TEACHERS' BELIEFS AND SELF-EFFICACY IN COMPUTER TECHNOLOGY INTEGRATION FOR TEACHING AND LEARNING: A COMPARATIVE STUDY BETWEEN OMAN AND MALAYSIA

by

RASHID MOHAMMED SALIM ALHAJRI

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| 2 | A survey of epistemological beliefs of students in e-learning environment. Paper presented at the International Conference on Distance Education - ICODE 2006, Sultan Qaboos University, Muscat, 27-29 March 2006, Sultanate of Oman. | March 2006 |

KEPERCAYAAN DAN EFIKASI KENDIRI GURU DALAM INTEGRASI TEKNOLOGI KOMPUTER UNTUK PENGAJARAN DAN PEMBELAJARAN: SATU KAJIAN PERBANDINAGAN ANTARA OMAN DENGAN MALAYSIA

ABSTRAK

Kajian ini dijalankan untuk mengkaji faktor-faktor berkaitan integrasi teknologi komputer untuk pengajaran dan pembelajaran. Kajian mengkaji kepercayaan guru dan efikasi kendiri guru dalam mengintegrasi teknologi komputer untuk pengajaran dan pembelajaran sebagai kajian perbandingan antara dua negara, Oman dan Malaysia. Ia bertujuan untuk menentukan sejauh mana guru sekolah menengah menerima teknologi komputer sebagai alat untuk pengajaran.

Sampel kajian terdiri daripada guru sekolah menengah, iaitu 920 guru dari Oman dan 934 guru dari Malaysia. Kajian menggunakan dua soal selidik: Soal Selidik Kepercayaan Guru Tentang Integrasi Teknologi Komputer dan Soal Selidik Efikasi Kendiri Guru terhadap Integrasi Teknologi Komputer.

Dapatan utama kajian mendedahkan bahawa guru di kedua-dua buah negara mempunyai kepercayaan positif tentang integrasi teknologi komputer untuk tujuan pendidikan, dan menunjukkan tahap efikasi kendiri yang secara relatif rendah dalam integrasi teknologi computer, terutama di Oman. Dapatan menunjukkan bahawa penggunaan komputer, untuk pengajaran adalah rendah. Walaupun majoriti guru menggunakan komputer untuk pengajaran dan pembelajaran, statistik diskriptif mendedahkan bahawa skor min untuk tahap penggunaan komputer adalah rendah di kedua-dua negara. Perbezaan statistik yang signifikan dikesan tentang kepercayaan guru terhadap integrasi teknologi komputer untuk pengajaran dan pembelajaran antara kedua-dua negara. Terdapat juga perbezaan antara kedua-dua negara tentang efikasi kendiri guru berkaitan integrasi teknologi komputer untuk pengajaran dan pembelajaran. Malah, terdapat perbezaan antara guru mengikut jantina di

setiap negara dengan keputusan dapatan yang bertimbalbalik. Wanita lebih kerap menggunakan komputer daripada lelaki di Oman berbanding Malaysia, di mana guru lelaki lebih kerap menggunakan komputer daripada wanita. Tetapi hasil kajian tidak menunjukkan perbezaan yang ketara antara guru di Oman dengan guru di Malaysia tentang tahap penggunaan komputer untuk pengajaran dan pembelajaran. Walau bagaimanapun terdapat perbezaan tahap penggunaan komputer mengikut mata pelajaran yang diajar oleh guru-guru di Malaysia, tetapi di Oman perbezaannya tidak tidak signifikan. Selanjutnya dapatan kajian menunjukkan terdapat hubungan yang signifikan dan positif antara kepercayaan guru dengan dan tahap penggunaan teknologi komputer di kedua-dua Negara. Terdapat juga hubungan positif yang signifikan antara efikasi kendiri guru dengan tahap penggunaan komputer, dimana terdapat perbezaan antara kedua-dua negara dari segi saiz hubungan tersebut.

TEACHERS' BELIEFS AND SELF-EFFICACY IN COMPUTER TECHNOLOGY INTEGRATION FOR TEACHING AND LEARNING: A COMPARATIVE STUDY BETWEEN OMAN AND MALAYSIA

ABSTRACT

This study was designed to investigate factors related to computer technology integration for teaching and learning. The study examined teacher beliefs and self-efficacy with respect to computer technology integration for teaching and learning, as a comparative study across two countries, Oman and Malaysia. The aim was to determine the extent to which secondary school teachers are accepting computer technology as a tool for educational purposes.

The sample consisted secondary school teachers, 920 from Oman and 934 from Malaysia. The study utilized two questionnaires for collecting data: Teachers' Beliefs about Computer Technology Integration Questionnaire, and Teachers' Self-efficacy Regarding Computer Technology Integration Questionnaire.

Principal findings revealed that teachers in both countries possess positive beliefs about computer technology integration for educational purposes and relatively low level of self-efficacy with respect to computer technology integration, particularly in Oman. Furthermore, the findings indicated that computer use for instruction is relatively low. Although the majority of teachers use computer for teaching and learning, descriptive statistics revealed that the mean score of the level of computer use was low in both countries. Statistical significant differences were observed on teachers' beliefs about computer technology integration for teaching and learning between the two countries. Moreover, there were differences between teachers' self-efficacy regarding the integration of computer technology integration for teaching and learning. In addition, there were differences

between teachers according to their gender in each country with a converse result. Female teachers use computers more than male teachers in Oman whereas in Malaysia male teachers use computers more than female. On the other hand, finding did not indicate significant differences between teachers in Oman and Malaysia on their level of use of computer for teaching and learning. However, there were significant differences in the level of computer use with respect to the subjects taught among Malaysian teachers, while in Oman the differences were not significant. Positive relationship exists between teachers' beliefs and their level of use of computer technology in both countries, and also there was positive relationship between teachers' self-efficacy and their level of computer use, with a difference between the two countries on the size of the association.

CHAPTER 1

INTRODUCTION

1.0   Introduction

A number of researchers state that the integration of computer technology in classroom instruction can improve and enhance teaching and learning and many educators believe to be irrefutable. Technological knowledge and expertise are viewed to be imperative for students to prepare themselves for the challenges and demands of the information era. However, provision of the latest computer paraphernalia in schools and the implementation of a series of professional development programs of technology integration for teachers do not give assurance that integration on computer technology would be effectively carried out in practice. There are various other factors that come into play which could influence successful technology integration, such as teachers' beliefs and self-efficacy in terms of their technological knowledge and expertise which ultimately would result in the existence or non-existence of the internal barriers (or second order barriers) affecting their use of computer technology for teaching and learning. Acknowledging this problematic situation, this study attempts to identify the internal barriers (second order barriers) that exist amongst teachers toward technology integration. This study also attempts to compare the differences in terms of the teachers' beliefs and self-efficacy regarding the integration of computer technology between teachers in two countries, namely Oman and Malaysia. It is expected that the results of the study would uncover the

psychological barriers that affect the integration of computer in schools in the two countries.

1.1 Context of the Study

Efforts to encourage the use of computers have been undertaken by the respective governments of Oman and Malaysia. Evidence of this can be seen in the increasing number of computers made available in both countries' schools. In Oman, Ministry of Education has launched a comprehensive plan known as the 'Educational Development Project' which aims at modernizing the country's education system in order to meet the needs of the 21st century. This major reform in the education system commenced in 1998 with the introduction of a new educational model called "Basic Education" which refers to a "unified ten-year education provided by the government for all children of school age" (Ministry of Education, Oman, 2003, p.4). The implementation of this new educational model is geared towards meeting the basic education needs of Omani pupils in terms of knowledge, skills, and values. It would also ensure that they would be well-equipped when pursuing their education or training at higher levels based on their interests, aptitudes and dispositions as well as be prepared to face the challenges of their present circumstances and future developments in the context of a comprehensive social development .

One of the most important aspects featured in this educational reform is the introduction of information technology to the education system in Oman. Huge investments have been made in order to make information technology accessible to all schools in the country. This goes in tandem with the view upheld by the government that computer technology is an effective catalyst for

improving the traditional educational practices in basic education schools. Such reformation also requires changes in the curricular and instructional practices from teacher-centered to student-centered learning. This huge investment is illustrated in the differences between the average cost per student for the academic year 2003/04 in which the cost per student in schools with computers amounted to USD$1934; whereas the cost per student in schools without computers was only USD$1349 (Ministry of Education in Oman, 2005).

Similarly, the education system in Malaysia also underwent transformation with the introduction of a project called "Malaysian Smart School". This project was launched in July 1997 and piloted in 1999, involving 87 schools and focusing 4 subjects, namely Mathematics, Science, English and Malay Language. The full implementation of this project will be completed in all Malaysian schools by the year 2010 (Foong-Mae, 2002; Jen & Huang, 2004). The goals of the project are as follows:

- To support the country's ICT master plan and to be in line with the countries drive to fulfill Vision 2020.

- To reduce the digital divide that exists in the different parts of the country by providing computer laboratories to thousands of schools.

- To enable students in information gathering, management, manipulation, access, and communication in various forms.

- To help the country achieve the aims of the National Philosophy of Education, as well as to foster the development of a workforce prepared

to meet the challenges of the 21st century (Ministry of Education in Malaysia, 2001).

Such transformation would also entail changing the instructional practices of Malaysia's teachers from a teacher-centered focus to a learning environment that stimulates thinking, creativity and caring whilst at the same time on the individual differences and various learning styles (Mae, 2003).

Nonetheless, despite evidence on the dramatic increase of the number of computers in teachers' classroom in the last 6 years in Oman, there have also been reports from the authority indicating that integration of technology into classroom curricula has been below the expectations. Similar issues have been reported in Malaysia. Therefore, this study compares the current status of technology situation in Oman and Malaysia to identify the barriers that exist with regard to technology integration. More specifically, this study examines and compares the differences and similarities in terms of teachers' beliefs and self-efficacy regarding the integration of computer technology in these two countries.

This comparative study between Oman and Malaysia is aimed at highlighting similarities and differences on several aspects. In general, it is evident that both countries vary in many important socio-economic and geographical dimensions such as demography, size of population, language, political system, economic development, culture, and geography. Among prominent factors are the cultural differences and political aspects of these two nations. Studies have suggested that cultural differences influence users' acceptance of technology (Heath, 1998; Shimahara, 1986; Sun & Zhang,

2005; Vöhringer-Kuhnt, 2005). Hence, it would be expected that there would be differences in aspects of technology adoption between teachers in Oman and Malaysia. The diversity in cultures between these two countries can be attributed to the different historical background and geographical location. A distinctive aspect distinguishing the two cultures is the degree or level of openness of both societies towards modernization. Unlike Malaysians who have been accustomed to modern life since the early years of the twentieth century, Omani people began accepting modern living and lifestyles only after 1970.

In retrospect, both Oman and Malaysia have been under the British colony since the 19th century and remained so for most of the 20th century. Democracy in Malaysia has been established for many years ago; whereas, in Oman, like most Arab countries, the government (monarchy) controls every thing in the country. In this context, studies have indicated that political ideology translated in the government policy is another key factor which influences teachers and their teaching (Karakaya, 2004, p199).

Apart from the above differences, some similarities can also be observed between the two countries, particularly, the official religion, status of economic development, as well as government's emphasis on technology in education. Another interesting observation is that both governments started to provide their schools with computers and related devices approximately in 1998. This reflects one of the important similarities between Oman and Malaysia. In addition, the fact that Islam is the official religion for both countries is also viewed as an important contributing factor in this study which

investigates and compares technology adoption of teachers in Muslim nations. Similarly, in terms of levels of development, both countries appear to fall under the category of developing countries. It is argued that economically, Malaysia may have more development compared to Oman as there have been signs indicating that Malaysia is becoming one of the new industrialized countries (Watson, 2001). The similarities as well as the differences observed between these two nations serve as background for this comparative study.

1.2   Background of the Study

With the advent of the Internet in recent years, the diffusion of information technology has become a global phenomenon. It is also a natural part of human lives to the extent that certain aspects of economic, communication, transportation, and even social life have become difficult without technology necessitating them. Rapid expansion of technology has even effected every organization throughout the world and many workers are expected to be able to access technology to increase effectiveness in their workplace. The fact remains that whether welcomed or not, computers have and are going to have an increasingly important role in our society (Selwyn, 1997).

The use of technology in the educational institutions has also become a necessity in order to prepare the students for the information era and the globalized world. Advanced knowledge and skills in technology is required from the students after their graduation owing to the demand for efficient employees at workplaces to have sufficient knowledge and skills about computer, telecommunications, and the ability to utilize new technologies and

new ways of working (Rowland, LeCrone, Tuker, Willis, & Wong, 2001). MacNeil (2001) asserts that similar demand is also made by the public that expects students to be getting adequate skills in schools to enable them to cope with the challenges brought forth by the advancement in technology. Hence, the inevitability of making technological knowledge and expertise is an integral aspect of education which has given rise to efforts to develop policies that could improve the aims and content of educational system or even reform the system altogether.

1.2.1 Technology and Education

Despite being acknowledged and accepted as an integral part of life, consensus as to what technology entails and how it effects educational practices are still being debated in the educational community. There has yet difficult to be found only one accepted definition or meaning of the technology word that prevails across societies; and this is largely due to the fact that technology changes so quickly; hence, it is hard to create one definition of what constitutes its effective use in an educational setting (Veal, Tippins, & Wiesema, 1997). Nonetheless, there have been several definitions which many educators have considered all as encompassing. Some researchers have defined technology as "the practical implementation of intelligence" (Veal et al.1997, introduction section, para.3). However, focusing on the definition of technology is not as important as deciding on what students need to learn about technology. This poses as one of the biggest challenges encountered by the educators and curriculum designers (Fulton & Pruitt-Mentle, 1998).

Education today relies heavily on technology and over the past decade, schools have invested greatly in computers and networking to enhance instruction (Sylvia & Sylvia, 2002). In other words, technology has become a prevalent part of the educational culture and its impact on the changing face of curriculum can no longer be dismissed (Alexioo-Ray, Wilson, Wright, & Peirano, 2003). As a result of the diffusion of computer in schools, teachers' role has also changed and the textbook would not be the only resource for the student's knowledge. Acknowledging the benefit of technology in enhancing education, expenditures to supply schools with technology have increased throughout the world. Many experimental studies confirm that technology provides teachers and students with several ways of being in contact with events in the wider world (Al-heala, 2001). Developments in computer technology have also attracted the educators to explore its benefits and potentials for various purposes (Durdu, 2003). This is inevitable since advances in educational technology indirectly change the delivery of education itself.

Students need technological abilities in order to learn and to survive. In short, integrating and using computers in education, that mean preparing students for their future. Teachers also need to adapt to the changes in the society to ensure that their students leave their schools equipped with the important technological skills and knowledge on how to apply these skills (Baldwin & Sheppard, 2003). Consequently, technological knowledge and expertise need to become an integral part for the teachers professional development (Martin, 2003).

1.2.2 Computer Technology Integration

The American Society for Training and Development (ASTD, 2005) defines computer integration as combining hardware, software (and, in e-learning, content) components together to work as an interoperable system. The process of integration may also include front-end planning and strategy. In short, technology integration in schools refers to the use of electronic technologies in the day-to-day activities of teaching and learning. According to Bowman (2004), technology integration is about teachers and how they teach as well as about students and how they learn using technology. He also stresses that it is not about replacing the existing practices; instead, it is about doing them better with technology. The goal of supplying schools with technology is to integrate it across curriculum, but "a common definition of technology integration is hard to find" (Goodwin, 2004, p.3). Some teachers are unable to differentiate between computer as a subject and computer as a tool, the former refers to isolated computer education courses, which teach students about computers and computer-related basic skills; whereas the latter refers to the integration or use of computer technology throughout education for gathering information, communication, presentation and enhancing problem solving skills. Such distinction is important in order to facilitate learning any subject area. For example, the Panel on Educational Technology in USA under the auspices of the President's Committee of Advisors on Science and Technology (PCAST) (1997) reported that "the greatest promise of educational technology lies in the possibility of utilizing computers and networks as an integral part of virtually all aspects of the curriculum" (recommendations section). Hence, it offers recommendations that the focus should be on

learning with technology and not about technology, with emphasis given to content and teaching methods and not just hardware.

1.2.3 Teacher and Technology Acceptance

Despite already becoming a common feature in the lives of human being, there continues to be resistance by some people towards technology use. Throughout the world, the authorities of education spend heavily to equip schools with computers and related devices, but the use of this technology will not reach its expected potential, if teachers are not motivated and comfortable in utilizing them. This raises questions such as, why are they reluctant? Is it harmful? Is it difficult to use? What are the reasons for the reluctance? Bohlin (2003) points out that resistance towards computer can be a serious problem when technology becomes widespread and is commonly used in society.

A number of researches have shown that underutilization of technology in schools still exists even when computers have become easily available and many teachers still do not use them to enhance the students learning (Baldwin, & Keith, 2003; Bowman, 2004; Cuban, 2001; Gifford, 2004, & Henryk, 1996). The findings of these studies indicate that many hindrances prevent teachers from using computer technology. Some of these obstacles are environmental; whereas others are personal. However, personal barriers such as teachers' beliefs, attitudes, and self-efficacy are the major factors affecting their acceptance of technology (Baldiwin & Sheppard, 2003; Coleman, 2004; Gifford, 2004; Goodwin, 2004; Park, 2004). Unfortunately, little research has been done to identify the factors that influence acceptance of computer technology designed specifically for the teachers.

The development of teachers' positive beliefs about computers is considered to be a key factor in fostering computer integration and the enhancement of quality learning and teaching using computers (Yuen & Ma 2004). A number of studies state that the teachers' beliefs, attitudes and self-efficacy as well as knowledge and skills in using computers are major factors influencing their initial acceptance of computer technology and their future behavior regarding computer usage (Koohang, 1989). Hence, successful use of computers in the classroom depends on the teachers' beliefs about computers. Some researchers found that teachers' perceived usefulness of computers can also influence attitudes towards computers, and the amount of confidence a teacher possesses in using computers may influence his or her implementation in the classroom (Lawton & Gerschner, 1982).

Technology is not the ultimate answer for improvement in education. Instead, it is the teachers who embrace this technology and persist to develop and creative methods and strategies for using the technology in their classrooms. Therefore, focusing first on the teachers' professional development and adoption should be considered before providing computers in schools. Its possible to conclude in the light of the findings of previous studies that without teachers' knowledge of technology integration, the implementation of educational reform will not take place.

1.2.4 Educational Reform

Educational reform movements throughout the world have been attributed to technology, driven by the need to prepare students for the

information age (Hopson, 1998). Hence, technology is viewed as a critical component in the development of a brighter economic future (Coleman, 2004). The trend to introduce the information and communications technology within school environment has been fostered in many countries recently; and its inclusion is considered valuable and beneficial for teaching and learning (Gobbo & Girardi, 2001). For example, the use of technology for improving education and school reform has been the goal of the USA government for about the past 30 years (Smarkola, 2004). A review of literature indicated that in most countries reforming education is often associated with computer technology because computer is a very important tool to enhance teaching and learning. Vrasidas and McIsaac (2001) state that technology has the potential to support curriculum and policy reform. In the same view, Means et al. (1993) argue that technology drives reform in education, and that education reform, consequently, makes a school ripe for technology. Furthermore, schools reform often looks for technology to improve education and most reform agendas recommend the inclusion of technology within the educational process (Davidson & Ritchie, 1994).

1.2.5 The Benefits of Computer Technology Integration

Even though technology cannot solve all the issues facing education, there is substantial evidence that when used effectively it can promote and improve the student's achievement, including higher-order thinking skills (Kemker, Harmes, Kalaydjian & Barron, 2001). Research findings over the past 20 years provide some evidence to the positive effects of the use of computer technology on the students' learning (Mumtaz, 2000). Similarly, findings from

36 researches conducted from 1988 to 1992 on technology effects on learning suggested that computer applications have positive effects on the students' academic achievement, starting from the elementary schools up to college level (Smarkola, 2004). Recent studies also indicate that effective use of technology plays a key role in helping students to acquire essential skills and has the potential to improve their learning (Gifford, 2004).

Integrating technology helps teachers to shift the control of learning from them to the students. Technology helps students take responsibility for their learning. In addition, use of technology also motivates the students to explore their learning environment through research, collaboration, and problem solving. Moreover, the students will be able to gather information from online resources and create interactive presentation, which combines text, graphics, sound, and digital video (Pastor, 2001). By using technology, student can do operations such as questioning, exploration, discovery, analysis, understanding, application, and communication.

As mentioned previously, it appears that there are three main benefits of computer integration. First, the role of the teacher will shift from a lecturer to a facilitator, and this signifies that the learning environment will become more student-centered instead of teacher-centered. Second, when using computers, students will become more responsible for their work and they will learn on their own pace. Third, using computer keeps students interested, increases their motivation, and stimulates them for further learning.

1.2.6 Underutilization of Computer Technology

With increasing support for the idea that computer technology could significantly improve the educational system, coupled by the fact that the number of computers in schools has been increasing (Henryk, 1996), it would be expected that teachers would be ready to incorporate technology into instruction. From its inception to the field of education nearly twenty years ago, educators have been optimistic that technology would lead to improved teaching and learning. However, it appears that despite the rapid integration of computers into everyday personal and professional lives, successful integration into classrooms in schools has "lagged behind" (Baldwin, & Sheppard, 2003, p.5) and the problem of underutilization of computers for teaching still prevails. While computers have affected changes in other aspects of life, the same, however, cannot be said when it comes to the level of actual classroom change (Fulton & Torney-Purta, 2000). Bowman (2004) finds this situation to be intriguing and further highlights that "so many teachers still do not know how to use them, much less use them to enhance instruction and learning" in spite of the evidence indicating that computers have been in schools since the 1980's. Coleman (2004) attributed this phenomenon to the lack of vision of technology's potential for improving teaching and learning.

Despite having spent billions of dollars per year for the purchase of computer technology in order to support and increase the effectiveness and efficiency of teaching and learning, the diffusion of technological innovations for teaching and learning has not been well executed and technology has not become deeply integrated into the curriculum as reported by several

researchers (Baldiwin & Sheppard, 2003; Coleman, 2004; Gifford, 2004; Goodwin, 2004). Jacobson (1998) estimates that "no more than five to ten percent of faculty utilizes technology in their teaching whereas integration of technology is not appealing to other faculties" (p.2). Reasons for this underutilization have been identified by a number of researchers. A recent study by the U.S. Department of Education found that many of the new technology equipment has become a white elephant. The evidence suggesting that only 59 percent of students actually utilize computers in the classroom substantiates this. In addition, teachers' utilization of technology is mainly for drill and practice or word processing and not for higher-level applications (Cuban, Kirkpatrick, Peck, 2001; Technology Leadership Team Institute, 1999).

According to Pratt (2002) about (99%) of schools in the U.S already have access to the Internet. However, recent studies indicate that only (13%) of teachers had required students to use the browser in ten or more lessons during the year. Additionally, he claims that most studies report that the use of technology has primarily been for traditional purpose or focus on basic skills. Anthony (2000) asserts that many studies provide evidence showing that computer-based learning technologies are greatly under-used in classroom of pre-service teachers and that "this phenomenon has occurred in a range of countries and within a variety of education systems" (p.3).

1.2.7 Teachers' Training

Pratt (2002) believes that teachers who are proficient in their knowledge of computers have higher tendency to integrate or utilize computer technology

in their teaching and learning process. However, it appears that many teachers had undergone their teacher education or training programs at teacher training colleges and schools at a time when computers have yet to become a permanent fixture in educational institutions. Many teachers also often mirror or adopt the instructional techniques and approaches they had experienced as students when delivering instructions in their own classrooms. In the light of this apparent under-use of computer technology by the teacher, attention has turned to incorporating knowledge of technology integration in teachers' professional development. The authorities of education in many places throughout the world have chosen to focus on in-service opportunity for their teachers via computer workshops to enable them to develop their computer knowledge (Askar & Umay, 2001).

For instance, in USA over the past 25 years, various programs on the development of computer technology in education have been conducted at the local and national levels. However, studies on the effects of teacher training on how to use computers have suggested that "there has been a disappointingly slow uptake of computers in schools by the majority of teachers" (Cox, Rhodes, & Hall, 1988, p.174) in spite of the teacher training programmes, an increase in technology resources and the requirements of national curricula. Hoerup (2001), emphasizes that successful innovation implementation takes place once an understanding of the needs of teachers as they encounter the new innovation is formed, and that this preliminary step is pivotal in order to find additional tools or strategies to assist them in the successful adoption. In addition, aspects of the teachers' motivation and comfort need to be accounted

to ensure that technology use would achieve its expected potential (Bohlin, 2003).

Although a lot of efforts have been undertaken to improve the teachers' skills and knowledge on technology use as a effective instructional tool, many educators and school administrators stress that teachers' training alone does not create an effective technology use. Various studies have been carried out to better understand why some teachers use technology, and why technology appeals to some teachers, but not desirable to others.

1.2.8 Factors Inhibiting the Use of Computers in Schools

Various factors have been identified as barriers to the adoption of technology in the classroom. The majority of researchers divide the inhibiting factors or barriers into two parts – external and internal. The former refers to issues such as, lack of computers, training and resources, whilst the latter on issues such as, the teachers' beliefs, attitudes and self-efficacy. These later factors influence the teachers' decision about integrating technology in their teaching. According to Fulton (1997), while research often concentrates on external conditions which may affect technology use in the classroom, less attention has been devoted to intrinsic factors such as the relationship between beliefs and the acceptance of technology. In other words, literature on barriers towards utilization of computer technology in teaching and learning has mostly focused on environmental barriers such as availability of computers, support and training. Investigation of the internal barriers, however, has not been very predominant. Nevertheless, much of the research has found some psychological variables such as attitudes and beliefs toward computers

and computer self-efficacy as predictors of technology use among teachers (Vannatta & Fordham, 2004).

1.2.9 Teachers' Beliefs and the Integration of Computer Technology

The significance of teachers' beliefs on technology integration has been emphasized in a number of researches (Coleman, 2004; Holmes, Vargas, Jennings, Meier, & Rubenfeld, 1999). For example, Nespor (1987) highlights that teachers' beliefs play a major role in "defining tasks and selecting strategies because, unlike other forms of knowledge, beliefs can be flexibly applied to new problems". Teachers' beliefs, attitude, and the level of confidence regarding utilization of computer are considered to be influential motivating factors affecting technology integration. They are also indicative of the teachers' level of technology use (Handal, 2002). Lavonen, Jauhinen, Kopene, and Kurki-S (2004) accentuate that "teacher beliefs are a critical component in the factors that determine what happens in classrooms" (p.311), and that many of the reform attempts of the past have overlooked the role and influenced of teachers' beliefs in sustaining the status quo. Although it is argued to be important influences on how teachers conceptualize tasks and learn from the experiences, "little attention has been accorded to the structure and function of teachers' beliefs about their roles, their students, the subject matter areas they teach, and the school they work in" (Nespor, 1987, p 317). A probable reason for this, according to Pajares (1992) is that the subject of beliefs itself is often perceived as being the concern of philosophy or religion instead of education.

The Technology and Assessment Study Collaboration (TASC) reports that the teachers' positive beliefs about technology are important to increase the use of computer in instructions (Gifford, 2004). To achieve this, a change in beliefs about technology integration may be required (Russell & Bradley, 1997). Wang and Speaker (2002) assert that "the psychological barriers are often more difficult to identify and overcome than the external factors, because they are less tangible and more personal and deeply ingrained" (p.2). Thus, identifying and overcoming these obstacles or barriers towards technology adoption, are imperative in order to shift the teachers' beliefs about the role of technology (Coleman, 2004).

1.2.10 Teachers' Self-efficacy and Using Computers

Apart from beliefs, another factor, which influences the teachers' classroom practices, is their self-efficacy. Studies have found that there is a link between the teachers' efficacy and the students' achievement. High level of efficacy leads to more efforts in performance, an increase in persistence, and a low level of stress. Low efficacy, on the other hand, leads to fewer efforts and commitment, a higher level of stress and anxiety, and a tendency to give up the task assigned. Bandura (1997), stresses this point in his argument that "without skills a task could not be complete, but without self-efficacy, a task may not even be attempted" (p.43).

Self-efficacy has also been reported as a major factor in understanding the frequency and success with which the individual uses the computer (Coleman, 2004). Hence, self-efficacy may promote or inhibit the use of computer technology. This study concentrates on the relationship between

internal barriers, namely, the teachers' beliefs and the teachers' self-efficacy, and their level of computer use for teaching and learning.

Studies of diffusion and adoption help to explain the what, where, and why of technology acceptance or rejection in education (Holloway, 1997). Implementation of technology innovation requires the user's consent for without it any implementation of technology in education may result in failure. Swanson (1988) indicates that resistance towards technology continues to prevail despite evidence suggesting its potential to enhance users' performance. In other words, the user's consent is a critical component which determines the success of the innovation implementation.

Literature on technology adoption offers several models which attempt to explain the relationships between the teachers' beliefs about the utilization of computer technology for teaching and learning and the actual use of computer. The model, which serves as the theoretical framework for this study, is based on several theories, namely, the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), and Technology Acceptance Model (TAM), (see Figures 3.1, 3.2, and 3.3 in Chapter 3). In brief, the model of this study (Figure 3.4) shows that the main direct variables for predicting intention towards use of computer are beliefs and self-efficacy. These two components influence the person's intent towards the engagement in a targeted behavior such as actual use of computer. They are directly affected by the person's salient beliefs or specific beliefs about the target behavior. In other words, the assumption is that beliefs and self-efficacy affect the person's formulation of

intentions. Consequently, a person behaves or acts in ways consistent with his or her beliefs or in accordance with his or her formulated intentions.

1.3 Problem Statement

Investments have been made by the governments of Oman and Malaysia to increase the utilization of new technologies at all levels of their respective education systems. Efforts are still ongoing in both nations to equip their schools with the latest computers and related devices. At the same time a lot of time and money have also been spent to circumvent environmental barriers by providing optimal training for the teachers in order to improve their skills on technology integration in teaching and learning process. However, despite the training, resources and support given, many teachers still find themselves struggling with the tasks of incorporating technology into their daily curriculum. Handal (2002) asserts that exploration and identification of the teachers' beliefs is essential to ascertain if teachers would accept or reject the educational reform. He further states the resistance towards the implementation of the educational reforms could be due to the lack of compatibility between teachers' instructional beliefs and the original goals of a particular innovation.

The reports from Ministries of Education of both Oman and Malaysia indicate that the use of computer technology in schools is still below the expectations despite the effort to make computer available in public schools for the teacher and students use (Ministry of Education, Malaysia, 2001; Ministry of Education, Oman, 2003). In Oman, for instance, a recent study about the use of computer in schools for teaching and learning reveals that the level of

use is limited (Alhajri, 2005). A similar outcome is also reported in Malaysia particularly with reference to the reports about the current status of technology use in smart schools. According to the report, the average mean of computer use for teaching is low as it is only around 2.8 out of 5 (Ministry of Education, Malaysia, 2001, p. 488). Such findings clearly indicate that the level of technology has not increased despite teachers have attended training and technological infrastructures have been made available and accessible. The use of technology is still limited, which implies that only a few teachers are involved; whereas others are lagging behind. This poses questions such as, why are teachers not using computers for teaching and learning? Could this underutilization of technology be attributed to their internal and psychological barriers?

Investigation and exploration of the reasons or answers to questions above have received the attention and concern in recent studies on technology adoption by the teachers. It is argued that investigation of the teachers' beliefs is necessary before implementing any educational innovation as it is a significant predictor of the teachers' computer usage. In addition to this, other aspects such as the teachers' attitudes and self-efficacy are also pivotal when investigating technology integration (Bruess, 2003; Donna & Bruce, 2003; Fabry & Higgs, 1997; Hill, Smith, & Mann, 1987; Mumtaz, 2000; Pierson & McLachlan, 2004; Strader, 1998; Turnbull & Lawrence, 2002; Wang, 2001). Hence, it is timely that a study investigating the internal factors that influence the teachers' technology adoption be conducted to help in the governments' effort to reduce the impact of external barriers such as lack of computers, and lack of training on technology use.

1.4   Purpose of the Study

This study is conducted to identify the internal barriers (second order barriers) that exist toward technology integration among teachers in Oman and Malaysia. Specifically this study is designed:

- To explore the level of use of computer technology by teachers for teaching and learning in both Oman and Malaysia.

- To explore the teachers' beliefs and self-efficacy related to technology integration for teaching and learning in both countries.

- To examine the relationship between the teachers' beliefs about the utilization of computer technology and their level of computer use for teaching and learning in the two countries involved.

- To examine the relationship between the teachers' self-efficacy regarding the utilization of computer technology and their level of computer use for teaching and learning in both nations.

- To determine if there is any difference between teachers in their level of use of computer technology for teaching and learning which is attributed to gender in both countries Oman and Malaysia.

- To determine if there is any differences on the teachers' beliefs and self-efficacy with respect to computer technology integration for teaching and learning between Oman and Malaysia.

1.5   Research Questions

The following research questions were formulated to achieve the objectives of the current study:

Q1- To what extent do teachers in Oman and Malaysia regularly use computer technology for teaching and learning?

Q2- What are the teachers' beliefs about using computer technology for teaching and learning in Oman and Malaysia?

Q3- What is the teachers' self-efficacy with respect to using computer technology for teaching and learning in Oman and Malaysia?

Q4- Are there significant differences between teachers in Oman and Malaysia on their level of computer use (frequency) for teaching and learning?

Q5- Are there significant differences between teachers in Oman and Malaysia on their beliefs about using computer technology for teaching and learning?

Q6- Are there significant differences between teachers in Oman and Malaysia on their self-efficacy in respect to using computer technology for teaching and learning?

Q7- Are there significant differences between teachers' gender (male and female) regarding the level of computer use (frequency) for teaching and learning among teachers in Oman and Malaysia?

Q8- Are there significant differences in the level of computer use (frequency) for teaching and learning by the subject taught among teachers in Oman and Malaysia?

Q9- Is there a relationship between teachers' beliefs and their level of computer use (frequency) for teaching and learning among teachers in Oman and Malaysia?