hate, and probably hate what he should love". The one, who exercise spiritual thinking, will always be conscious of God's presence in every moments and corner of his life. God is always present either when he/she is alone or in public. Therefore, this person will mind what he does, say, think or feel. In the context of this study, we define **consciousness** level as the learning status of know but forgetting or know but neglecting. Conditioning should be able to eliminate forgetfulness and negligence.

Mindfulness is a quality of human consciousness characterized by an accepting awareness of and enhanced attention to the constant stream of spiritual experience. The person witness Allah and sees His sign in everything, and believe that he is accountable and answerable to Allah in all his actions.

Therefore, meaningfulness in this study includes the elements of feeling, awareness, consciousness and mindfulness. Table 5.3 summarizes the meaningful spiritual learning experience.

Table 5.3 Criteria for meaningfulness evaluation of SRS

Meaningful Spiritual Learning Experience	
Feel	Feel something in the heart when one interact with the learning content.
Awareness	Aware of one's purpose, mission and vision in this worldly life.
Consciousness	Conscious of the existence of Allah and constantly under His surveillance.
Mindfulness	Remembering and pleasing Allah in all actions.

The fundamental questions used as guidance in the SRS evaluation are illustrated in Table 5.4.

Table 5.4: Questions that guide the evaluation of SRS

Criteria	**Questions**
Meaningfulness	• Does learner feel something when interacting with the learning content? • Is learner aware as to why he / she needs to know about religious and spiritual matters? • Does learner practice what he knows? • Does learner's action comply with God's rules and prohibitions? • Does the learner constantly remember God at all times? • Does learner see the sign of God in this world?
Validity	• Is the system an innovative element to support the National Education Philosophy in education? • Is the system consistent with the design objectives?
Practicality	• Does the system run as intended? • Is the system useful for learners? • Does the system provide opportunities for learning spiritual matters?
Effectiveness	• Does the system motivate learners to access? • Does the system support learners' learning process?

5.6 SRS Evaluation Methodology

In this section, the methodology used to evaluate the system is elaborated. It covers the data collection technique of focus group, result of evaluation and findings from the evaluation.

5.6.1 Focus Group

The subjective evaluation of SRS is done through a focus group meeting. Focus groups are group interviews that provide the researchers the opportunity to capture richer information or insight on the system. The focus group meeting was held on 30 May 2013 at a lab with total number of 20 participants. The participants are third year Muslim students from the Faculty of Computer Science and Information Technology, University Malaya. Their participation is on voluntary basis. Gender wise, they are 8 male students and 12 female students.

The evaluation session ran for 2½ hours, was divided into three parts; (i) briefing and guidance session, (ii) evaluation of the system session and (iii) discussion session. These sessions were facilitated by the main researcher. During the first session, participants were made clear of the meeting objective and rules on how the meeting was conducted. An orientation talk about the research work was also presented. The second session took place for about an hour. Each participant was provided with a list of questions to guide their evaluation and also to write down their comments. The last session lasted for another hour.

5.6.2 Results on Evaluation of Spiritual Reflective System

The establishment of this system is meant at creating awareness in students on the importance of educating the soul towards goodness. The prerequisite knowledge lies in understanding the nature or reality of human self, be able to answer the existential questions, and realize the mission and vision of this worldly life based on the real source of Godly knowledge.

Table 5.5: Participant feedback on meaningful aspect of SRS

ID #	Feel	Awareness	Consciousness	Mindfulness	Comments
1.	Yes	Yes	Yes	No	*When I use the system, I feel myself near to Allah. The best part is "reminder" section, because we can become aware of ourselves.*
2.	Yes	Yes	Yes	No	*The system indeed provides an excellent reminder to Muslim students on all the spiritual learning experiences.* *Suggest to also offer guides on how to perform voluntary prayer, such jama'& qasar, taubah, hajat, etc.* *Overall, I feel that this system improve my knowledge in spirituality, and it is a good medium to remind students not to neglect their responsibility as servant of Allah.*
3.	Yes	Yes	Yes	No	*I like the reminder part at the top of the page. Such reminders cannot be found in any other website. It gave me motivation to remind myself to turn to Allah.* *Very enlightening talk presented by the lecturer that make me realize the importance to base my life on Islam.* *Open my heart, eyes and the mind to correct my intentions, and the purpose of life in this world.* *Really touches the heart of Allah's greatness when I watched the video.*
4.	Yes	Yes	Yes	No	*I feel that this website does give me the feel of reflection about Islam, the presence of Allah and the Al-Quran close to heart.* *The quotes line also makes me aware and alert about values in Islam.* *I'm quite sure people will start to use and practice everything they have read, watch, and listen through Al-Quran, videos posted and lecture posted in this website.* *After using the website, automatically I understand the content of website will think and feel that Allah is the master and me as a human being, is only a slave to*

					Allah. With that thought, I will act as what Allah ask in the Al-Quran. *Overall, this website is useful if the user itself understand the content of the website.*
5.	No	Yes	Yes	No	*It is a good system as it is a well covered. As it covers almost all the aspect in Islam but it does not create the "feel" as I felt that this is just another website and looks like just another website. It could be improved and it is a public website that can be accepted by all group of people.* *It does create awareness but only if and when the website is accessed. For example, if that person was so busy and did not have time to open the browser, the person could miss out several reminders. Maybe by integrating the system with the operating system could work.* *Humans are forgetful, we tend to do or say things unconsciously. This system is a good to remind us with its features such as to do list, and prayers time. Even with a sentence from the "reminder" part in the system it could give and impact and change the person's mood for the day.* *If the website is accessed consistently, it could create a mindfulness and through the features, if it is fully utilized by the user. It is solely based on the user's own feeling to change or to continue to improve himself.*
6.	Yes	Yes	Yes	No	*I think this website is very user friendly as it is easy to use. In addition, the content is very suitable for all ages.* *The content of Al-Quran and Hadith is very intereting to be referred.* *Audio recitation of the Quran for me is a very clever idea because the users can use it as a reference for how to check the reading and the Tajwid.* *I suggest that this website is created bilingual. In addition, I suggest to have learning Jawi in this website.*
7.	Yes	Yes	Yes	No	*The Quran recitations give the element of peace and serenity. Each type of recitation reflects deeply to the heart. Really excellent as the user able to practice and memorize the verse by using the system.* *The content is really good and make me closer to Allah. The six steps taught me that Allah is always there for me*

					and He's the only one that I must put all my hope and prayers. *Audio lecture gives more self-consciousness as I listen to what are they talking about. Something that can reach deep into my heart, especially the way the content is delivered.*
8.	No	Yes	Yes	No	*The reminder should have schedule so people can know if there is any talk or usrah. Overall, should have direct translation in every section and have 'share' button for social network share.*
9.	Yes	Yes	Yes	No	*I feel touched by the reciter of the Quran and made me realize that I had been careless as a servant of Allah.* *From "Atom to Galaxy" video has impacted me about how great the power of Allah.* *Book of Adab is the best resource that I discover and learn more about Adab. It will be more interactive if it has some example so that it is easier to understand.*
10.	Yes	Yes	Yes	No	*MP3 Surah with translation in Malay language has touched my heart and makes easier for me to understand the contents of Al-Quran.* *I can also improve my knowledge by reading the Hadith.*
11.	Yes	Yes	Yes	No	*I am very excited about this system, its content is very good because it makes me feel closer to Allah. This system makes it easier for me to learn more about Islam and I can read the Quran anywhere so that I am not wasting my time.*
12.	Yes	Yes	Yes	No	*The talk before evaluating the system gave the most impact that shakes me to realize of our life real purpose.* *The audio and video tazkirah helps me to understand new knowledge.* *I like the way in which the contents are organized, very systematic.*
13.	Yes	Yes	Yes	No	*This system is great for Muslims because there are many descriptions of the terms in Islam that I did not know before and helped me learn Arabic.*
14.	Yes	Yes	Yes	No	*I was more impressed with a word of advice that is in the system because it will always remind the people about Allah.* *"Allah is Master and we are His Slaves" video makes me felt as a servant of God, we must constantly remind*

					ourselves that who are we compared to Allah. Among the things that can be done for us to thank Allah is to be grateful for His blessings, always do what you are told and leave what is forbidden. *As human beings we need to realize what the real purpose of our life. When we realized, we will constantly remind ourselves about gods and enjoining good and forbidding wrong.*
15.	Yes	Yes	Yes	No	*With this system, I can learn more about Islam and the Zikr makes my heart feel calmer.* *Hadith contained in these systems tells us about our responsibility as vicegerent on earth.* *To some extent this system has encouraged me to learn more about Islam. However, this system alone is not sufficient because it depends on a person's heart to accept it or not.*
16.	Yes	Yes	Yes	No	*The system is great, but I prefer a mobile system that I can access straight form my mobile devices.*
17.	Yes	Yes	Yes	No	*SRS help me to gain more knowledge, but I need to practice what I'd learnt to be spiritual.*
18.	Yes	Yes	Yes	No	*The system is just a learning tool. However, it can drive change in me to be a better person / Muslim.*
19.	Yes	Yes	No	No	*It somehow help in a way, if one refers to it regularly.* *I like the tazkirah audio.*
20.	Yes	Yes	Yes	No	*Besides the system, you need to be in a good company all the time to be reminded of doing good things. You need human touch instead of technology.*

Table 5.6: Extract of validity, practicality and effectiveness comments of SRS evaluation

Criteria	Comments / recommendations
Validity	Since the system stress on educating the soul, provide ways to inculcate religious knowledge, yes in a way it does support the National Education Philosophy. The reason this system exist is to instill spirituality in students. But students will not access the system often unless the teacher motivates them. Teacher has to find ways for students to learn and practice this knowledge.

Practicality	Participants agree that the system run as intended. Agree that the system is useful for them and can be more useful if it is presented in Malay instead of English. With the type of materials available, the system provides opportunities to foster spirituality in students. At very minimum level, they gain understanding during the focus group meeting. To reach spiritual intelligence, students need more than self-learning.
Effectiveness	Only the teacher can motivate students to access the system. Human touch is needed to touch the heart. The system only needs to be updated regularly and include "share button" for social media sharing. The multimedia content in the system does support learners in their learning process. To be able to see and hear, with varieties of content makes the system interesting. Teacher can also record talk and place it on the system for students' reference.

5.6.3 Findings from the Evaluation

These findings answer the final research question set forth in the research, which is: What are the implications of IT for creating meaningful spiritual experience?

Overall, the feedbacks received were very positive. The system had created the feel in the participants. Among the feelings that were recorded during their one hour, interaction with the system includes-

- Felt touched – 4 participants
- Felt knowledge had improved – 6 participants
- Felt greatness of God – 1 participant
- Felt near, close to God – 2 participants
- Felt peace, calm and serene – 2 participants
- Felt reflected about Islam – 3 participant
- Felt motivated, encouraged, excited, interesting and impressed – 6 participants.

Sources of feeling according to them mostly came from the audio and video tazkirah, words of advice, online Quran recitation, Hadith and Islamic poster message.

They realized the real purpose, vision and mission of this worldly life from the knowledge imparted by the system. Majority of them never give thought to the existential questions. They were rather unclear about certain basic terms, the distinction between Muslim, Mukmin and Muhsin. The chance of knowing these implicit stuffs in an explicit way has created awareness in them. Awareness is essential in developing belief and change.

Knowing and practice are two different things. In Islam, action should follow knowledge. They acknowledged that there were things they know very well but do not practice, such as perform prayers on time, does not perform congregational prayer at the masjid for men, does not practice the *Sunnah* of the Prophet PBUH, abstain self from backbiting, give charity and helping needy people.

None of them claimed to be mindful of Allah at all times.

Some suggestions proposed by them to add to the system are making the system bilingual (English and Malay), include share button for sharing in social media, have space to learn Jawi (Arabic alphabet adapted for writing the Malay language) and "how-to" session on performing voluntary prayers.

In term of validity, the participants agree that the SRS support the National Education Philosophy. The proclamation of NEP is spelt out on the system's home page. One concern that the participants raised was the readiness of students to access the system continuously in the near future. Some "push" extrinsic motivations from teacher are needed to enable them to "pull" the system. Teacher has to find ways for students to learn and practice this knowledge until the students become self-directed learner.

In term of practicality, the participants agree that the system run as intended. They approved that the system is useful for them and can be more useful if it is presented in Malay instead of English. With the type of materials available, the system provides opportunities to foster spirituality in students. At very minimum level, they gain understanding during the focus group meeting. To reach spiritual intelligence, students need more than self-learning, this system is just a first step to progress towards spiritual intelligence journey.

In term of effectiveness, the participants argued that only the teacher can motivate students to access the system. Human touch is needed to touch the human heart. The system only needs to be updated regularly and include "share button" for sharing on social media. They also asserted that the multimedia contents really support learners in activating their feelings. To be able to visualize and listen various contents makes the system interesting. They suggested that all talks made by teacher to be recorded and to be placed on the system for them to refer at own pace.

5.7 Conclusions

The evaluation was carried out on 20 participants via a focus group. Subjective evaluation data on the meaningfulness of the system was collected. Meaningfulness in this study includes the elements of feeling, awareness, consciousness and mindfulness. Aspect on validity, practicality and effectiveness were also discussed during the evaluation session. Overall results confirmed that participants of the Spiritual Reflective System find the system useful and went through a positive learning experience in using the system. However to gain spiritual intelligence, students need more than self-learning, this system is just an assistance in the first step to progress towards spiritual intelligence journey.

CHAPTER 6
DISCUSSION AND CONCLUSION

The last chapter summarizes the entire study carried out and recapitulates the answers to the five research questions and highlights the realization of each objective listed out in the first chapter of this thesis. Limitations of the design are discussed and finally, future enhancements to the design and to further work are suggested.

The efforts towards spiritual improvement and refinement are important to reduce educational crises. Prioritizing moral, character and personality development in university education is our main concern as educators. The study is motivated by the intention to find a proper integration of Web 2.0 technologies with sound principles of religious pedagogy that is useful to inculcate spiritual intelligence among university students. Since religious knowledge is not taught at college, we proposed to utilize information technology (IT) as a teaching and learning tool to help nurture students' spiritual and faith development via the provision of guidance, resources and environment that values spirituality. The ultimate aim of this learning support space or system is to shape the right perspective (worldview or life paradigm) on the purpose of human life and to determine the life in its best possible manner; in accordance to the individual own benefits and to the collective benefits of society at large. The source to nurture human development is engaged from divine guidance, since ignoring attention to godly guidance will corrupt human development. This support learning space is deemed as an informal personal learning space for them on campus. The first step towards spiritual intelligence is through awareness that the soul need to be educated. Next to embark into studying spiritual knowledge, and then derive belief from knowledge gained, reflection and experience. Change in thought and action is the end result of this transformative learning. Basically the learning process is in the sequence of awareness, learning, belief and change.

Throughout the progress of this study, several questions are devised to obtain information that can support in achieving the objectives of the work. To answer the research questions several activities are carried out; namely reviews of literature, data collection via questionnaire, interview and focus group. The following section presents the realization of the research objectives.

6.1 Realization of Research Objectives

This section reiterates the objectives of this study and discusses the accomplished tasks and achievement of each objective. Each subsection focuses on one objective with it associated research question. The discussion are carried out according to the order of each objective as listed below:

(i) To understand the spirituality needs of Muslim students.

(ii) To explore the capabilities of information technology (IT) as a tool for spiritual enlightenment.

(iii) To design a techno-religious framework for spiritual development, that will be the basis for the development of a spiritual reflective system.

(iv) To evaluate the meaningfulness of the spiritual reflective system in providing spiritual experience.

6.1.1 Objective 1: Understanding the spirituality needs of Muslim students

The aim of this study is to explore the development of students' spirituality by means of a virtual space for personal spiritual pursuits with a social support sphere. This research deals with how technologies can be adopted and adapted to mediate religious education and practices. We refer to this technology-enabled space as techno-religious space, instead of techno-spiritual space because spirituality in Islamic perspective is the knowledge in religion.

Spirituality detached from religion is meaningless. This work is mainly divided into three areas of knowledge, which are technology, religion / spirituality and education. The first objective is to review on authentic principles of Islamic spirituality. The following research question supports the objective 1:

What are the vital elements necessary to cultivate spiritual development?

Literature review and personal knowledge and experience help determine these vital elements. In Islam, all deeds must be in conformity with God's revealed law and His pleasure. Abu Huraira reported Allah's Messenger (PBUH) as saying:

"Verily Allah does not look to your faces and your wealth but He looks to your heart and to your deeds."

(Sahih Muslim: Book 32, Number 6221)

Since God mainly look at the heart, everything in Islam is considered spiritual. The value of a person lies in the heart. The knowledge on Muslim spiritual development lies in the branch of Islamic knowledge called Tasawwuf or Sufism. The structure of Islam is build on 3 main basic areas; system of belief (Tauhid), law and jurisprudence (Feqh) and morality (Tasawwuf) or also referred as the 3 main levels; starting from Islam (Muslim), to Iman (Mukmin) and to the highest level of Ihsan / Tasawwuf (Muhsin) (Sheikh Nuh Ha Mim Keller, http://www.masud.co.uk/ISLAM/nuh/sufitlk.htm). This was based on the following Hadith of Muslim:

"*Umar ibn al-Khattab said*:

As we sat one day with the Messenger of Allah (PBUH), a man in pure white clothing and jet black hair came to us, without a trace of travelling upon him, though none of us knew him. He sat down before the Prophet (PBUH) bracing his knees against his, resting his hands on his legs, and said: "Muhammad, tell me about Islam." The Messenger of Allah (PBUH) said: "Islam is to testify that there is no god but Allah and that Muhammad is the Messenger of Allah, and to perform the prayer, give zakat, fast in Ramadan, and perform the pilgrimage to the House if you can find a way."

He said: "You have spoken the truth," and we were surprised that he should ask and then confirm the answer. Then he said:

"Tell me about true faith (iman)," and the Prophet (PBUH) answered: "It is to believe in Allah, His angels, His inspired Books, His messengers, the Last Day, and in destiny, its good and evil."

"You have spoken the truth," he said, "Now tell me about the perfection of faith (ihsan)," and the Prophet (PBUH) answered: "It is to worship Allah as if you see Him, and if you see Him not, He nevertheless sees you."

The hadith continues to where 'Umar said:

Then the visitor left. I waited a long while, and the Prophet (Allah bless him and give him peace) said to me, "Do you know, 'Umar, who was the questioner?" and I replied, "Allah and His messenger know best." He said,

"It was Gabriel, who came to you to teach you your religion." "

(*Sahih Muslim*, 1.37: Hadith 8).

The aim of Tasawwuf scholars was on purification of the heart, and development of consciousness of Allah through submission to the shariah and sunnah (http://tasawwuf.org/tasawwuf/).

Islam is a way of life rather than merely a religion. Muslims today is lack knowledge on the ways to live life in Islamic manner. They treated Islam as a religion, thus focus mostly on the rituals like prayers, fasting, paying alms, and pilgrimage. To treat Islam as a way of life Muslim needs to move to the next level to become a Mukmin by having strong faith and ultimately with pure and sincere heart reach the level of Muhsin as an outcome or bestowed upon by God. Domestic scholars advised to seek the Tauhidic knowledge sufficiently, the Feqh knowledge adequately, and to delve into knowledge of Tasawwuf deeply.

Knowledge is important for spiritual progress, vital elements which are knowledge centric and action-oriented are necessary to understand spirituality. This includes:

- **Declarative and Tacit Knowledge**.

Declarative knowledge can be found from sacred books and great books venerated by the majority Muslims. Tacit knowledge comes from the talk or advice of the top authentic sincere knowledgeable scholars. This includes knowledge:

    - About oneself, that consists of body and soul (which is divided into four parts: ruh, nafs, qalb and mind).
    - Islamic worldview.
    - Observing the inner side of Shari'ah (the inner situation of the heart and the soul while performing the outward rituals).

- **Procedural Knowledge and Practice**
    - Purification of the heart from the blameworthy.
    - Acquiring the good characters and getting rid of the bad
    - True devotion to Allah
- **Feeling and experience based on spiritual values**
    - Positive thoughts, feelings and actions.
    - Experience with Allah through remembrance, zikr, devotional act, etc.

Main references for Tasawwuf:-

- The Beauty of the Righteous by al-Hafiz Abu Nuaym al-Asfahani
- The Revival of the Sciences of the Deen- *(Ihya)* al-Imam al- Ghazali
- Al-Risalah of Imam Abul Qasim al-Qushayriy.
- The Aphorisms, al-Hikam, of Imam Ibn Atta'illah
- Revelation of the Unseen by Imam Abdul Qadir al-Jalaini.
- Awarif Al-Ma'arif, by al-Suhrawardi.
- Qawa'id Al-Tasawwuf, by Imam Ahmad Zarooq.

6.1.2 Objective 2: Exploring the capabilities of information technology (IT) as a tool for spiritual enlightenment.

Information technology is seen as a knowledge tool or as a presenter to achieve the educational goal. IT has many success stories in education that brought tremendous benefits to both teachers and students, but very few cases were reported on IT application in religion or spiritual teaching. The second objective is to explore the capabilities of IT as a tool to enlighten spirituality. The following research question supports the objective 2:

What are the ways that IT can offer to scaffold students with spiritual values?

The purpose God sent Prophet Muhammad (PBUH) to humankind is to teach morality, as said by the Prophet (PBUH), "I have only been sent to perfect good moral character." [Musnad Ahmad (8595)].

Spiritual values are good values that can shape one morality and if internalize become ones personality. IT unique features such as its ubiquity, global reach, richness, interactivity, information density, personalization and social networking. Its ubiquitousness, make it practical for students to access the system just about everywhere and at any time. Being global reach, students can access materials or attend cyber-class from anywhere in the world, without the need to travel. IT can deliver complex and content-rich information fusion with multi media. The multimedianess of the IT is the utmost feature that has tremendous effect on conveying spiritual materials. For instance, when one see the YouTube video on "Zooming out from earth to the universe" available at https://www.youtube.com/watch?v=MqY_0iIhzdQ. One can immediately feel the smallness and insignificant of oneself compared to the gigantic universe. This make one realize his position as the creation and feel the greatness of the Creator. The mind is incapable to imagine if the phenomenon is described in words. The story of Prophet Muhammad PBUH with the blind Jewish beggar also touches the heart and shed tears to some who listen. Another

testimony is audio on “The Last Few Words of Prophet Muhammed PBUH” at https://www.youtube.com/watch?v=dEwJv4Opk40.

Another example is an illustration on “Imam al-Ghazali on the Steps To Repentance”, accessible at https://www.youtube.com/watch?v=qw5lH-plMqk.

Besides audio and video materials presentation, the system also deliver Islamic poster, as show as in Figure 6.1.

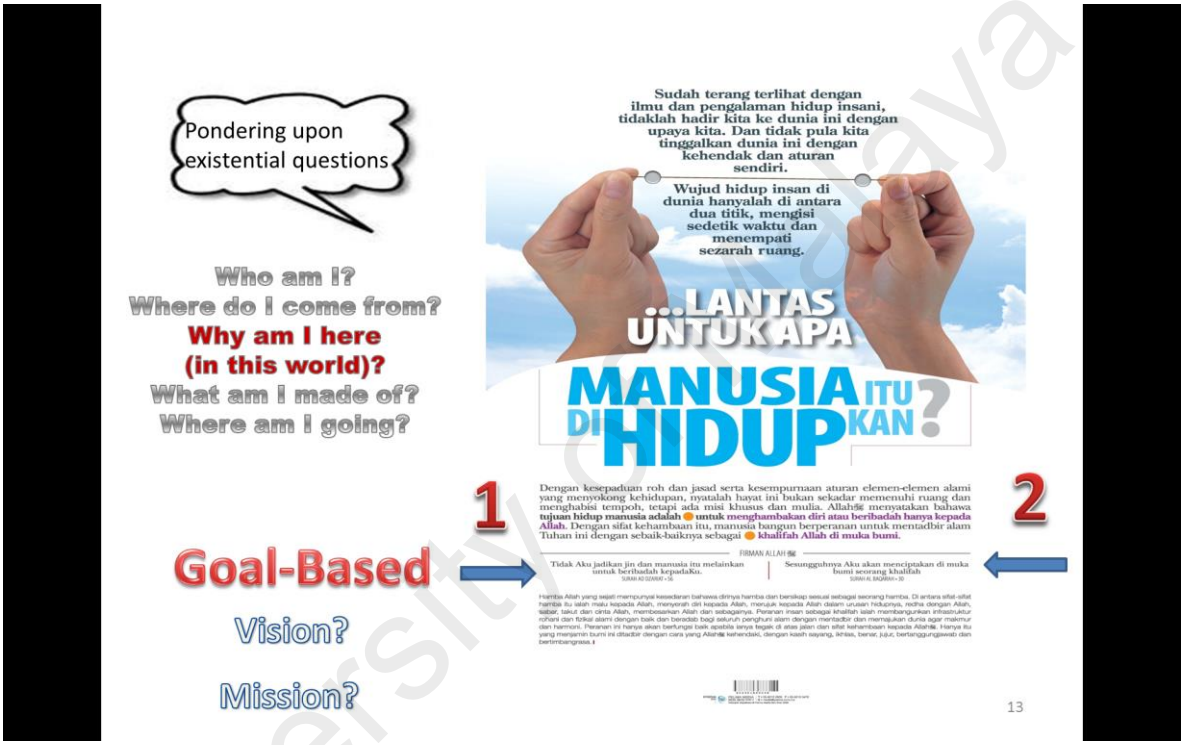

Figure 6.1: Islamic poster on Life Purpose

These technologies also allow interaction between the teacher and the students and their peers. The amount and quality of information available to students is abundance and easy to deliver. Personalization allows students to adopt, modify the learning materials from various sources. They can also generate content and share with others via social technology. They can create social communities focused on religion/spirituality.

6.1.3 Objective 3: Designing a techno-religious framework for spiritual development, that will be the basis for the development of a spiritual reflective system.

The third objective is to design a techno-religious framework that will be the basis for the development of a spiritual reflective system. The framework incorporates the main elements that should be included in the technological support spiritual education.

The following research questions support the objective 3:

What is the preferred learning space for students today?

Based on the survey and interview done, 90% of respondents prefer face-to-face learning, followed by e-learning. Only 10% prefer personal learning online. They mostly use Web 2.0 applications for collaborating and socializing followed by synthesizing and creating purpose. None of them use the applications for organizing contents.

In this study, we are introducing the personal learning space and also application for note taking and tagging for efficient retrieval.

What is the suitable pedagogy for learning spirituality?

Spiritually engaged pedagogy integrates the cognitive (head), affective (heart), and behavioral (practical) aspects of learning and development, and posits that all are teachers and learners in the process. Prophet Muhammad PBUH is the great model of educator who possesses the best of character. “Teaching Methods and Techniques Inspired by Prophet Muhammad (PBUH)” as in Antonio, M. S. (2007) listed several Prophet pedagogies.. However we list the one that is adopted in our work, which is to be delivered in face-to-face mode, supported by the SRS.

i. Active interaction and body language; *pay attention to intonation, pauses in the midst of an explanation; eye contact in teaching, utilizing facial expressions, smile.*
ii. Applied-learning; *illustrate practical methods to students.*
iii. Scanning and leveling (understand student individually according to the level of intelligence); *two sessions were proposed, basic and intermediate level.*

iv. Discussion and feedback; *logical method in providing answers and create a simple example that is easily understood.*

v. Story telling; *the system provide story of the Prophet and Companion to listen and watch.*

vi. Analogy, picture and case study; *provide imagery and real case studies around life, and explanation is reinforced by drawing or writing.*

vii. Teaching and Motivating; *increase the passion of learning and curiosity are high.*

viii. Reasoning and argumentation; *disclose the reasons for going to clarify something hard and heavy in order to be understood by students*.

ix. Self-reflection; *provide the opportunity to the students to answer itself a question for students to optimize the work of the brain and sharpen the mind.*

x. Affirmation and repetition; *repetition of sentences and words name.*

xi. Focus and point basis; *using techniques based formulations large or points will help the students to absorb knowledge and keep from forgetting.*

xii. Question and answer method; *questioning techniques to draw the attention of the students and prepare them for what will be delivered for the session; Commenting on student question.*

xiii. Guessing with question; *it is important to strengthen a concept and encourage curiosities.*

xiv. Encouraging student to seek help; *the teacher give the opportunity and motivation to students to be brave to ask the question.*

To sum up, mostly instruction methods of talk, story telling, learning activities, reflection and question & answer are the suitable pedagogy in learning spirituality.

6.1.4 **Objective 4: Evaluating the meaningfulness of the spiritual reflective system in providing spiritual experience**

The fourth objective is to evaluate the sense of purpose of the spiritual reflective system. Simply stated, to find out if the system is successful in transmitting spiritual knowledge to the learners.

The following research questions support the objective 4:

What are the implications of information technology (IT) for meaningful spiritual experience?

Findings from the evaluation session prove the ability of IT to deliver spiritual content and experience effectively and this system has met the objectives. The implications of IT in the case of spiritual education of this study, can be divided into three facets; learning, teaching and purpose of education.

Students face information overload when they search for learning materials online, and it is a time consuming activity to filter the right materials they actually need. If they get the right materials, they need to investigate the authenticity of the materials before using. Student need to be meticulous when referring to spiritual resources especially online. Teacher need to assist students to develop skill in finding, selecting, analyzing, interpreting and verifying religious learning materials in order to save them from referring to materials that violate the teachings of real Islam. Only venerated materials can be used as a reference. The skill in filtering information is crucial for students to prevent them from sharing or spreading whatever they found online with impunity.

Teacher needs to select trustworthy learning materials to place on the system, and recommend some venerated learning materials for students. The materials presented in the system need to be categorized and placed in a clear section and then arrange them in order that move from basic to intermediate level. It is the sole responsibility of the teacher to provide the main and

recommended learning resources. Spiritual education is purely a guided learning endeavor. It is compulsory for a talk session to precede the SRS usage. The SRS is meant for basic and intermediate level. Upon awareness and understanding the basic knowledge, students are very much encouraged to find a real Sufi master to guide them to the path of God and uplift their level from being Muslim to being Mukmin and reach their highest level of Muhsin.

Technology enhanced learning has empowers an effective avenue for learning matters (i.e. religion and spirituality) that are significant but not taught at university. This initiative to foster spiritual intelligence amongst students is a freewill effort. Borrowed from Duderstadt (2000) terms, it is a "Just-for-You" education. Education that is personalized to the need of every student with soul that brings life to the body. This education is lifelong learning, no certificate given, no test or exam required, but demand an understanding and change in worldview, thoughts, attitudes, behaviors and actions.

6.2 Contribution of the Study

Three main types of outcomes from this study are mainly theoretical, methodological and practical. Theoretical guide for spirituality study is God-centric, grounded firmly in the Quran and demonstrated in the Sunnah of Prophet Muhammad PBUH as the Prophet had advised in his farewell sermon:

"*O people, and understand words which I convey to you. I leave behind me two things, the Quran and the Sunnah (Hadith), and if you follow these you will never go astray. All those who listen to me shall pass on my words to others and those to others again; and may the last ones understand my words better than those who listened to me directly. Be my witness, O Allah, that I have conveyed your message to your people.*"

There are 33 search results found about spirituality and spirit in the Al-Quran through http://search-the-quran.com.

Other theory comes from authentic scholars, namely Imam Al-Ghazali for his Six Stages Spiritual Effort model for self-purification, Al-Attas for his "Ru'yat al_islam lil wujud" model, and Al-Zeera for the Islamic paradigm model. This work applies theological knowledge rather than man-produce theoretical knowledge.

This research achieved deeper understanding in fostering spirituality and using technology to support the tertiary level learning process. The methodological outcomes include the development of techno-religious frameworks, reflection, scaffolding tools and guidelines for teacher and students for incorporating spirituality in learning.

The practical outcome is the creation of web-based system of Spiritual Reflection System. Intangible outcome from the education point of view include, initiation of change towards the affirmation, that spiritual learning aspect does makes a difference in providing quality education. Students wise, we expect them to exercise continuous learning and put into practice of what they have learnt.

6.3 Significance of the Study

The study investigated the undergraduate Muslim students' spiritual needs. This unseen or inner dimension is often over looked or neglected in almost every sphere of life, particularly in the educational sphere. Since spirituality is an essential core of a person, an attempt is made to provide an education on the spirituality to understand the absolute truth. This is to enlighten and prepare students to their responsibilities in life instead of educating them to earn a living and sustain life with a career. In other words, to educate students to be intellectually smart and spiritually virtuous. The study is in full accordance with Islamic epistemology that emphasizes on knowledge ('ilm) and truth, with the main source guided by the Al-Quran and As-Sunnah, Islamic scholars writing, as well as authentic academic reference materials written by non-Muslim Western scholars that do not conflict with the

teachings of Islam. The content in spiritual education combines rational sciences and traditional sciences, which is aligning fard 'ayn and fard' kifayah.

This study has significant implications in supporting National Education Philosophy for including spiritual dimension in education at university level. The avenue to include this dimension learning is through informal learning mode via web-based technology. The process of learning and teaching, embraces the mind, the soul, the heart and the body. Therefore, the purpose of spiritual education is to develop all four aspects of intellectual, spiritual, emotional and physical. Effective development of soul is through integrative Islamic teaching and learning. It must encompass and engage the whole person, spiritually, emotionally, socially, intellectually and physically into learning in a way that tributes to God. The beneficiaries of this study would be the students and lecturers at a micro level, the university at meso level, and the society at macro level.

6.4 Limitations of the Study

The first limitation, the study only include undergraduate Muslim students at a faculty in University of Malaya, which may not be a true representation of general Muslim students' population throughout the whole campus, country or world. This is unavoidable as it is constrained by the duration of the study. It is however, reasonable to assume that the results are applicable to the university being studied. Since the samples were chosen at random, this randomization helps to improve the external validity and thus would be an acceptable generalization.

Second limitation concerns the multidisciplinary nature of this research. There is a minimal interaction and sharing of ideas between different disciplines of information technology, education, religion and spirituality that directly involved in this work. It would have been better if we call upon experts in the related fields to be involved in the study.

6.5 Directions for Future Research and System Enhancements

This research is the first attempt to move further in the exploration of spirituality in education at university. The encouraging early findings indicate that it is an important needed area of research. However, many aspects in this work demand an in depth study and as for the system needs refinement and improvement. Some idea that can be used in the enhancement work includes:

- A filtering tool is needed to assist in finding, selecting, analyzing and verifying the authenticity of religious and spiritual materials. An in depth study of the criteria is needed before the tool could be created.
- Faith Book, a religious or spiritual version of Face Book. This is about customizing the functions and features in Facebook to incorporate only this spirituality subject.
- A virtual desk space simulating the physical desk place used by students as their study space, where they have the real books, references, note books, files. All these can be replaced by e-books, e-references, e-folders/e-files and e-note space in the virtual desk space.
- A module and a book on spiritual literacy and fluency. The loose guideline from this work can be transformed into teaching modules, and a reference book for students.
- A model on educated graduate from Islamic perspective.
- Research on spirituality index.

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