

ICT AND INTERNET USAGE IN
EARLY CHILDHOOD EDUCATION: A
COMPARATIVE STUDY OF
AUSTRALIAN AND MALAYSIAN
TEACHERS' BELIEFS AND CURRENT
PRACTICES

Filzah Zahilah Mohamed Zaki

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early childhood education, preschool, early years, teachers, ICTs, Internet, practice, teachers' beliefs, Australia, Malaysia, survey, classroom, technology integration

Abstract

Recent years have seen rising numbers of young children as active users of technology and the Internet. Across different countries, the importance of young children using technologies and the Internet is evidenced in national and state early years' education policy documents, including the Australian Early Years Learning Framework (2009) and Malaysian National Preschool Standard Curriculum (2010). Teachers play a vital role in the endeavour of bringing technologies to these young children in their classrooms.

The research aim is to understand teachers' current beliefs and practices in using Information and Communication Technologies (ICTs) in general, and specifically to know their Internet use in the preschool years of education in Australian and Malaysian contexts. Preschool teachers from centres associated with the Crèche & Kindergarten (C&K) Association in Queensland were involved in Australia, while the majority of participating teachers from Malaysia came from public, government-funded centres (PERMATA childcare centres or PAPN, PERPADUAN *tabika*, KEMAS *tabika* and Ministry of Education, or MOE preschools), with some private kindergarten teachers in Selangor.

Using a two-phase online survey, the study was conducted to investigate Australian and Malaysian preschool teachers' beliefs, comfort with ICT and current use of digital technologies and the Internet in teachers' personal and early childhood contexts. Printed copies of the survey were used where necessary. The Australian survey was in English, and the Malaysian survey was prepared in two languages (English & Malay) to cater for different language competencies and teachers' preferences.

There were four major findings derived from the study. First, the study found that Australian and Malaysian teachers have many similarities in terms of their relatively high Internet penetration rate and their overall comfort in using ICTs and the Internet in their personal lives. Australian and Malaysian teachers reported similar high levels of comfort in using ICTs, including word processing, doing PowerPoint presentations, and explaining use of technology to children. The correlations with teachers' age, teaching experiences, education level and the practices of technology and Internet use in classroom for both countries showed that older teachers tended to report less comfort with technology. Second, both groups of teachers reported having positive attitudes towards technology and Internet use in early childhood education, although these beliefs did not translate into their reported practices. The third significant finding was that structural issues in both countries existed despite current policies related to Internet availability in early childhood classrooms. Almost half of the teachers surveyed in each country did not report having Internet-enabled devices or access in their classrooms. Finally, the single significant predictor that determined the practices of using Internet in the classrooms in each country was the teachers' positive beliefs that the Internet is a useful resource in the classroom.

The study has two recommendations, with implications for teachers' professional development and preparation for pre-service teacher education. The first recommendation proposes a teachers' peer-mentoring system using early adopters as mentors. Second, the development of effective training systems for continuous teacher professional development at various levels and modes can support effective integration of technology into early childhood classrooms. For pre-service teacher education, the curriculum should support teachers to develop positive attitudes and

skills regarding the use of ICTs by having specific and strategic ICT modules that are adaptable to teachers, related to ICT integration in classrooms, and by developing a collaborative network with existing teachers for knowledge sharing and actual-classroom exposure and discussions.

The study suggests possible future research directions to extend current findings, either by replicating this study in other countries or to study the current support given to preschool teachers for their ICT integration in classrooms, and the study of early adopters. A study focusing on enabling factors would contribute to understanding effective integration of ICT in early childhood settings. In conclusion, the study has provided understanding of cross-national early childhood teachers' beliefs and comfort levels regarding their ICTs and Internet classroom practices in both established and emerging economies.

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List of Abbreviations

ABS	Australian Bureau of Statistics
ARC	Australian Research Council
C&K	Crèche & Kindergarten Association (in Queensland, Australia)
EPRD	Educational Planning and Research Division, Ministry of Education, Malaysia
EPU	Economic Planning Unit, Prime Minister Department, Malaysia
ICTs	Information and Communication Technologies
KEMAS <i>tabika</i>	preschool classes administered by Department of Community Development (<i>Jabatan Kemajuan Masyarakat</i>) of the Ministry of Rural & Regional Development, Malaysia
MCMC	Malaysia Communications and Multimedia Commission
MOE preschools	preschool classes administered by Ministry of Education, Malaysia
NAEYC	United States of America National Association for the Education of Young Children
OECD	Organisation for Economic Co-operation and Development, an international organisation helping governments tackle the economic, social and governance challenges of a globalised economy
PERMATA childcare centres (<i>Pusat Anak Permata Negara or PAPN</i>)	Early Childhood Education and Care Centre set up through the project “Every Child is Precious as a Jewel” for children 0-4 years administered by Department of Prime Minister, Malaysia
PERPADUAN <i>tabika</i>	preschool classes administered by Department of National Unity and Integration, Prime Minister Department, Malaysia

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Chapter 1: Introduction

This study investigates current views and practices of early childhood teachers and their Internet use in Queensland, Australia, and Selangor, Malaysia. This chapter first outlines the background of the study (Section 1.1) and then discusses the context of the study and the key themes (Sections 1.2 & 1.3). Next, this chapter presents the aim and research questions of the study (Section 1.4). The next section briefly describes the research methodology used in the investigation (Section 1.5), followed by a discussion of the significance of this research (Section 1.6), the thesis structure and outline of the remaining chapters of the thesis (Section 1.7), and a summary of this first chapter (Section 1.8).

In my role as researcher, I am aware that my personal and professional experiences influence the selection of this research topic. I have a background in Information Technology and I have young children. I currently reside in Australia, and Malaysia is my home country. Living in both countries prompted my interest in studying how Australian and Malaysian children and early education teachers engage with ICTs and digital technologies in their daily lives, in both home and classroom contexts. This research proposal was triggered by observing my older children interacting with technology, and the fascination of its use among their peers. My interest became one of identifying current practices in early childhood education in relation to integrating Internet with classroom practices in early childhood education.

1.1 BACKGROUND

Recent years have seen a rapid emergence of websites and online applications for educational purposes. The number of young Internet users is becoming more

prominent (Calvert, Rideout, Woolard, Barr, & Strouse, 2005; Media & Rideout, 2011; Vandewater et al., 2007). In many countries, awareness of the potential of Information and Communication Technologies (ICTs), and particularly the use of the Internet's World Wide Web (WWW), also known as the Web, for seeking information is encouraged, for its benefits in contributing to the development of the 'knowledge society' and for promoting digital literacy for everyone, including young children. According to the Web inventor, Tim Berners-Lee, founder of the World Wide Web Consortium (W3C), "the World Wide Web is the universe of network-accessible information, an embodiment of human knowledge" (<http://searchcrm.techtarget.com/definition/World-Wide-Web>). Khan (1998) points out that the World Wide Web has become progressively more popular in education due to its information technology features, attractive resources and new ways of teaching and learning for students and teachers. The Web has added a new dimension for education by providing interactive and dynamic learning experiences, and offering students exposure to broaden their horizons and the capacity to embrace international education standards by using information and communication technologies (Bruning, 2003).

Early years education policy documents identify learning through Web use as essential for attaining knowledge, educational success and social equity (Miller, 1999). In advocating Internet use in young children, in the context of early childhood education, teachers play a vital role in this effort, as improved teachers' confidence levels benefit the children (Graham, 2008).

With an emphasis on the benefits for young children, this research is significant in that it studies current teachers' beliefs of their practices and experiences with the Internet and their general ICT use. The findings will directly

contribute to informing policy and professional development in relation to teachers working with young children as well as promoting positive use in the early childhood classrooms. This research contributes to existing research findings on how the users' beliefs and attitudes influence their technology usage (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989; Dishaw & Strong, 1999; S. Taylor & P. Todd, 1995; Venkatesh & Davis, 2000). In the context of early childhood education, Fleer and Jane (2004, p. 35) point out that children as young as five nowadays are expected to be involved in technology education, but there are very few empirical studies that suggest how children should engage with the planned curriculum. Little is known about young children's prior technological experiences before attending kindergartens, and how these experiences influence their learning opportunities in the classroom. One way to find out about how technologies are used in preschool contexts is to survey the teachers about their experiences.

Studies that have focused on the use of ICT in the context of early childhood classrooms are primarily concerned about children's experiences, and less concerned about the role of the teacher. To date, little is known about how much teacher engagement, and what kind, is implicated in reports of positive outcomes of technology use in classrooms. This study will add another dimension, by exploring teachers' reports of their variation of use of technology at home and in early childhood classroom settings. The study is significant as it adds two dimensions, that of Malaysia and Australia, with dissimilar settings of culture, language, and socio-economic conditions.

The study will extend to the body of knowledge beyond a western perspective in terms of examining current early childhood teachers' beliefs and practices in the aspect of their ICT usage. At the same time, the research will provide a point of

contrast between the two countries in terms of teachers' attributes and lingua franca. Some examples of includes teachers' age, qualifications and cultural differences. As English is more prevalent as a language used for technology and communications today, the contrast between an Australia, as an English-speaking country and a multilingual, multicultural Asian country like Malaysia, will be a useful comparison. This cross-national research is valuable, because extending a research to any different country is important in its own right, and based on the assumption that even comparison between countries with similar economy is worth knowing, besides to test whether any differences or any universal similarities that exists. In addition, this comparison will provide more understanding in terms of early childhood education system that exists between the two countries as well as the respective teachers' belief and their ICT usage. However, the study of the teachers' cultural differences goes beyond the scope of this research, as only the structural factors are in focus here.

Also, there has been little published research investigating, from a comparative perspective, teachers' beliefs and use of technology in countries such as Australia and Malaysia. This study will be useful in the measuring and comparing dimensions of Australian and Malaysian teachers' beliefs towards technology use.

1.2 ICT IN EARLY CHILDHOOD EDUCATION POLICY IN AUSTRALIA AND MALAYSIA

In order to understand the Australian and Malaysian early childhood teachers' views of their beliefs and practices of the Internet in early childhood classroom settings, the discussion is located within national frameworks presented as teacher guidelines for implementing curriculum and pedagogical approaches in both countries. For example, the Early Years Learning Framework (EYLF) endorsed by the Australian Federal Government in 2009, aimed to expand learning experiences for young children from birth to five years of age, and to provide a platform for

transition to school (Miller, 1999). The Australian Early Years Learning Framework (EYLF) presents a supportive foundation for quality teaching and learning in early childhood education and childcare settings in Australia. The Framework has specific goals and aims, and learning outcomes targeted for children from birth to 5 years of age, that emphasise the importance of communication and language development that includes early literacy and numeracy with the use of ICTs, as well as a focus on children's social and emotional development.

One example from the Framework is Outcome 4 (Children are Confident and Involved Learners), where the use of ICTs is promoted for children for investigations and problem solving. Young children are encouraged to be resourceful by having connection with people, technologies and other natural and processed materials. The framework expects that teachers use appropriate tools and technologies in supporting the children's learning, and to develop confidence with use of ICTs while assisting the children in their learning. The Framework was developed to assist educators working in partnership with families to maximise young children's potential, and to build a strong foundation for success of young children.

In Malaysia, the most recent framework for early childhood education is the National Standard Preschool Curriculum (Ministry of Education Malaysia, 2010). The purpose of this framework is to develop the potential of children aged 4 to 6 years potential to the fullest, in an integrated manner, addressing physical, spiritual, social and intellectual attributes. The framework advises that this aim can be achieved by preparing a safe and conducive learning environment that will be fun, allowing creativity and meaningful activities to take place (Ministry of Education Malaysia, 2010, p. 1).

Also, according to the Malaysian National Preschool Standard Curriculum, children are encouraged to use ICTs and communicate in accountable and ethical manners, by applying and using appropriate ICT resources for improving their learning process. The overarching goal is to produce well-rounded individuals by encouraging their creativity and innovative thinking, and developing their critical thinking. This approach is made possible by drawing on the use of science and technology elements and by adopting inquiry-based approaches to science knowledge, scientific skills and attitudes, mathematical knowledge and skills, problem solving and the use of ICTs in teaching and learning. ICT use is supported alongside other curriculum elements, such as communication, spiritual and moral development, self-presentation, and physical and esthetical development (Ministry of Education Malaysia, 2010, p. 2).

In the National Preschool Standard Curriculum document, there are explicit basic technological competencies expected for young children; for example, expectations that a 5 year-old child (or older) would be able to identify and use a computer (Ministry of Education Malaysia, 2010, p. 132). The list included (but was not limited to) identifying basic computer parts (monitor, mouse, keyboard and system unit), starting a computer and turning off a computer in the right manner with the teacher's assistance, using the mouse to click and double click, having positive attitudes in using ICTs and cooperating with other children in the classroom when using computers. Additional expectations included using software to draw basic shapes and colours and finally, using CDs or DVDs for knowledge seeking and to gain new skills.

At the same time, the Malaysian Curriculum Development Centre was involved in providing training to some teachers (at the primary and secondary levels)

in conjunction with the Computer in Education Program. The program started in 1992, years before the Malaysian smart schools initiative was introduced in the Malaysian Super corridor mega project, which was conceptualized in 1996 (Chan, 2002). The training initially encompassed ICT literacy for teachers but, recently, the focus shifted towards getting teachers to implement ICT in their lessons. Additionally, teachers were trained in their school, district or state level.

In the latest Malaysian Education Blueprint 2013-2025, the Malaysian government plans long-term to equip more ICT facilities within Malaysian schools for students' ICT literacy and to support future innovations in pedagogical practices (Ministry of Education Malaysia, 2012, p. 163). In the same education plan, the project titled 1BestariNet plans to provide Internet access and virtual learning environments to all 10,000 Malaysian schools by mid of 2013 (Ministry of Education Malaysia, 2012, p. 40), providing a complete platform for teachers to integrate ICT into their teaching and learning process in their classrooms.

In conclusion, both the Australian and Malaysian educational frameworks focus on assisting educators to implement curriculum and pedagogic approaches that value use of technologies. It is a clearly evident in both the Australian and Malaysian frameworks that there is an emphasis on the use of ICTs in young children's learning environments in their classrooms, as well as the promotion of teachers' use of ICTs in their everyday teaching experiences. In terms of Internet use, figures show that both Australia and Malaysia have increasing numbers of Internet users (Koo, 2008; Thompson, Lim, & Lai, 1999). The initiative by governments in both countries for broadband Internet access also assists in realising the endorsement of ICT use in preschool classroom settings.

1.3 TEACHERS' BELIEFS, DECISION-MAKING AND TECHNOLOGY ACCEPTANCE

Teachers' classroom practices are built on their perspectives of curriculum and pedagogy. A study conducted by Kilderry (2012) on Victorian early childhood teachers' curriculum decision-making found that teachers were held accountable for their curricula choice. The teachers reported that their pedagogical practices were based on their professional understandings, and that their curriculum decision making was highly dominated by developmentally appropriate practice (DAP) principles. Kilderry (2012) concluded that there was a need for further examination of factors that influence early childhood teachers' decision-making. Marsh (2006) investigated the connection between belief systems of Icelandic preschool teachers and their pedagogical practices, and found that teachers may be similar in their educational ideology, but different in terms of their goals, beliefs and pedagogical practice.

In other research, Teo (2011) drew useful conclusions based on a meta-analysis of recent findings, concluding that teachers play a role as the ultimate decision-makers of what and how the technology is implemented in their classrooms for teaching and learning purposes, even if they are guided by government policies on technology integration. With the increasing demand for educational ICT applications and the evolving nature of working practices and technological trends, there is an imperative to re-examine the factors underlying technology acceptance in early childhood classrooms.

Pajares (1992) stressed that teachers' beliefs are an important focus of attention for educational research and a major factor influencing curriculum decisions and educational practice. Pajares argued that teachers' beliefs vary in terms of interpretations and use. As well as Pajares' (1992) view, others argue that beliefs are

an important factor that drives any individual's choices in their lives (Bandura, 1986; Nisbett & Ross, 1980; Rokeach, 1968). For example, Bandura (1986) proposed that self-efficacy, our judgements about our own capacity to achieve a desired goal, as a belief system, will determine motivations and behaviours. Bandura (2012) argued that "teachers' beliefs in their personal efficacy to motivate and promote learning affect the types of learning environments they create and the level of academic progress their students achieve" (p. 117). Thus, this premise suggests teachers' beliefs in their own self efficacy, and their comfort level with ICTs could impact their motivation to use ICTs, and be predictive of their intentions to incorporate technologies into educational practice in the early childhood context.

There are an increasing number of studies that investigate the relationship between teachers' attitudes and beliefs towards ICTs and their intentions to incorporate these technologies within the classroom. The Technology Acceptance Model or TAM (Davis, 1989) is a research framework used to determine teachers' attitudes towards ICTs (Hu, Clark, & Ma, 2003; Teo, Lee, Chai, & Wong, 2009). TAM proposes that when users perceive technology to be useful and easy to use, they will convey positive attitudes towards technology usage (Davis, 1989). The TAM model is a well-known model of user acceptance that was originally applied in fields other than education. Teo, Lee, Chai and Wong's (2009) study investigating pre-service teachers' attitudes in Singapore and Malaysia used an 11-item survey design with four constructs: intention to use computer technologies, attitude towards computer use, perceived usefulness, and perceived ease of use. They found overall positive responses to the constructs. The significant factors in both countries (Singapore and Malaysia) that predicted behavioural intention were perceived usefulness, perceived ease of use, and positive attitudes towards computer use. In

addition, the study found that there was a higher variance for intention to use in the Malaysian teacher data compared to the Singaporean teacher data. Users' intentions to use technology were significantly influenced by their attitudes towards computer use when given the option to use or not to use technology (Teo et al., 2009).

In a mixed methodology study by Smarkola (2011), the examination of the Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989) and decomposed theory of planned behavior (DTPB) by Taylor and Todd (1995) were used to predict pre-service and experienced teachers' computer usage intentions. The DTPB model applies direct assessment on attitudes, subjective norms (other people's effect on one's behaviour), and perceived behavioural control. The degree of control that users have on their behaviour is closely related to self-efficacy (Trochim, 2006b). The study also found that there were two constraints in predicting teacher intention and eventually, their behaviour: internal factors, such as skills; and, external factors, such as the availability of resources and available opportunities (Trochim, 2006a). The DPTB was found to be a more significant model for predicting teachers' intentions in computer usage, although TAM was also considered a good predictive model.

There are emerging models available for predicting teachers' intentions in their ICT usage within the context of early childhood. Studies have examined technology adoption among early childhood teachers (Gialamas & Nikolopoulou, 2010; Wood, Specht, Willoughby, & Mueller, 2008; Yurt & Cevher-Kalburan, 2011), perspectives on technology uptake by teachers (Teo et al., 2009), what motivates early childhood teachers to use computers (Edwards, 2005; Ljung-Djärf, Bengtsson, & Ottosson, 2005), and teachers' challenges in integrating technology (Keengwe & Grace, 2009). These studies are discussed in chapter 2.

1.4 AIM AND RESEARCH QUESTIONS

The main aim of the study is:

To understand early childhood teachers' current educational beliefs and reported practices in terms of their general ICT and Internet use in the preschool years of education in Malaysian and Australian contexts.

In understanding teachers' beliefs and reports of their classroom practices, the study identified their technological comfort, educational beliefs on ICT and Internet use, and the current state of play in relation to technology in their classrooms.

The research questions that drove this study are:

- i. What are the teachers' comfort level of ICTs and Internet use in their personal and professional early childhood education contexts, and how does that map onto age, experience and education level?
- ii. What are the teachers' beliefs on the relevance and importance of ICTs and Internet usage for young children in the early childhood context?
- iii. What are the approaches adopted by early childhood teachers in their classrooms when using ICTs and the Internet?
- iv. What are the similarities and differences across Australian and Malaysian teachers' ICTs and Internet usage in early childhood context?

The study identified Australian and Malaysian preschool teachers' current level of ICT comfort, their beliefs system on ICT usage for young children and their current practice of ICTs in early childhood classroom contexts. The study also took into account the substantial ICT initiatives in existing and recent curriculum documents in both countries.

There are obvious differences in overall education systems of Australia and Malaysia, as well as differences related to the current economical status of both

countries, where Australia is a developed Western country and Malaysia an emerging economy in Asia. This comparative study identified the similarities in teachers' roles and the issues they shared, even though there were dissimilarities in teachers' backgrounds (educationally or culturally), and the contexts of classroom settings. Across both countries, teachers were found to play an important role as reflective educators, informed decision-makers, and effective technology integrators in their classrooms.

In recognising the teachers' perspectives and use of ICT in both countries, the study has some major facets of investigation. The initial aspect is to identify early childhood teachers' comfort level with ICT and Internet use, in both personal and early childhood classroom context. Next is to examine teachers' pedagogical or educational beliefs in terms of their general ICT and Internet use in early childhood classrooms. Inferentially, the study also aims to analyse the type of correlations that exist between the teachers' beliefs and their reported pedagogical practices concerning ICT and Internet in their classrooms. Finally, the study is to draw a comparison between the two countries in terms of the teachers comfort with ICTs and the Internet, their beliefs, and reported classroom practices. In brief, the investigation involves identifying teachers' technological comfort, their educational beliefs on ICT and Internet use, and the current state of play in their classrooms.

This unique two-fold study is envisioned to tap into existing and future opportunities for early childhood teachers to be a more comfortable with digital technologies in their pedagogical practices, as teachers in the 21st century are expected to engage with ICTs and young children educational needs, to be compatible in the global arena of today's world of education.

1.5 RESEARCH DESIGN AND METHODOLOGY OF THE STUDY

The study resides within a larger Australian Research Council project: *Interacting with knowledge, interacting with people: Web searching in early childhood* (Project ID: DP110104227, Danby, Thorpe, Davidson). The study has ethical approval by QUT (University Human Research Ethics Committee, Approval #1100004180) and the CEO of Crèche and Kindergarten Association. Informed consent was sought from teachers. This study uses survey data from Australia and adds additional survey data of Malaysian teachers' computer access and use in home and preschool settings as well as their beliefs and experiences of technology.

The online survey tool was developed using Key Survey software provided by QUT. It was originally anticipated that surveys would be sent to approximately 400 participants in total (200 in Queensland, Australia, and 200 in Selangor, Malaysia). In total, 234 participants responded to the survey (131 completed the survey in Australia and 103 in Malaysia). In Australia, the survey was sent to teachers, group leaders and teacher assistants in Crèche and Kindergarten (C&K) centres across Queensland. In Malaysia, the same survey questionnaire was used, with some additional questions suggested by the candidate's confirmation panel. Some survey questions were adapted to recognise the local conditions of the Malaysian research context, such as the difference in teachers' education levels. In Malaysia, the survey involved government-funded childcare centres, kindergarten and preschools, including PERMATA childcare centres (PAPN), Ministry of Education (MOE) preschools, KEMAS *tabika*, PERPADUAN *tabika*, and also some private kindergarten providers.

Survey data collected from Australia and Malaysia were analysed using SPSS, to provide reports on descriptive statistics, group differences and also

regression analysis (e.g., predictions of computer usage analysis among preschool teachers were generated and analysed).

1.6 SIGNIFICANCE OF THE RESEARCH

The major finding relates to the comparative analysis of teachers' ICT usage in early childhood education in two different educational systems. The findings highlight current issues related to belief systems and practices of early childhood teachers in Australia and Malaysia, including how teachers engage with technologies, and their views of the usage of ICTs in the classroom. The findings show the extent of Internet use by the surveyed teachers, and how comfortable they are in using related technologies. In addition, the research yielded greater understandings of the ways that preschool teachers use ICTs and the Internet in their classroom with their students, increasing understandings of teachers' views of young children and Internet use (e.g. in Web searching).

The findings of this study can be used for benchmarking early childhood teachers' use of ICTs and the Internet in preschool settings in Malaysia and Australia. The findings can support initiatives to improve the quality of early childhood education and are especially useful for considering professional development for early childhood education providers in the future. This is the first study of its kind to map early childhood teachers, in Australia and Malaysia, and their ICT and Internet usage, as well as their views of digital technologies use in their classrooms. Findings can inform policy and educational curriculum in the early years and also be a benchmark study for future studies of teachers' engagement with technologies in early childhood classrooms.

1.7 THESIS STRUCTURE

Chapter 1 introduced the rationale and context for the research study, and introduced the aim and research questions of the study.

Chapter 2 identifies key themes for the study. Key elements include young children's and early childhood teachers' use of Information and Communication Technologies (ICTs), and the Australian and Malaysian early childhood education contexts.

Chapter 3 discusses in detail the research design and methodology used for the current research study. This chapter includes a discussion of the overall process of designing and implementing the survey, and data analysis. There is also a discussion of ethical considerations.

Chapter 4 outlines the results of the survey undertaken in both countries, Australia and Malaysia, providing the details of the data as well as the analysis techniques used. This includes descriptive as well as inferential statistics addressing the research questions.

Finally, Chapter 5 discusses the findings of the study and the significance of the research by addressing the research questions, and presents a conclusion of the study.

1.8 SUMMARY

This introductory chapter introduced the context and rationale of the study. It presented the aim and the research questions, as well as the methodology. Briefly, the potential of the study and the significance of the study were summarised.

The next chapter discusses key themes issues on ICT use, and how young children and teachers engage with technologies. The chapter also discusses how the

uses of ICTs are embedded in early childhood education frameworks in the Australian and Malaysian contexts.

Chapter 2: Literature Review

This chapter investigates how Information and Communications Technologies (ICTs) are used in early childhood education contexts. Access to ICTs by young children is a rapidly emerging phenomenon, with the safety and value of their use in the early childhood years often contended. The presence of ICTs and access to the Internet is increasingly commonplace. For example, the Australian Federal government's initiative to upgrade Australian broadband for Internet access has provided an increasing number of households with Internet access, with 86% of households having access in 2009 (Thompson et al., 1999), and likely to be higher within the next few years. The Malaysian government, through its National Broadband Initiative (NBI), stated in 2007 that the target was to achieve 50% household broadband penetration by the end of 2010 (Koo, 2008). The growth of Malaysian Internet users was emerging in 2008, with 62.8% of Malaysians Internet users (2008), compared with just 15% in year 2000 (Koo, 2008; Lucia & Clarestalwj, 2010). As of the second quarter of 2012, the Malaysia Communication and Multimedia Commission (2012) reported Internet broadband penetration has increased to 63.7% per 100 households. This increase at the Malaysian national level was reflected also in Selangor where the broadband penetration rate per 100 households stands at 76.6% (MCMC, 2012). Selangor stands in second place after the Federal Territory of Kuala Lumpur, within the same quarter period of 2012. The use and demand for ICTs in both Australia and Malaysia present a strong case for investigating how teachers and children engage with technologies in early childhood education contexts.

This chapter provides an overview of current evidence in the field and identifies three key themes of research: Young Children and ICTs, Early Childhood Teachers and ICTs, and Policy Guidelines for ICTs in Australian and Malaysian Early Childhood Education and Care (ECCE) systems. The first section, Section 2.1, investigates the topic of young children and ICTs for education to examine the benefits and the importance of ICT implementation in young children's learning environments. The impacts of ICTs are discussed as one of the main pillars of this study that explores Internet use in early childhood settings and the challenges of implementation. The second section, Section 2.2, investigates teachers' use of ICTs in teaching-learning environments, with insights into current practices, teachers' perspectives and teacher preparation for using ICTs in current pedagogical approaches and curriculums. The third section, Section 2.3, focuses on early childhood educational frameworks in Australia and Malaysia. The Australian Early Years Learning Framework (EYLF) is an important conceptual framework for educators, as it is the first national framework for early childhood curriculum (Miller, 1999). This section also discusses the educational framework specifically used in Queensland in the Crèche and Kindergarten Association centres, the Building Waterfalls framework (Creche & Kindergarten, 2011), as this is the research context for the study. The Malaysian Early Childhood and Care Education (ECCE) and the related government framework, as well as policies of ICT in the Malaysian early childhood and care education system, are discussed in this section. The chapter concludes by identifying a key research gap in understandings concerning the use of ICTs in early childhood education contexts. This gap is the impetus for the proposed study of early childhood teacher's comfort levels and practices with ICTs in early childhood education contexts in Australia and Malaysia.

2.1 YOUNG CHILDREN AND ICT

In most parts of the world today, the Internet has become part of almost everyone's lives, and including those of young preschool children. In the last ten years, a number of studies have examined the use of ICTs in the lives of children in their early years or in the context of early childhood education. These studies show that many children have multiple technological experiences and exposure even before they reach their school years (Chen & Chang, 2006; Fler & Jane, 2004, 2011). Most studies and debates have been on the appropriateness, or not, and the benefits and dangers of ICT for children, and the impact of ICT use in young children's learning process. These studies are discussed in this section.

The term 'digital natives' was first introduced by Prensky (2001a) to describe a young generation of users able to take up and use rapidly changing technologies. This group of users was compared with the group of users described as the 'digital immigrants,' members of the older generation. Since then, many studies have emerged that discuss the concept of the 'digital native' in various platforms and contexts, including in education contexts. One example is an Australian study by Bennett, Maton and Kervin (2008) that found the argument of 'digital natives' versus 'digital immigrants' was constructed as an issue of 'moral panic' and not based on empirical and theoretical study. Also, more recently, Bennett and Maton (2011) further condemned the notion of 'digital native' as a an erroneous perception of young people's technology use. They argued for credible research to be employed for worthwhile debates, to bring the benefits to the whole community of stakeholders, including teachers in educational systems who have been labelled as the potentially incompetent 'digital immigrant'(Prensky, 2001b). In challenging the concept of the 'digital native', Helsper and Eynon (2009) attribute any visible generational gaps or differences to the extent of adults' experiences with information and communication

technologies use. Generalisations and claims when it comes to uptake and use of technology serve no benefits to the current education system; as such perspectives could lead to introducing a model of generational divide.

The current study focuses on early childhood teachers' comfort levels related to technological use and the potential effect on their practical skills and knowledge of technologies in their early childhood education contexts. The recent study by Bittman, Rutherford, Brown and Unsworth (2011) examined the concept of 'digital natives' used to describe the current generation of young children. Drawing on data from the Longitudinal Study of Australian Children (LSAC), they investigated vocabulary and conventional literacy development of children aged birth to 8 years, their digital accessibility and use of computers, parental interventions, and family perspectives on technology use. The study concluded that the parental role was significant, and suggested that the use of computers for learning purposes, but not for playing games, contributed to better language development amongst these children.

There are diverse views about the value of young children using computers within their everyday experiences. Yelland (2005) reports that there are mixed reactions among emerging research findings about the safety and value of usage of computers in education. Some researchers argue that computer usage could result in adverse physical and cognitive effects on children, including lack of social development and inappropriate content use, security issues, and even behaviour problems (Appel & O'Gara, 2001; Cordes & Miller, 2000; Vandewater et al., 2007). A national advocacy group, the Alliance of Childhood, has raised concerns about the use of technology. The Alliance suggests that computer use involves extended screen or virtual time for the children and reduces time in real relationship interactions, suggesting that these practices will jeopardize the 'normal' social development of

these children (Alliance for Childhood, 2004). Their position, however, was not based on empirical research, and numerous studies have reported positive effects of computer use on young children's social, cognitive, emotional, language development and motivation (Clements & Sarama, 2003; Haugland, 1999; McCarrick & Li, 2007; Wang & Ching, 2003). A study by O'Hara (2008) conducted in the United Kingdom suggests that ICTs have great potential to provide additional opportunities for creativity, sharpening young children's learning skills as well as providing a place to implement their social skills. One Japanese study investigated how technology was used to promote the social aspects of the young children's interactions in early childhood classrooms alongside play in group-based activities (Cross, 2011). Examples of practice included using the computer as a toy for playing certain software and, in this way, the technology afforded opportunities for play. A second use of the computer in the play environment was using the computer as a prop for pretend play, such as 'playing store,' with digital versions of buying and selling items, and the creation of a 'digital pictorial map dictionary' that allowed the children to collaborate and communicate with their friends. The practices observed in these classrooms support the findings of an earlier study that found that Japanese teachers viewed technology as a communication device and as tool for human communication (Izumi-Taylor & Satomi, 2009). Other studies identify technology as an attractive resource for young children, arguing that the use of technologies offer a sense of empowerment (Cooper, 2005; Lepičnik-Vodopivec & Samec, 2012). Having a sense of empowerment means that children have the freedom to explore and learn at their own right and pace, and to take ownership of their own learning. Access to digital technologies can exponentially increase the ability to access knowledge, with the

consequence of building a 'knowledge society' that involves and affects all walks of life and different generations of users (Laurillard, 2002; Resnick, 2002).

Another issue related to young children's use of the ICTs involves the associations between real world concrete experiences and the virtual worlds of technology. Research has discovered that there needs to be a direct link between the real world and digital data for technology use at the preschool level (Fleer & Jane, 2011). The criticism is that traditional computer interactions fail to support the principles of concrete, hands-on experiences and do not provide the type of direct contact most familiar to preschool children. Digitally appropriate design, based on children's cognitive, physical, social, and emotional development and experiences, can enable technologies to be beneficial to these young children (Cooper, 2005). Issues regarding the appropriate type of technology in the early years are matters that educators and parents alike are keen to explore further.

An emerging area of research is the investigation of literacy and digital literacy practices of children as they engage with technology. While the Internet has been investigated as a medium for integrating literacy (Leu, Castek, Henry, Coiro, & McMullan, 2004), little is known about the process of very young children accomplishing digital literacy or techno-literacy expertise while using the Internet in early childhood contexts (Carrington, 2005a, 2005b; Lankshear & Knobel, 2003; Marsh, 2006; Merchant, 2008). A recent study in the United Kingdom by Burnett (2010) characterises technology as a "deliverer of literacy", a "site for interaction around texts" and a "medium for meaning-making" (p.254). An earlier study in the United Kingdom, by Marsh (2004), suggests the 'emergent techno-literacy' can be understood as a valued practice in the case of multi-modal techno-literacy. Further, the study by Marsh and her colleagues (2005) concluded, as one of their key findings:

Young children are immersed in practices relating to popular culture, media and new technologies from birth. They are growing up in a digital world and develop a wide range of skills, knowledge and understanding of this world from birth. Parents and other family members scaffold this learning, either implicitly or explicitly, and children engage in family social and cultural practices which develop their understanding of the role of media and technology in society. (p.5)

Children, as young as two years of age, are found to have technological competency in using computers and the Internet (Calvert et al., 2005; Davidson, 2012). A recent Australian study by Davidson (2012) of children aged 2-3 years accessing the Internet showed that the acquisition of literacy of young children is feasible and achievable through social interactions, and through utilising digital technology and Web search engines. Similarly, an Australian exploratory study (Spink, Danby, Mallan, & Butler, 2010) that investigated Web interactions and techno-literacy of children aged four to six years of age found that children engage in a range of complex skills including multitasking, query creation and Web browsing. Cause & Chen's (2010) study explored the use of tablet computers for drawings among children aged 3-6 years and found that there was significant variation of use in terms of engagement, and that this resource captured the interests of the young children despite any technical difficulties faced by them. The teachers' approaches were found to be important in determining the success, or not, in using this type of technology. The role of a teacher is paramount in selecting the different forms of technology (hardware, software, and platform) as well as the methods used to implement the technologies in their classrooms. The proposed study builds on previous studies of young children engaging in Web searching and using the Internet

in early childhood contexts by obtaining teachers' reports of their home and class practices, and their perspectives on young children using the Internet.

A number of studies recognise young children's abilities and their competencies when engaging with technologies. Young children use the Internet to search for information, play interactive online games and explore their interests through orienting to the visual aspects that draw their attention (Livingstone, 2003; Subrahmanyam, Kraut, Greenfield, & Gross, 2000). A recent Australian study by Hill (2010) found that young children, aged 4-8 years, have extensive experiences of the Internet. The teacher-researcher in Hill's (2010) study used a 'techno-tour' to view young children's use of ICT in their homes. Hill reports that children, as young as four, already use online websites associated with TV programs, using search engines and playing interactive games online (Hill, 2010).

Although issues of safety are raised over concerns of ICTs and Internet use among young children (Cordes & Miller, 2000; OECD, 2011; Tsantis, Bewick, & Thouvenelle, 2003), there is no solid justification to argue that the Internet is inherently unsafe or "bad for children." It is the "how" of ICT use and the support of adults that determines whether ICTs can benefit children's learning (Hasebrink, Livingstone, & Haddon, 2008; Livingstone, 2003; Subrahmanyam et al., 2000). The imperative is that there is a real need to understand the role of adults, both parents and teachers, in facilitating positive interactions with ICTs. This study focuses on the role of early childhood teachers who facilitate this process and practices, within early childhood classroom settings.

The uses and prevalence of digital tools and digital media in home, school and public places by young children need to be understood further. Digital tools come in different forms and sizes, and include television, game consoles, smart phones and

computers. It is fascinating to see how this current generation of young children brings into play this technology, seemingly integrating this technology in their lives. Many studies have evidenced that digital media have the ability to develop children's sense of narrative (Linebarger & Piotrowski, 2009), reading (Verhallen, Bus, & de Jong, 2006)), writing (Mavers, 2007; Wollman-Bonilla & Carpenter, 2003), and emergent literacy skills (Shamir, 2009; Smith, 2001). Within the early childhood education settings, teachers play an important role as gatekeeper when it comes to decisions regarding which technologies to use in the classroom, just as parents do at home. It is worth noting that there is no straightforward path to technology integration and that challenges are often produced due to the pervasive nature of technology (Caitlin McMunn, Amy Seely, Teri, Laura, & Peggy, 2011).

This section has discussed children's use of computers in the context of early childhood home and classroom settings. The studies of young children using the Internet and computers are relevant in understanding the potential impact of such technologies on children and the need to understand the role of teachers' views in relation to technologies and their comfort levels when supporting young children's practices. Overall, the benefits of young children using technologies appear to outweigh concerns related to young children accessing and using technology. A number of studies view the Internet as a resource for complementing teaching practices and enriching students' knowledge and skills, but little is known about how teachers engage with children when they are using computers, and this is discussed in the next section.

2.2 EARLY CHILDHOOD TEACHERS AND ICT

Around the world, with the emerging technological evolution, trends are fast moving towards an integration of information and communication technology (ICT)

in every aspect of life, and the same expectation is being placed on educators, be it at primary, secondary or tertiary levels. In early childhood education, the main issue involves the integration of ICTs into the classroom, and how implementation can happen. More recently, the issue involves discussion of efficient approaches and models for supporting young children's learning. A recent study in the USA on a technology integration model for practising early childhood teachers found that teachers face various types of challenges and that they used different strategies in line with constructivist pedagogy (Keengwe & Grace, 2009). One challenge in successfully integrating technology into classroom lessons was building an "intellectually engaging technology activity using any piece of software or object" to stimulate learning and development of young children with various backgrounds (Keengwe & Grace, 2009). In supporting children in the active meaning-making process and understanding their learning, teachers are encouraged to put themselves in the learner's position and also support children to explore in their unfamiliar technological areas (Jonassen, Peck, & Wilson, 1999). To address needs of teachers' technological competency, Keengwe & Grace (2009) proposed early-adopter teachers as peer-coaches, and technology collaborations among educators, or school level networks, alongside concrete support for teacher professional development.

Within studies of early childhood education contexts, the focus by researchers and practitioners has been to devise the best pedagogic models for young children who are sometimes considered vulnerable users of technology or at risk of exploitation (Ey & Glenn Cupit, 2011; Farber, Shafron, Hamadani, Wald, & Nitzburg, 2012; Ktoridou, Eteokleous, & Zahariadou, 2012; Staksrud & Livingstone, 2009). Many of these studies discuss the types of associated risks with children's use of ICT and the Internet, particularly regarding how parents can intervene if they believe that

their children are spending too much time engaged with these technologies. These studies inform policies of risk prevention and implementation without compromising the potential that ICTs afford in relation to young children's access to knowledge. Teachers' beliefs are recognized as potentially one impediment to implementing the current practices of ICT (Hennessy, Ruthven, & Brindley, 2005; Hew, 2007; Mumtaz, 2000). The current study examine teachers' beliefs of ICT, and possible factors such as their personal comfort levels using ICTs, to understand how such beliefs may inform their classroom practices.

There are many examples of technology use, and mixed reactions about the use of technology in classrooms. While some technology-savvy teachers showcase their implementation of technology with passion and available technology in the classrooms, other less technologically savvy teachers display lack of knowledge and skills for effective use of technology. A study on teachers' practices of ICTs suggests that two-thirds of primary teachers felt competent or very competent with ICTs in classroom practice, but they felt less confident using ICTs in their lesson plans (D. Williams, Coles, Wilson, Richardson, & Tuson, 2000). This finding is supported by a study by Plowman, Mateer, and Leakey (2002) in Scottish schools that suggests that teachers, even when not using ICTs directly in the lessons they teach in class, do use ICTs in their class lesson preparation and in administrative tasks, developing their own ICT skills. Some studies report resistance among teachers, with teachers struggling with the use of ICT in their classrooms due to unclear goals and methodologies on how to implement technology in their classroom settings (Haugland, 1999).

Teachers increasingly are being asked to take an active role to inculcate effective Internet use in early childhood education, regardless of their background in

ICTs or their students' Internet literacy skills level. Within policy and curriculum guidelines, it is becoming recognised progressively that more teachers are assumed to be an information-literate (Australian and New Zealand Information Literacy, 2004). In the preschool years, teachers use the Internet with children to access websites designed for literacy and numeracy purposes, arrange virtual field trips, and to explore ideas and access to information (Donohue, 2003). More and more, children in classroom and home contexts explore the technology by themselves, without the supervision of parents or carers (Rideout, Vandewater, & Wartella, 2003).

Marsh et al. (2005) discovered useful findings with regard to teachers' attitudes and practices in early years' classrooms. Their study found that many teachers had positive attitudes towards technologies, although within a narrow framing and use of technology. Their use was initially limited to use of desktop computers at the beginning of the study, but this changed towards the end of the project where teachers started to use ICTs more extensively. The practitioners noted that the introduction of technologies into their communications, language and literacy curriculum enhanced young children's motivation and engagement. Another key finding was the need for more professional development on ICT, media and popular cultures, to support teachers' use in their classrooms (Marsh et al., 2005). In Australia, Edwards (2005) study identified the reasons why teachers used computers and discussed issues related to ICTs in the curriculum. The study found that teachers used computers with the children not just as supplementary tools for learning, but as an essential component of the curriculum (Edwards, 2005).

Teachers' skills and attitudes are important factors in ensuring successful implementation of ICTs in early childhood classroom. Chen and Chang (2009) observed that teachers' attitudes, skills and instructional methods of computer use

were influenced by their years of teaching experience, their role as lead or assistant teacher, the availability of home computer access and in-service training length. This study of Chinese and American pre-kindergarten teachers also found that professional in-service opportunities were significant in increasing teachers' technological competencies to address the different needs of teachers to further support their role in their classrooms. The findings of the study reported in this thesis provide comparative findings for Australian and Malaysian early childhood teachers and their comfort levels.

A study undertaken in the United Kingdom by Plowman and Stephen (2005) suggests that strategies are needed to implement ICTs for effective classroom teaching and active learning, and recommended that teachers engage in guided interaction as a way to optimize the potential of ICT in young children's development. The study identified the importance of understanding the practices and perspectives of educators, by including the teachers' views in order to maximise the benefit of using ICT (Plowman & Stephen, 2005). A Swedish study investigated teachers' use of computers in their classrooms and found that they use computers differently depending upon their philosophies, producing three types of practices known as 'protective', 'supporting' and 'guiding' (Ljung-Djärf, 2008; Ljung-Djärf et al., 2005). How teachers view the role of computers in their classrooms does have an impact on how they use them as resources within the classroom pedagogic and learning environments.

A 2011 study in Turkey, conducted to understand the views and practices of early childhood teachers in relation to the use of computers in early childhood education, found that the majority of the teachers acquired their ICT skills by themselves and thought that computer use was suitable in early childhood education

(Yurt & Cevher-Kalburan, 2011). Yurt & Cevher-Kalburan (2011) found that teachers use computer technologies to support their daily planning activities. This finding is relevant for the current study, which takes as its main focus the practices and beliefs of early childhood teachers and their attitudes towards ICT. A study by Graham (2008) suggests that teachers' own digital literacy history is important as it affects their life at work and other everyday activities. The study recognises three distinct groups of users: self-taught, school-taught, and playful social digital learners. The playful social group were highly adaptable to the digital learning environment, using technologies for most aspects of their life and in their work. Accessing reports from early childhood teachers can identify the extent in which they use digital technologies in their workplace as well as for their personal use.

The current study explores teachers' comfort levels and use of ICTs and the Internet, and their beliefs on practices in the early childhood contexts. Possible benefits include understanding and mapping teachers' current practices, with implications informing policy and curriculum guidelines for early childhood education. Understanding how early childhood teachers in early childhood settings access the Internet and digital technologies can help to understand their current practices and beliefs. In addressing the issue of the so-called 'digital immigrant' (Bittman et al., 2011), this study reports on teachers within the current educational contexts adapting to education reform in terms of their own personal levels of comfort and practice when using ICTs in their classrooms.

Strategic plans for professional development of teachers are necessary so that they will not be left out of the mainstream of 21st century technology use (Howard Parette, Quesenberry, & Blum, 2010). The first step is the necessity of understanding the current situation of practising early childhood teachers, and this study reveals how

teachers in two different countries, Australia and Malaysia, embrace technology and their attitude towards technology use. The current study presents an opportunity to recognise ICT integration in early childhood classrooms by using the teachers' reports of their pedagogical approaches to implementing technologies into the curriculum.

2.3 TEACHERS' PERSPECTIVES ON TECHNOLOGY INTEGRATION

Educators look to the incorporation of technology and its challenges. Effective technology leadership, training and planning among teachers and institutional administrators, with commitment to enhancing teaching and learning using technologies, is necessary to rise above possible obstacles (Wood et al., 2008) and proactively assess the benefits and the strengths that ICT could bring to early childhood classrooms. Previous studies during the last decade or so (2000-2012) investigating teachers and their integration of technology have discussed technology integration and possible implementation models, and the challenges of integration into the classrooms.

In Australia, there is a rather short history of teachers' technology education in relation to integrating technology for young children at the early childhood and primary levels of schooling (Fleer & Jane, 2011, p. 19). For example, in Queensland, teaching technology came about ten years later when compared to other states, when directives were given by Queensland's Department of Education (Fleer & Jane, 2011). Also, according to Fleer and Jane (2011), besides having technology education and the policy procedures set by departments of education, teachers' beliefs play an important factor in determining how technology is taught to young children. This research, therefore, represents one step in understanding the pathway of integrating technology in education, particularly within the early childhood context.

One recent study in the USA by Pickett (2009) employed the Determining Educational Technology and Instructional Literacy Skillsets (DETAILS) for the 21st Century Questionnaire to investigate teachers' technology integration to determine their ranking as low, medium, or high technology integrators. The focus of the study was how teachers, students, and school principals could effectively work together to improve and ensure effective technology integration in the classroom. The study found teachers' beliefs regarding the significance of integrating technology was a strong indicator that accounted for teacher decision-making in relation to technology integration in their classrooms.

Technology integration is not easy for all educators, and some teachers in the study reported that they lacked technical support and that technical issues affected their lesson plans (Stephen & Plowman, 2003). However, the good news is that these kinds of obstacles could be overcome with strategic courses in educational technology skill development and pedagogical technology education. A study by Heo (2009) observed the effects of one pedagogical approach, digital storytelling, and its impact on pre-service teachers, and found that teachers' technological aptitudes and readiness to change towards educational technology improved following their experiences of digital storytelling. Another finding was the importance of teacher making and their use of existing technology knowledge and skills in their learning environments. Consequently, it is important for teachers to be comfortable and familiar with a range of concepts related to technology implementation in their classrooms.

In a recent USA study by Ntuli and Kyei-Blankson (2012), a group of preschool teachers reported using technology as learning tools for young children in their classrooms. They reported that a lack of knowledge and understanding of technology usage regarding assessment practices. This finding was evidenced when

the majority of teachers did not have an assessment plan, and did not make use of assessment data available for the technology being used, to measure the young children's progress with the use of technology. It is important, therefore, that any professional development for teachers implementing classroom technology integration include understandings of how to integrate assessment as part of having and using technology. Teachers require clear understanding of the benefit that technology use can bring to young children's learning and knowledge of strategies available for assessment purposes.

Successful models of ICT integration in early childhood education still remain elusive in nature and entails many underlying issues (Mishra & Koehler, 2006; Wan & Gut, 2011). A study, conducted in Cyprus by Angeli (2004), suggests that case-based learning affects early childhood teachers' beliefs and pedagogical uses of ICT in the classroom. The study identified four cases:

- a) teachers who initially held negative beliefs and successfully integrated ICT into their classrooms;
- b) teachers who initially held negative beliefs and did not successfully integrate ICT into their classrooms;
- c) teachers who initially held positive beliefs and successfully integrated ICT into their classrooms;
- d) teachers who initially held positive beliefs and did not successfully integrate ICT into their classrooms.

These cases were presented to pre-service teachers to challenge their beliefs about ICT while also educating them about the worth of ICTs and analysing issues related to pedagogical beliefs, values, teaching methods, ICT infrastructure, institutional and community support, and appropriate educational software. This study highlighted the

importance of identifying teachers' initial perspectives of ICT uptake in their classrooms and identified examples of successful models of ICT integration in early childhood classrooms.

In Australia, one national pre-service teacher education initiative is the Teaching Teachers for the Future (TTF) project that aims to support pre-service and in-service teachers engaging with the new Australian Curriculum (Romeo, Lloyd, & Downes, 2012). The Teaching Teachers For the Future (TTF) project aimed to generate ICT proficiency for graduate teachers across every levels (Romeo et al., 2012). The study drew upon the conceptual TPACK framework (Harris, Mishra, & Koehler, 2009; Koehler, Mishra, & Yahya, 2007; Mishra & Koehler, 2006; Mishra & Koehler, 2008) that identified issues on ICT in education, such as the obstacles that teachers may have in implementing ICT within curriculum, pedagogy, and assessment. The TPACK is a widely-known conceptual framework that consists of three major components: teachers' technological knowledge (TK), teachers' pedagogic knowledge (PK) and teachers' content knowledge (CK). The model emphasises the collaborations across these three domains and the critical issues. The initiative developed a comprehensive toolkit provided in ICT in education practices: *A capacity-building toolkit for teacher education institutions in the Asia-Pacific* (Lim, Chai, & Churchill, 2010). Mapping technologies onto teachers' pedagogical practices is one way to embed ICT education planning into early childhood pre-service teacher education.

While various strategies and models are being developed for teachers adapting to technology and integration, technology is still not yet firmly attached to curriculum and other established subject domains in classrooms (Lloyd & Esjeholm, 2010). Effective use of technology is when it is in line with curriculum objectives, and offers

opportunities for student cooperation (Mukti & Hwa, 2004) and reflective practices (Lloyd & Esjeholm, 2010). This study may support teachers to work with students by reflecting on their own technology usage in educational settings (Teo, 2010a).

2.4 EARLY CHILDHOOD CURRICULUM/FRAMEWORKS AND ICT

Increasingly, the role of technology is being incorporated into understandings of early childhood curriculum. There are numerous books, articles and guidelines on ICT use in early childhood education published by researchers, academics and early childhood providers, with common intention to make a well-informed decisions and options in implementing ICT in early childhood education context (NAEYC, 1996; Downes, Arthur, & Beecher, 2001; O'Hara, 2004; Siraj-Blatchford & Siraj-Blatchford, 2006; Stephen & Plowman, 2008; Yelland, 2001).

One early and prominent proclamation supporting the use of ICT in young children was in the United States of America. The value of using developmentally appropriate software for the development of young children for play, learning and creativity was acknowledged several years ago within the position statement by the National Association for the Education of Young Children (NAEYC), the largest professional association for early childhood education in the USA. More recently, in 2012, the National Association for the Education of Young Children (NAEYC) released a set of guidelines for use in early childhood classrooms, calling for research to encourage evidence-based practice and proper use of technology and interactive media as tools for early childhood education development (NAEYC, 2012). The NAEYC (2012) guidelines were built on previous NAEYC initiatives over the past decade.

Drawing on NAEYC's promotion of their guidelines on developmentally appropriate curriculum, Rosen and Jaruszewicz (2009) introduced a new term called

‘DATU,’ which is short for *Developmentally Appropriate Technology Use*, defined as “the use of digital tools and strategies in ways that capitalize on children’s natural desire to actively, collaboratively construct knowledge, respecting the unique challenges presented by children’s levels of development across all developmental domains” (Rosen & Jaruszewicz, 2009, p. 164). The Rosen and Jaruszewicz study was based on two case studies, trialled to implement the DATU concept in the classroom. Their study found the need to extend the earlier model of *Developmentally Appropriate Practices* (DAP), which describes recommended teachers’ roles in encouraging children to build their own knowledge through connections with the physical, social, and cultural environment, and suggested teachers make decisions based on student’s individual characteristics, interests and needs. This study highlighted the value of early childhood teachers being asked about their recognition of the significance of technology in the current era of ICTs.

The next sections of this chapter introduce the Australian and Malaysian early childhood education frameworks, as these frameworks underpin what teachers do in classrooms, and how they design, implement and evaluate their daily classroom experiences for facilitating young children’s learning. The Australian context is discussed first, followed by the Malaysian context.

2.4.1 Policy contexts

(a) Australian Early Childhood Frameworks and ICT

The Australian government’s implementation of a national early childhood education curriculum has been supported through federal government initiatives, state government education departments and national and state early childhood organisations embracing the use of ICTs in their education curriculum frameworks. In 2001, the Australian Council of Deans of Education (ACDE) proposed 8 propositions

to address the education in the twenty first century. One proposition was that “technology will become central to all learning” and “the work of educators will be transformed” (Australian Council of Deans of Education, 2001, p. 99 & 111). Since this set of propositions, there has been a shift in the Australian education system towards the integration of technology in pedagogies and curriculum. These implementations have translated policy that offers support to teachers and school leaders by the Departments of Education in every state in Australia (Yelland, Lee, O'Rourke, Harrison, & Ebooks, 2008).

Australian federal and state governments are committed to improving teacher quality: “National partnerships between the Australian Government and State and Territory governments on improving teachers’ quality, literacy and numeracy and low socio economic school communities will also contribute to children experiencing a positive learning pathway once they reach school” (Department of Education, Employment and Workplace Relation, 2010, p.10). The current study contributes new understandings to inform policy within the Australian government framework guidelines.

The recently developed Early Years Learning Framework or EYLF, the first Australian national curriculum for early childhood education, represents the national reform agenda for Australian early childhood education and care. It is a key component of the Australian Government’s National Quality Framework for early childhood education and care (Miller, 1999). Within the EYLF, there is an emphasis on the use of ICT. For example, one learning key focus is “Active learning key focus: Exploring tools, technologies and information and communication technologies (ICTs)” (Miller, 1999). The Australian Early Years Learning Framework (EYLF) has two outcomes related to ICT use: ‘Children are confident and involved learners’ and

‘Children are effective communicators.’ Both these outcomes promote the use of ICT as one key method for young children to experiment, exploring various perspectives and assisting in problem solving activities, and meaning-making in their world, among others. Teachers can encourage techniques and knowledge to enhance children’s learning by being comfortable with the technology available in the classroom and by providing the right resources and access to technologies to foster learning. The role of the teacher is not only to facilitate information searching, but also to enable integration of technologies into play and projects, as in collaborative learning activities with technology.

In Australia, the federal government, through the Digital Education Revolution (DER) earlier in 2008, has an objective to provide a sustainable and effective transformation to teaching and learning in schools, to prepare Australian students in the future to access digital worlds. The investment of over \$2.1 billion at the school level to support the successful integration of information and communication technology (ICT) is in line with other government initiatives, which includes the Australian curriculum (O’Connell, 2009; Rosman, White, & Hoad, 2008; Rudd, Smith, & Conroy, 2007).

Another recent milestone and initiative by the Australian government for early childhood education and its related services is the national legislative framework National Quality Framework (NQF) that was founded in January 2012. The coverage of this broad framework is comprised of newly developed national integrated guidelines and approaches directed towards a high quality service, and appraisal of the related service, which includes pre-preparatory years and kindergarten services. The Australian Children’s Education and Care Quality Authority (ACECQA) will monitor and verify, at the national level, the uniformity and quality execution of the

current early years framework, *Belonging, Being and Becoming: An Early Years Learning Framework (EYLF)*, and the school age care learning framework, *My Time, Our Place: Framework for School Age Care for Australia*. At the same time, states and territories will regulate the federal government initiative (<http://acecqa.gov.au/national-quality-framework/>) by approving, evaluating and rating the current services and supervising compliance.

The Crèche and Kindergarten Association of Queensland is a major provider of preschool education in Queensland, and the context for this study. This organisation acknowledges the importance of ICT use in early childhood education, for accessing information, exploring ideas and represent thinking (Creche & Kindergarten, 2011). The recently developed curriculum, *Building Waterfalls I* and *Building Waterfalls II*, is a set of curriculum guidelines for Crèche and Kindergarten Association centres and affiliates. The guidelines provide support for planning, interacting with children, monitoring and assessing, and sharing information. In the guidelines, one QLKG Learning and Development Area focus is on engaging young children with their imaginations and creativities, with young children encouraged to use ICTs in play and active learning, and for a range of purposes to represent their ideas and communicate understandings of real, imaginary and digital worlds. This curriculum goal is in line with one of the EYLF learning outcome, “Children are effective communicators.” While there is a call for technology implementation in the curriculum frameworks, to date there has been little specific support for teachers’ actual implementation. The findings of this study can directly inform policy and curriculum guidelines.

(b) Malaysian Early Childhood Education and Care Frameworks and ICT

Malaysia has placed high importance on developing its early childhood education services. The need for critical action in Malaysia was identified at the National

Conference on Early Childhood Care and Education (Kuala Lumpur, 2011). The conference noted that quality early childhood education settings are essential in producing optimized results for young children to achieve their full potential, based on basic human values and ethics of the Malaysian community. Increasingly, this access is being delivered in a technology-rich social and educational world. The government of Malaysia, in the effort of integrating ICT into education, has invested heavily on implementation, starting with the development of policy. For example, in supporting productivity in education management, the educational ICT policy encourages the deployment of ICT in areas such as office automation systems and in other analysis-related tasks such as reporting students' test data. Improvements have been made in terms of the physical infrastructure needed for running these ICT policies. For example, the supply of computers to government-funded schools has increased dramatically, with a ratio of computers to students increasing from 1:10 in 2005 to a ratio of 1:5 in 2010. The same ratio growth also applied for teachers' access, with a 1:5 ratio for computer to teacher in 2005 and a 1:1 ratio in 2010 (Ministry of Education, Malaysia, 2003).

Malaysia has a different system of early childhood care and education (ECCE) to that of Australia. In Malaysia, ECCE is divided into two age groups of children; the first group are those children aged birth to 4 years and the second group are children aged 5 to 6 years. The younger group is under the responsibility of the Ministry of Women, Family and Community Development (MWFCD) through its Department of Social Welfare, which manages the childcare centres or *taska*. Public government-funded centres that offer early childhood education for younger group includes PERMATA childcare centres (PAPN), PERMATA is an abbreviation used to describe early childhood centres with the concepts of 'Every Child is a Jewel' or

Setiap Anak Permata which is managed by the Prime Minister Office. The second group (for children aged 5 and 6 years) are managed by several ministries or agencies: the Ministry of Education (for MOE preschools), the Ministry of Rural and Regional Development (for KEMAS *tabika*), and the National Unity Department (for PERPADUAN *tabika*). Other early childhood education providers in Malaysia include private preschools or kindergartens that, in some states, are more prevalent than the public, government-funded centres. An example is in Selangor, where the average percentage of enrolment stands at 68% from years 2003 to 2005 (Malaysian Curriculum Development Centre, 2007, p. 39). A recent study by Dahari & Ya (2011) found that parents' choice of pre-schools in Malaysia are influenced by certain factors, including the how the centres are branded, and that parents prefer privately-run early childhood institutions than public, government-funded centres, besides other concerns. In addition, a study in 2008 by the Educational Planning and Research Division (EPRD), Ministry of Education, reported that 40% of preschool students are enrolled in these private preschools in Malaysia (Curriculum Development Centre, 2008).

The National Preschool Standard Curriculum (*Kurikulum Standard Prasekolah Kebangsaan*) or NPSC in Malaysia offers curriculum guidelines for children aged 4 to 6 years. In the NPSC, one key theme is science and technology, with the aim that young children will acquire necessary skills and knowledge in this area (Ministry of Education Malaysia, 2010). Within the NPSC, the use of ICTs is encouraged for communication, information seeking, and interaction with materials for self and peer learning, as well as enrichment of learning experiences (Curriculum Development Centre, 2001).

Malaysia's long-term plan "Vision 2020" aims for sustained productivity-driven growth that is achievable through a technologically literate society, and a workforce who can undertake critical thinking. The Malaysian Multimedia Super Corridor (MSC) was initialised in 1996 (Seventh Malaysia Plan 1996-2000, 1996), and is an initiative that provides specific application development and frameworks towards the advancement of ICTs. With the MSC goal of producing a knowledge-society nation in the long run, one of the seven flagships is dedicated to the concept of ICT-enabled smart-schools, expected to be widespread across all schools in Malaysia by 2020. The government of Malaysia, through its Ministry of Education, is also attempting to reduce the digital divide in schools in different parts of the country by providing computer laboratories to thousands of schools. For example, the Ministry of Education introduced a range of projects, including providing electronic books and e-learning materials rolled out to all schools in the country (Chan, 2002).

A 2006 study on Malaysian preschool teachers' perspectives of the usefulness of ICT by the Educational Planning and Research Division (EPRD) states that, on average, teachers mostly agree on the importance of ICT as a tool for teaching young children (EPRD, 2006). In the EPRD's observation study, however, ICT was not used extensively in teaching and learning. Their conclusion was that most teachers had positive attitudes towards the teaching and learning approaches, but still required the know-how and more guidance (Malaysian Curriculum Development Centre, 2007). Identifying teachers' ICT comfort levels, and their practices and beliefs towards ICT use in early childhood classroom settings, can provide understanding of ways to support positive attitudes and practices in early childhood classrooms.

In Malaysia, pre-service teachers who attend teacher-training colleges are given training on the use of ICT as one of the main course components, with the focus

on the use of ICTs in their teaching and learning. There is a requirement for teachers to produce and evaluate multimedia teaching materials. Furthermore, there are in-service smart school courses and Professionalism Development Courses in ICTs available for teachers (Basri, 2006). The current study complements the earlier study by EPRD, building on these understandings to support ICT implementation in Malaysian preschools contexts.

In Australia, a collective approach encompassing all 39 Australian higher education institutions that prepare Australian pre-service, graduate and in-service teachers is available through national education reform and strategies. For example, the Teaching Teachers for the Future project (2012), funded by the Australian Government under the Digital Strategy for Teachers and School Leaders, a component of the Digital Education Revolution program, is designed as a strategic framework that has online learning resources, curriculum and network support systems to support graduate teachers developing their ICT capabilities as well as improving students' learning outcomes. This initiative is undoubtedly useful and provides flexible online personal development packages for teachers in Australia.

2.5 STRATEGIES AND RECOMMENDATIONS FOR TECHNOLOGY INTEGRATION IN CLASSROOMS

A considerable number of studies have investigated teachers' technology integrations in classrooms. There have been some influential reports by prominent bodies in early childhood education, for example, the National Association for the Education of Young Children (NAEYC, 2012). A study by Ertmer and Ottenbreit-Leftwich (2010) suggests that teachers' attitudes be shifted towards the concept that "teaching is not effective without the appropriate use of information and communication technologies (ICTs) resources to facilitate student learning"(p. 255).

The study emphasized four variables for this change: knowledge, self-efficacy, pedagogical beliefs, and their subject and school culture (Ertmer & Ottenbreit-Leftwich, 2010). These factors are undeniably important as teachers' attitudes and pedagogical beliefs are indicators towards readiness and positive use of technology (Ertmer, 2005; Ertmer & Ottenbreit-Leftwich, 2010; Eugene, 2006; Sang, 2010). For example, a recent study by Henderson (2011) discovered that teachers addressed the issue of the digital divide between the students' homes and classrooms through their use of digital technologies and multiliteracies (Henderson, 2011). Multiliteracies are ways to approach literacy in the new digital age (Cope & Kalantzis, 2009). The use of a variety of media implemented in classrooms, including YouTube, digital stories, and blogs in a language arts curriculum, represent simple tools suitable for teachers to use that could easily be integrated (Mullen & Wedwick, 2008). In the current context of education, the pedagogy of multiliteracies is relevant due to the rapid social and technological advances in communication and learning environments, and the changing nature of how teachers conduct their teaching and learning.

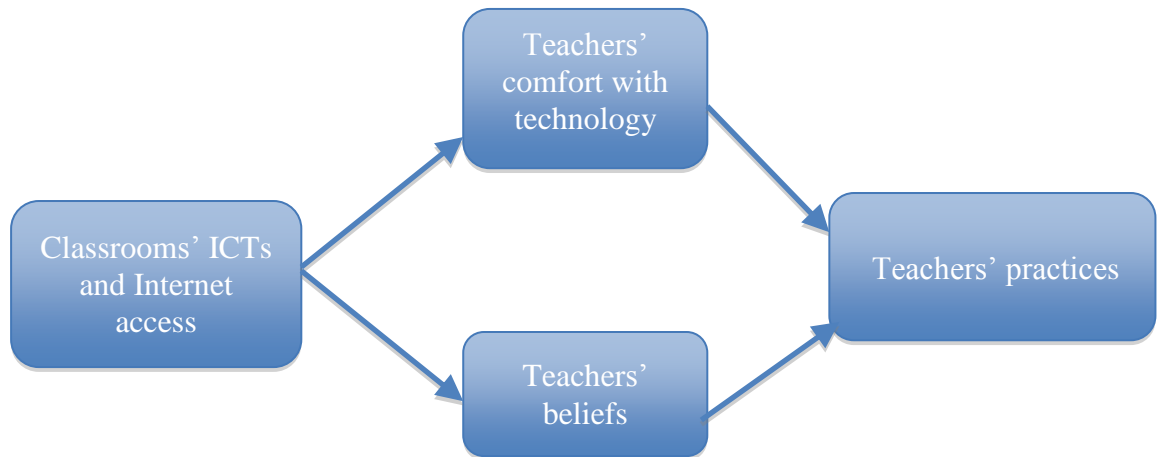
A Malaysian study that examined a group of university student teachers on their attitudes towards information technology showed that teachers' attitudes changed to be more positive, regardless of their gender, towards use of IT after attending a compulsory discrete IT course (Su Luan & Hanafi, 2007). The findings suggest that exposure to appropriate uses of ICT affects the ways the teachers perceive ICT and the use in their classrooms. Parette, Blum and Boeckman (2009) show how assistive technology use helped young children with disabilities to learn in their classroom. In these contexts, and in early childhood classrooms, careful planning and research are necessary before attempting to use a range of tools. Teachers require professional support to provide real intervention.

Previous research has made specific recommendations regarding strategies for ICT integration. For example, Plowman and Stephen (2008) identified two approaches of guided interaction, *distal* and *proximal* interactions. *Distal* interactions require the teachers to have no interpersonal interactions, but to offer appropriately-planned resources and physical arrangements, and to intervene only when necessary. The researchers suggest that *distal* interactional approach could encourage young children to independently use ICTs. In *proximal* interactions, the teachers' role is more active, enhancing and supporting children's ICT usage by offering direct assistance when help is needed, praising their efforts, and engaging with children's use of ICT. The study suggests that both types of interactions are needed for successful play and learning with ICT in playroom settings.

Marsh and Vasquez (2012) point to insights on what educators can do towards children's literacy development, including children's digital literacy. They suggest that teachers align their instructions based on children's needs by learning more about children's developmental pace through using observation and individual scaffolding instructions. This approach encourages teachers to personalise the integration of ICT based on every child's needs and interests, and avoiding reliance on standard or typical assessment-driven approaches (Marsh & Vasquez, 2012).

In summary, for early childhood teachers to successfully integrate technology in their daily pedagogical practices, there is a need for careful planning. Also important is the opportunity for teachers to experiment with strategies to empower them to discover the best ways to integrate ICTs in their classrooms for the optimum engagement of young children.

2.6 RESEARCH VARIABLES AND CONCEPTUAL FRAMEWORK



Conceptual Framework



Methodological Approach



Figure 2.1. Current research variables, conceptual framework and methodological approach

2.7 SUMMARY

This chapter identified the important role that ICTs play in young children's lives, both in areas of formal early childhood education contexts, and in their home settings. Though there are questions raised about the safety of children's use of ICTs, the evidence suggests that not being able to access technologies restricts access to knowledge and essential life skills. The benefits, however, are best realised in active interactions around ICTs.

Teachers are important facilitators, and their pedagogic approaches critical for providing educational support. Teachers' pedagogic approaches are important factors in supporting how children engage with technologies in classrooms. Their contributions in engaging young children with ICTs and Internet use in classroom are seen as one factor supporting young children's engagement with technologies within the Australian and Malaysian national early education frameworks. Understanding how early childhood teachers in early childhood settings access the Internet and digital technologies identify current practices and beliefs and contribute to identifying barriers to use of ICTs and positive practices. This study complements previous studies that investigate young children Web searching, in order to further understand how to support the use of the Internet, as suggested by national and state curriculum and policy guidelines for early childhood contexts, with implications that include contributing to more informed policy, curriculum and teaching pedagogies in the future.

This chapter discussed existing studies of teachers' beliefs and perspectives on ICT use in early childhood education. In short, what has not been investigated previously is a comparative study extending beyond Western perspectives, to provide a point of contrast between Australian and Malaysian early childhood classrooms. In

addition, there is little known about early childhood teachers' beliefs and structural factors that have an impact on ICT engagement with young children in classrooms. Reviewing current policy and curriculum frameworks within Australian and Malaysian early childhood education helps in ensuring the current study has relevance for existing policy and vision for early childhood education.

The next chapter discusses the research methodology used in the current study. It discusses the rationale of the approach, proposed procedures, the data analysis method, and the research timeline. Finally, the chapter discusses ethical considerations underpinning and informing the approach of the current study.

Chapter 3: Research Design and Methodology

This chapter discusses the research design, and the methodological approach used in the study to investigate teachers' reports of current practices using the Internet in the early years of education in Malaysian and Australian early childhood education contexts. The study addresses the following research questions:

- i. What are the teachers' comfort level of ICTs and Internet use in their personal and professional early childhood education contexts, and how does that map onto age, experience and education level?
- ii. What are the teachers' beliefs on the relevance and importance of ICTs and Internet usage for young children in the early childhood context?
- iii. What are the approaches adopted by early childhood teachers in their classrooms when using ICTs and the Internet?
- iv. What are the similarities and differences across Australian and Malaysian teachers' ICTs and Internet usage in early childhood context?

As discussed in Chapter 1, the current study is situated within a larger Australia Research Council (ARC) project: (ID: DP110104227) *Interacting with knowledge, interacting with people: Web searching in early childhood*. (Danby, Thorpe, Davidson). Section 3.1 of this chapter briefly outlines the ARC project's purpose and aims, and discusses the specific aims of this study reported in this thesis in relation to the ARC project, and the candidate's contribution. Section 3.2 discusses the study's research design and methodology including considerations used in designing the survey's questionnaire. Section 3.3 discusses the target populations and the participants involved in the current study. Section 3.4 identifies and discusses the survey instruments used. The advantages of using Key Survey are outlined as

The ARC investigates how the Web and related technologies are used by young children, based on the premise that children as young as three years of age are already involved with digital technology and doing Web searching (Davidson, 2012). The ARC study examines a preschool-aged cohort, whereas most of the previous research has focused mainly on school-age children's Internet use. For example, the Australian Bureau of Statistics (ABS) in 2009 investigated Internet use of school-age children (Australian Bureau of Statistics, 2009), and the large NetRatings study of Internet use in Australian homes only considered children aged 8 to 13 years (NetRatings, 2005).

The primary focus of the ARC study is to investigate how young children, aged 3 to 5 years, engage in the Web searches on the Internet, and their interactions when using the technology in their daily home and school life. This ARC investigation examines what the children are doing while accessing the information on the Web, and in what social context, to understand how adults, including teachers and parents, and children interact during Web searching. The findings of the overall ARC project will provide new knowledge about issues that have an impact on young children's information literacy and the essence of the knowledge-gaining experience. The project also will contribute by reporting the current classroom and home practices and developing related policy in early childhood education.

In addressing these aims, specific methods are being used in the ARC study at different phases of the project, including surveys of teachers and parents, and detailed observations of children's Web search activities in their classrooms and at home (see Figure 3.1). Phase 1 of the study involves an initial teacher survey, to understand teacher's Internet use at home and in the classroom, their comfort with

Internet technology and their beliefs about the role of ICTs in early childhood education. It is this phase that forms the basis of the candidate's study.

The candidate was appointed as a part-time Research Assistant in supporting the development and implementation of the teacher survey, as well as in assisting in other components of the ARC project. The candidate's unique contribution to the research is the development and implementation of the survey of Malaysian teachers, and the Australian and Malaysian data sets will be compared. In this way, while contributing to and utilising data from the ARC Discovery study, the candidate added a new dimension, that of the Malaysian teacher cohort. This study contributes to understanding the views of teachers in Australia and Malaysia regarding their comfort levels with technology, and their reported pedagogical practices in early childhood classrooms. The finding of the study contributes comparative data between the two countries, to show similar issues and those more regionally based. Further understanding teachers' views on technology literacy are important because it is teachers who implement policy and practices guided by national and state curriculum and policy guidelines related to technology.

3.2 RESEARCH DESIGN AND METHODOLOGY

The current study is an international comparative study investigating teachers' comfort levels, and practices and beliefs regarding young children's ICTs and Internet use in early childhood contexts in both Australia and Malaysia. The approach employs a quantitative research methodology. A Web-based survey design was chosen because the candidate could gather extensive data (Creswell, 2012, p. 383). The design allows the candidate to survey people who live in both central and regional areas of Queensland, and in Selangor, Malaysia. This method, therefore,

adds a broader range of participants in both urban and rural areas across the two selected states in Australia and in Malaysia.

This study uses survey data from Malaysia and Australia. The research design chosen is a cross-sectional survey that investigates the current beliefs and reported practices of early childhood teachers employed within Crèche and Kindergarten Association (Queensland) and in selected centres in Selangor, Malaysia. Teachers from Queensland, Australia, and Selangor, Malaysia, were invited to participate in parallel online survey questionnaires. The study therefore provides ‘case samples’ for both Australian and Malaysian early childhood teachers. In the Malaysian samples, the survey deliberately involved centres from diversified locations. First, in urban areas there were MOE preschools, PERMATA childcare centres (PAPN) and private kindergartens involved, whereas in rural areas, there were participants from PERPADUAN *tabika*, KEMAS *tabika* and also some MOE preschools.

3.3 PARTICIPANTS

3.3.1 Target populations

In recruiting participants for the study, the aim was to gather a wide and representative range of respondents from early childhood centres. In Australia, a Queensland-only study was chosen on the grounds that the state of Queensland offers a diverse population and geography. Additional reasons were the support of the Crèche and Kindergarten Association, geographical convenience for conducting later phases of the ARC Discovery research project, and keeping travel costs low. The large number of participants, and the diverse population and geographic locations of participants, helps offset the local nature of the sites. According to ABS (2009) data, when compared to other states, the state of Queensland sits mid-range in terms of households with access to broadband. Teachers, group leaders and teacher assistants

in Crèche and Kindergarten centres across Queensland were invited to participate in the study. Approval was given by Chief Executive Officer, Barrie Elvish from the Crèche and Kindergarten Association for this study to occur across 400 preschools and childcare services within the rural and urban community-based early childhood association in Queensland.

In Malaysia, the same survey questionnaires were used, with Selangor as a case within Malaysia. In this study, different types of preschools were the unit of selection, and teachers within those schools were recruited. Deliberately, sampling of various preschool settings which represent the diversity of preschool settings in Malaysia was done. This mimicked the same process in Australia, where there were selected schools, not teachers. Selangor, in Malaysia, was chosen as it was the state where the candidate resides before coming to Australia. Although the Selangor population has among the highest Internet users in Malaysia, i.e. 27.2% of the total Internet users in Malaysia (Malaysian Communications and Multimedia Commission, 2009), the survey took into considerations all different types of early childhood centres that also exist in rural area and also centres without Internet access. The survey were sent to approximately 400 government-funded centres, including PERMATA childcare centres (PAPN), Ministry of Education (MOE) preschools, KEMAS *tabika* and PERPADUAN *tabika*, and about 100 private kindergarten providers. These kindergarten and preschools centres from Malaysia were selected because:

- They include typical Malaysian government-funded preschool providers, which have been established in the Malaysian early childhood education system, where it is also available in other states in Malaysia

- They include typical private preschool providers that caters for majority of urban-based community, which is more popular in Malaysia(Dahari & Ya, 2011)
- They include the different group of communities, based on a diverse family socio-economic background of the preschool children
- They are accessible to the candidate. Selangor was the state where the candidate resides prior to coming to Australia.

3.3.2 Recruitment strategies

The recruitment strategies employed for the two different countries are detailed below.

Australian recruitment strategies

The Australian survey was completed first. Australian participants were recruited under the auspices of the broader ARC Discovery project: *Interacting with knowledge, interacting with people: Web searching in early childhood*. Recruitment was based on approval given from the CEO of the Crèche and Kindergarten Association (Refer to Appendix B) and participation was entirely voluntary (Refer to Appendix D). Information on the survey was sent to Crèche and Kindergarten staff in 400 preschools and childcare services across rural and urban Queensland, providing a link to the online survey through the Crèche and Kindergarten newsletter and emails. In order to encourage more participation, participants were offered an incentive in the form of entering a draw to win an iPod Touch (32GB), which was drawn at the end of the survey.

Initially, the survey had a very low response rate; with only 4 surveys completed more than a month after the survey was launched. This occurred because the survey was launched in the December-January timeframe, a period where

teachers take annual leave as the school year is finished. To address this low response rate, members of the ARC Discovery team conducted follow up phone calls to staff at Crèche and Kindergarten centres. Three research assistants, two of whom were experienced preschool teachers, were involved in the follow up and they enquired about the teachers' awareness of the survey and explained the importance of the survey. The contacted teachers were invited to give their centre's postal or email addresses, and were sent the link to the survey directly to facilitate their participation in the survey. In addition, some contacted centres indicated that they did not have Internet access, and 12 centres were sent a paper-based version of the survey (leading to 3 surveys returned. Among the possible reasons for lesser initial participation was that the survey started in the period just before the Christmas holidays and teachers were busy with end of year school activities, Also, as initially, invitations was not send directly to individual teachers' email, many weren't aware of the study. Finally, those without Internet access could not access the online survey, unless they requested paper copies. These factors was identified and addressed by the author and the team members of the broader ARC project.

Individual teacher contact through the centres proved to be more effective than the more generic approach of placing the information about the survey in the Crèche and Kindergarten newsletters. As a result, the number of respondents increased so that total numbers of participants were 146, with 131 completed, and 15 incomplete survey responses. Out of that number, 143 (98%) survey responses were completed through the online survey website and only 3 (2%) survey responses used a paper-based version or survey printout.

Malaysian Recruitment Strategies

Different recruitment strategies were employed for the Malaysian study, as it involved more than one type of organisation and the candidate had a shorter timeframe to complete the Malaysian component. Following the Queensland study completion, the candidate also took steps to avoid anticipated problems or pitfalls in research execution.

In addition to QUT ethical clearance for the Malaysian component of the survey, approval was sought and granted from the Economic Planning Unit (EPU). The EPU is the central official unit, under the Prime Minister's Department, managing research applications and related research regulations in Malaysia, for researchers applying from other countries (see Appendix I). Ethical clearance was then gained from all federal-based government departments prior to contacting the potential participants. These government departments consist of PERMATA (PAPN), for childcare centres below 4 years of age (Refer Appendix M), Education Planning Research Department (EPRD) for preschools in Ministry of Education (Appendix N), Department of National Unity and Integration for PERPADUAN *tabika* (Appendix O), and Ministry of Rural and Regional Development for getting data on KEMAS *tabika* (Appendix P).

For the Malaysian survey, a similar process as in Queensland was initially planned and, subsequently, amendments were made (and relevant ethical approvals gained) in terms of the recruitment procedures used to contact participants. The amendments were based on the feedback given from the corresponding officers from the related Malaysian federal departments and their recommendations of referrals at the state level. Whereas contact details for all potential participants in the Queensland sample were obtained from one central location (the Crèche &

Kindergarten Association), potential participants in Malaysia had to be contacted by a variety of means, depending on the type of child care centre and local factors. The major recruitment strategies were through email and telephone contacts. Teacher emails were primarily formally sourced from the state-based government department in charge of the preschool/childcare centres management, after gaining endorsement for the study at the respective federal level. Some information provided by the departments was not exhaustive, and different follow-up strategies were used, depending on the organisation.

Initial visits to selected PERPADUAN *tabika* centres were conducted, using a list of teachers' contacts numbers from the state PERPADUAN department, in order to pilot the Malay version and to ensure that teachers were able to understand the survey questionnaire. Prior to the centre visits, the candidate called the centres. Other teachers who were not available at the time of the visit were encouraged, through phone calls and emails informing them of the survey link, to complete the survey online. The total number of teachers from PERPADUAN who completed the survey was 12.

For KEMAS teachers' survey recruitment, the KEMAS liaison officer contacted and organised the distribution of the participants' surveys using hardcopies, and selection was done randomly from different districts in Selangor. Completed survey questionnaires were then posted to the university address of the Chief Investigator, and the candidate entered the data into KeySurvey. The total number of participating teachers from KEMAS *tabika* centres was 34.

In the recruitment of Ministry of Education preschool teachers, the list of direct email addresses for teachers in Selangor preschools and the school email addresses were provided by the Selangor Education Department. Initially, emails

invited teachers to complete the survey but, due to lack of responses among these teachers, the candidate sent the invitation directly to the official school emails of the selected group of schools with preschool classes in each district. In comparison to the Queensland sample, the response rate for the Malaysian Ministry of Education sample was much better when the invitations were sent through the school email address as compared to sending the invitation to the teachers' personal email addresses. Nevertheless, approximately 400 email invitations were sent through the school email addresses, but only 43 of the schools gave their responses to the survey.

Finally, for private kindergarten teachers, emails were sent to the respective manager or the principal of the kindergarten and childcare centres, and follow up was done through phone calls as well as email. Overall, 11 teachers from private kindergartens participated in the survey.

3.4 INSTRUMENTS

The survey questionnaire was designed to collect data from teachers regarding their comfort levels with ICTs, as well as their use of ICTs at home and in their early childhood centres, their views on the importance and appropriateness of Internet use for young children in the early childhood education context, and the use of computers and web searching in the classroom. Demographic information on the respondents and their centres also was obtained.

The chief investigators in the ARC Discovery project designed a penultimate draft of the survey questionnaire. The resulting survey related to the ARC project's aims and objectives, and also took into account relevant previous research involving young children's and teachers' use of online technologies. The final version of the survey was developed collaboratively over several meetings involving the ARC project research chief investigators, the candidate and other team members. The

candidate constructed the online versions of the final survey (both Australian and Malaysian).

The online survey questionnaires were implemented using Key Survey software provided by QUT. Key Survey was chosen as it is provided free of charge to HDR students and staff at QUT. Also, Key Survey is strongly supported and designed to meet the ethical and technical needs of researchers, which includes official training/workshops, consultations, survey creation support as well as technical support and advice. It is reliable as all respondents' data are stored and maintained within QUT's secure network. In addition, the features offered by Key Survey are easy-to-use and easy-to-learn. Besides, this software can easily integrate with other programs (e.g. Microsoft Excel, Outlook and SPSS statistical software). Some technical benefits of using Key Survey include the following:

- Ability to distribute surveys easily using Web address, email lists, in websites or on paper.
- Ability to customise surveys and reports (using templates, wizards, plug-ins, in-line web code and/or style sheets).
- Ability to export surveys and reports to other formats (Online, email, XML, PDF, XLS, SPSS and CSV).

A hard copy of the survey was available also at participants' requests to ensure that teachers who were less comfortable with using an online survey, or who did not have email or Internet access, were also able to participate. The layout of the survey questionnaire is shown in Appendices C, D and E. The paper-based questionnaire was designed to be as similar with the online version to give the same feel and look to the participants.

3.4.1 Survey Questionnaire Design

As there were two groups of teacher cohorts, the first in Australia and the second in Malaysia, two parallel survey questionnaires were created. Details of the questionnaire implemented with the Australian cohort are provided in Appendix E. The survey questionnaire was first translated into Malay, the national language in Malaysia, and was back translated with assistance from a group of academics from Universiti Sains Malaysia (Science University of Malaysia) in Penang, Malaysia. These academics were recommended by an early childhood visiting scholar from Malaysia who was temporarily attached to QUT School of Early Childhood. The English and Malay versions were provided as alternatives to all Malaysian participants so that they could choose the language that they felt most comfortable using to answer the survey. The Malay version of the survey was piloted in initial visits to selected PERPADUAN *tabika* centres in Selangor.

There were minor changes to the survey questionnaire used for Malaysian cohort of preschool teachers based on feedback and suggestions given by the members of the candidate's confirmation panel and in light of the survey completed on Queensland preschool teachers. Specifically, questions related to the highest level of qualifications were modified for the Malaysian cohort, as the education systems in Australia and Malaysia are different. Minor additional questions were added to the Malaysian version of the survey questionnaire, asking for information on how many years participants have had Internet access at home and in their classrooms.

The survey consisted of 23 major questions, divided into three major sections: (1) demographic information about the teachers, teaching backgrounds and Internet access; (2) information about teacher access to and use of computers in the classroom; and (3) teachers' views about young children's learning and the Internet.

The survey questionnaire was piloted and the time estimated to complete the survey was approximately 15 minutes.

Section 1 (About You), gathered teachers' basic demographic information, including the location of the centre in which they worked, their gender, age, highest qualification, and years of teaching experience with children (both at school age and below 5 years of age). This section also gathered information on teachers' use of computers in their home, Internet access, and familiarity with a range of search engines, Internet and mobile technologies. Finally, teachers were asked 14 questions about their comfort level with a range of Internet and related technologies (from mobile phones and DVD players to word processing and presentation software). Responses to these questions were combined (following factor analysis) to give an overall 'comfort with technology' scale. For the Malaysian survey, in Section 1, the additional question was added (as noted above) asking about the length of time that the teachers had Internet access, for their own personal use at home.

Section 2 (About Your Classroom and Computer Access) asked teachers about the number of children in their classroom and their teaching role, and the availability of different types of computers, including desktop computers, laptops, netbooks, tablets, and TV or electronic whiteboards in the classroom as well as their Internet access. Teachers also were asked to provide details on the frequency and the availability of computer-based activities in the classroom, such as educational games, Web searching, and drawing programs. The final question in this section focused on the frequency of the ICT practices in the classroom, including discussions about how to find out information on the Web, interactions happening at the computer, and whether the children engaged in these activities alone or with an adult. For the

Malaysian survey, in Section 2, a question was added about how long teachers had accessed the Internet in their classroom.

Finally, in the third section (Young Children's Learning), teachers were asked a series of questions about their views on the use of technology and the use of Internet in early childhood classroom settings. Responses to these questions will be subjected to factor analysis to provide summary scores on teachers' attitudes towards ICTs in their early childhood classrooms, for use in further analyses. A final open-ended question invited the teachers to provide an open-ended response to the question 'What do you believe children experience through accessing the Internet and Web searching?'

3.4.2 Validity and Reliability

The issues of reliability and validity focus on three main points in the current study. The validity of the survey questions refers to the degree to which the questions measure what they are supposed to measure. Reliability refers to the extent to which the same response is given across time and across similar questions assessing the same construct, and is a prerequisite for validity (Pallant, 2010). An example of validity test conducted in the study was when piloting the Malay version of the survey, which was earlier translated from the English version by organising visits to some PERPADUAN *tabika* centres in Malaysia to validate the survey questionnaire. This approach was to ensure that the survey questionnaire can be well understood by the respondents.

First, reliability was maximised by presenting the survey questions as clearly and unambiguously as possible to ensure clear responses from all participants, including careful translation of the survey into Malay for the Malaysian cohort, followed by a back translation of the teacher survey, from English language to Malay

language. In addition, the survey was piloted to ensure its suitability. Second, the design of the survey included using multiple measures to assess the key constructs of the research questions (for example, using several questions to measure the teachers' Internet usage, comfort level with the Internet, and their attitudes towards Internet use in early childhood context). These multiple indicators/questions aimed to provide a more reliable overall measure of each construct (Trochim, 2006c). In checking the reliability of a scale used in a survey which refers to the degree to which the items that make up the scale are measuring the same underlying construct, Cronbach's alpha coefficient can be used to see sign of internal consistency. Ideally, the Cronbach alpha coefficient of a scale should be above .7 (Pallant, 2010, p. 97; Sage Publications).

Content validity refers to the extent to which the items in a measure or scale represent the intended universe or domain of content (Fesakis, Sofroniou, & Mavroudi, 2011, p. 7). In this study, the questionnaire items were designed with expert input from members of the ARC project research team, including experts in the research field and experienced early childhood teachers, to ensure that they adequately covered the domains of interest. Construct validity involves testing a scale to ascertain the nature of the underlying variable or construct. In this study, factor analysis of data for the larger ARC study confirmed the construct validity of each of these measures, determining the underlying structure of items to derive the summary scores for the key constructs used in this study (Field, 2009). Based on these points, due consideration was taken to ensure the validity and the reliability of the data collected for both the Queensland and Malaysian studies.

3.5 ETHICAL CONSIDERATIONS

As the study involves two countries (Queensland in Australia and Selangor in Malaysia respectively), there were two sets of ethical approvals required. In Queensland, approval was given by the QUT Human Research Ethics Committee (UHREC Approval Number 1100001480). In addition, approval and support to conduct the study in Queensland Crèche and Kindergarten Association centres was given by the Crèche and Kindergarten Chief Executive Officer (see Appendix B). Ethical approval for the Malaysian data collection was also required and approved from QUT Human Research Ethics Committee. For the Malaysian data collection, approval was also granted from the federal government of Malaysia through Economic Planning Unit (or EPU) from the Prime Minister Department in mid April (Refer Appendix I).

Prior to application of conducting research in Malaysia, several guidelines were addressed. The application for conducting research in Malaysia is shown in the flowchart of applications (Refer Appendix J). In addition, there was a Malaysian Code of Conduct and Explanatory Note on Sensitive Issues that was adhered to (Refer Appendix K & Appendix L).

Variations to the original ethical clearance from QUT's Human Research Ethics Committee were gained to manage the recruitment process for Malaysia. As noted above, complete email contact details were not centrally available for teachers in many of the Malaysian centres. Therefore, the candidate used Web 2.0 tools or the social media (websites, Facebook and web blogs) to access contact information (Centre name, teachers' name, email). The Ministry of Education officers advised that the contact numbers for schools could be obtained from the respective school websites or web blogs for many of the Malaysian schools. In the case of PERMATA childcare centres (PAPN), the corresponding PERMATA officer gave teachers'

email addresses, and the contact numbers were also available through their Web blogs or Facebook page. The candidate consulted the liaising officer in order to contact the respective teachers using this channel. Some private kindergartens teachers were also approached by sending invitation by email address from their website or Facebook page. Only one centre contacted via the Facebook Page shared this info on their page, by posting a message sent to the administrator of Malaysian Society of Kindergartens & Childcare and re-posted (Refer Appendix N). In summary, although alternative means of contacting potential participants using social media were required for the Malaysian study, social networking sites were used only to locate email and telephone contact information or, where necessary, to contact centre staff via Facebook private messaging.

3.6 SUMMARY

The chapter has outlined the research methodology of the study. First, the ARC discovery project was introduced, titled *Interacting with knowledge, interacting with people: Web searching in early childhood (ID: DP110104227)* (abbreviated title KWEB), and then an overview of the candidate's current study was discussed. The next sections described the target populations and the recruitment strategies used in Australia and Malaysia. Given the nature of two different settings of study, there were some differences in approaching research participants in both countries.

The survey instruments used in the study were described, including minor variations incorporated for the second cohort of participants (the Malaysian preschool teachers in Selangor) in light of the survey with the first cohort (the Australian preschool teachers in Queensland). The issues of validity and reliability were discussed, as well as ethical considerations and ethical clearances obtained for the study. Next, the results of the study will be reported and discussed in Chapter 4.

Chapter 4: Results and Analysis

This chapter provides the survey findings for both the Australian and Malaysian surveys of preschool teachers, conducted in Queensland and Selangor respectively. The first section discusses the analytic strategies used, followed by results that respond to the study research questions as outlined in Chapter 1.

4.1 ANALYTIC STRATEGY

Data collected through the survey of Australian and Malaysian teachers was analysed using SPSS statistical software. Descriptive data analyses provide information on the teachers' age, education level, and years of teaching, as well as rich information on teachers' use of computers at home and in the classroom, their comfort level engaging in common online activities, their attitudes towards the role of the Internet or use of the Web in their preschool classrooms, and current classroom practices.

In addition to examining responses to individual questions, summary scores for key variables were derived, based on the results of factor analysis from the larger ARC study in Australia. These summary scores included an overall measure of 'comfort with technology' as well as factors describing teachers' attitudes to the use of Internet in early childhood settings and teachers' Internet-related practices in the classroom.

Several techniques were deployed in the inferential analyses to examine the relationships among variables. Crosstabs, analysis of variance (ANOVA) and correlational analyses were used to examine bivariate relationships among the key variables in the survey, including the teachers' age and educational experience, their use of and comfort with technology in the home, and their attitudes to, and use of Internet in their classrooms. Chi-square tests were performed to explore the relationship between two categorical variables (Fesakis et al., 2011). Analysis of group differences, (analysis of variance, ANOVA)

examined the relationship across teachers' educational level and their technological comfort, attitudes, and use of popular Internet activities. Finally, a multiple regression analysis was used to examine the prediction of teachers' classroom Internet practice, based on the patterns that emerged among the other key variables.

Prior to data analysis, distributions of variables were checked within each country for normality, outliers, and linearity in bivariate relationships and homogeneity of variance. Issues regarding breaches of assumptions are reported, where relevant, as part of the analyses below. Considering the large number of statistical tests carried out, a Type I error rate of .01 was adopted for all analyses.

4.2 DEMOGRAPHIC CHARACTERISTICS

Participants. From the Australian sample, 131 early childhood teachers completed the survey. The vast majority were female, with only one male respondent. For the Malaysian sample, 103 early childhood teachers completed the survey, with the majority female teachers (98%), as in the Australian sample. A summary of the demographic information for teachers in Australia and Malaysia is shown in Table 4.1.

Table 4.2 provides a breakdown of the Malaysian survey participants, in terms of the Early Childhood Education providers for which they worked, and the number of online versus hard copy surveys completed.

Table 4.1

Teachers' Demographic Information

	AUSTRALIA (N = 131)	MALAYSIA (N = 103)
Age	Average 44.81 years (SD = 9.88, range 23 to 64 years)	Average 34.09 years (SD= 8.41, range 20 to 56 years)
Sex	99% female, 1% male	98% female, 2% male
Teaching experience	Average 18 years (SD = 9.77 years, range 1 to 38 yrs)	Average 9.49 years (SD =7.82 years, range 1 to 36 yrs)
Highest qualification	67% Bachelor degree holder 15% Postgraduate university degree 11% Diploma or equivalent	44% Diploma holders 24% Bachelor degree holders 16% School completion (SPM or equivalent)
Role	80% class teachers/ group leaders	96% class teachers/ group leaders
Internet use at home	98% with Internet access at home 70% accessed the Internet everyday 80% very comfortable searching online	82% with Internet access at home 51% accessed the Internet everyday 63% very comfortable searching online
How survey was answered	92% Online 8% Hard copies	54% Online 46% Hard copies

Table 4.2

Malaysian Survey Participants

Malaysian ECE Provider	Number of teachers	How survey was answered
PERMATA Childcare Centres (PAPN)	3	Online-1, Hard copies -2
MOE preschools	43	Online-43, Hard copies -0
PERPADUAN <i>tabika</i>	12	Online-1, Hard copies -11
KEMAS <i>tabika</i>	34	Online - 0, Hard copies- 34
Private kindergartens	11	Online -11, Hard copies -0
Total	103	Online: 56 (54%), Hard copies: 47(46%)

An independent groups *t*-test confirmed that Australian teachers (average age 44.8 years) were significantly older than Malaysian teachers (average age 34.1 years), $t(225) = 9.13, p < .001$. A similar difference was found for years of teaching experience. A *t*-test for unequal variances confirmed that Australian teachers (with an average of 18 years teaching experience) had been working significantly longer than Malaysian teachers (with an average of 9.5 years teaching experience), $t(228) = 7.35, p < .001$.

Table 4.1 also shows that the majority (80%) of the Australian respondents were class teachers/ group leaders, compared with class assistants or other positions. More than two-thirds (67%) had completed a university bachelor degree, followed by 15% with a postgraduate university degree qualification, and 10.8% with a diploma or equivalent. The majority of the Malaysian respondents were also class teachers/ group leaders (95.8%) with a small minority of class assistants (2.1%) or other positions (2.1%). In terms of education level, the largest group consisted of diploma holders (44.1%), followed by bachelor degree (23.5%) and 15.7% with school completion (SPM or equivalent, which is equivalent with high school completion in the Australian education system).

Teachers' Internet use at home. The vast majority of Australian teachers and Malaysian teachers had Internet access at home, and most accessed the Internet every day or most days (see Table 4.1). Teachers in both countries reported using Google as their main Web search engine, with 51% of teachers in Australia and 38% of Malaysian teachers doing Web searches using Google every day in a typical week. A further 34% of Australian teachers and 33% Malaysian teachers in the study reported using Web searches on most days in a typical week, and 13% of Australian teachers and 23% of Malaysian teachers reported using it on some days. Overall, 80% of Australian respondents and 63% Malaysian respondents reported to be very comfortable searching online, with the remaining 20% of Australian teachers and 28% of Malaysian teachers moderately comfortable.

4.3 TEACHERS' COMFORT IN USING DIGITAL TECHNOLOGIES AND THE INTERNET

Teachers were asked to rate their level of comfort in using a range of digital technologies, including the Internet. Tables 4.3 and 4.4 provide the detailed results on teachers' self-reported comfort in using digital technologies, and in using Internet Web-based activities respectively.

Table 4.3

Teachers' Comfort in Using Digital Technologies

	Very		Moderate		Uncertain		Not at all		Don't know this		Don't use	
	AU	MY	AU	MY	AU	MY	AU	MY	AU	MY	AU	MY
Using programs on your mobile phone	27.7%	28.9%	33.1%	36.1%	9.2%	7.2%	13.8%	8.2%	1.5%	4.1%	14.6%	15.5%
Using DVD technology	49.6%	34.0%	38.8%	45.4%	6.2%	7.2%	0.8%	1.0%	2.3%	2.1%	2.3%	10.3%
Adding software programs to your computer	33.8%	32.3%	42.3%	36.5%	16.2%	15.6%	5.4%	1.0%	0.8%	6.3%	1.5%	8.3%
Making presentations packages such as PowerPoint	44.2%	48.5%	35.7%	38.6%	11.6%	5.0%	4.7%	0.0%	0.8%	3.0%	3.1%	5.0%
Using word processing packages such as Microsoft Word	80.6%	69.0%	17.1%	22.0%	0.8%	4.0%	0.8%	0.0%	0.0%	1.0%	0.8%	4.0%
Using drawing programs such as Microsoft Paint	29.7%	24.0%	36.7%	40.6%	17.2%	13.5%	7.8%	5.2%	2.3%	4.2%	6.3%	12.5%
Using drawing/storytelling programs such as Microsoft Photo Story	13.2%	12.5%	23.3%	29.5%	34.1%	22.9%	14.7%	3.1%	4.7%	14.6%	10.1%	17.7%
Editing digital photographs	46.1%	25.5%	40.6%	37.8%	9.4%	16.3%	3.1%	1.0%	0.0%	7.1%	0.8%	12.2%
Computer game playing	16.3%	24.5%	34.9%	45.7%	13.2%	10.6%	16.3%	6.4%	0.0%	2.1%	19.4%	10.6%
Explaining how to use technology to children	26.4%	30.6%	57.4%	54.1%	14.0%	10.2%	1.6%	1.0%	0.0%	2.0%	0.8%	2.0%

For ease of interpretation, Figure 4.1 and Figure 4.2 simplify these results, showing the percentage of teachers in each country who reported being comfortable (i.e., either very or moderately comfortable) with using both digital technology and the Internet. Contingency chi-square tests were used to identify any differences in comfort level across Australia and Malaysia, and adjusted standardised residuals were used to identify the cells (levels of comfort) in which teachers from the two countries differed.

Teachers' Comfort in Using Digital Technologies. As Table 4.3 and Figure 4.1 show, Australian and Malaysian teachers reported similar comfort levels in using a range of digital technologies, with the only significant differences (at .01 level of significance) being that a higher proportion of Malaysian teachers (19%) reported not knowing or using digital photo editing software, $\chi^2(5, N=226) = 31.54, p < .001$.

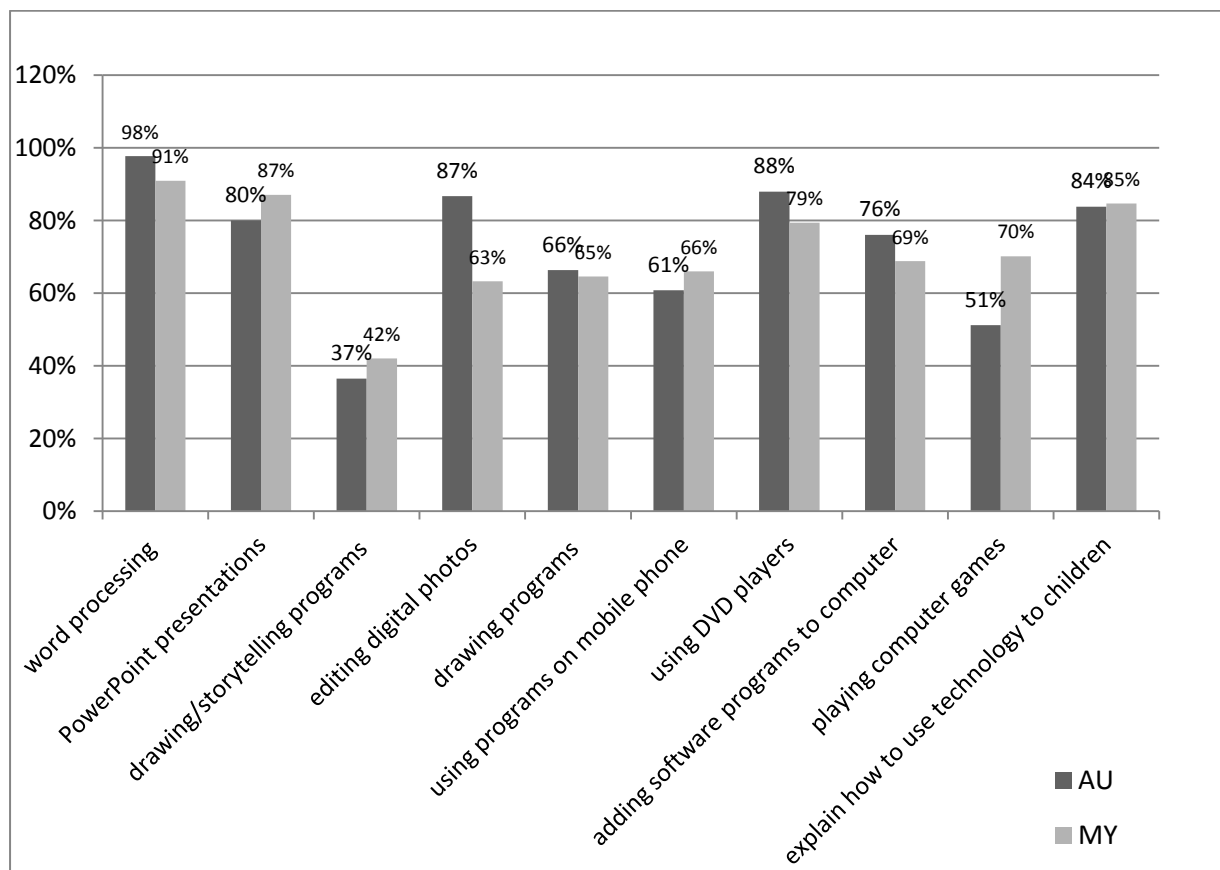


Figure 4.1. Percentage of Australian (AU) and Malaysian (MY) teachers who reported being very/moderately comfortable using digital technologies

As Figure 4.1 shows, more than 75% of teachers in both countries reported being very comfortable or moderately comfortable in using some digital technologies, including using word processing packages, editing digital photos, using DVD players, and making PowerPoint presentations. A smaller majority of teachers in both countries also reported being very or moderately comfortable in using programs on their mobile phones, adding software programs to a computer, and using drawing programs, such as Microsoft Paint. However, a significant proportion of teachers in both countries reported being not at all comfortable, or not using these digital technologies.

Less than half of the teachers from each country reported that they were comfortable with drawing/storytelling programs such as MS Photo Story. A substantial proportion of teachers in both countries (over 30%) was not confident/did not use story programs. Although a higher proportion of Malaysian teachers reported being comfortable in playing computer games than their Australian counterparts, this difference did not reach significance, $\chi^2(5, N=223) = 13.55, p > .01$.

Importantly, there was no difference between Australian and Malaysian teachers in their comfort in explaining how to use technology to children, with a total of 84% and 85% reporting being very or moderately comfortable.

Teachers' Comfort in Using the Internet. Table 4.4 shows teachers' self-reported comfort in using specifically the Internet or Web-based activities, and Figure 4.2 summarises this information, by showing the percentage of teachers who reported being comfortable (very or moderately) with these Internet activities. In contrast to the similarities in comfort levels reported by teachers in the two countries in the digital technologies reported above, there were significant differences across the two countries in teachers' self-reported comfort in using the Internet.

Table 4.4

Teachers' Comfort in Using the Internet

	Very		Moderate		Uncertain		Not at all		Don't know this		Don't use	
	AU	MY	AU	MY	AU	MY	AU	MY	AU	MY	AU	MY
Searching online	80.0%	62.2%	20.0%	28.3%	0.0%	3.0%	0.0%	0.0%	0.0%	2.0%	0.0%	4.0%
Using email	86.9%	54.1%	12.3%	32.7%	0.8%	4.1%	0.0%	0.0%	0.0%	1.0%	0.0%	8.2%
Using social network programs such as Facebook and Twitter	35.6%	47.5%	29.7%	39.6%	10.2%	2.0%	10.2%	3.0%	0.0%	1.0%	14.4%	6.9%
Using communication programs such as Skype	40.3%	20.8%	23.3%	30.2%	20.2%	13.5%	7.0%	5.2%	0.8%	6.3%	8.5%	24.0%

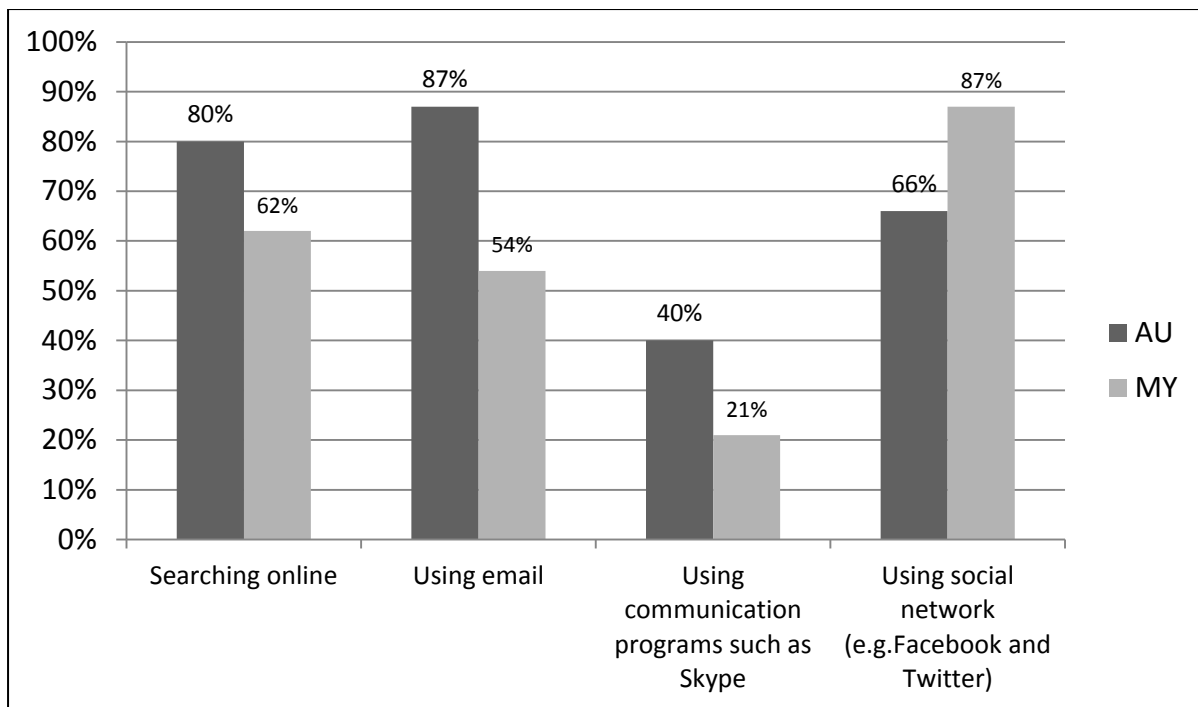


Figure 4.2. Percentage of Australian (AU) and Malaysian (MY) teachers who reported being very/moderately comfortable in their Internet activities

Although the vast majority of teachers in both countries reported being comfortable searching online, a chi-square test determined that there were significant differences between the two groups of teachers, $\chi^2(4, N=229) = 15.79, p=.003$. As Table 4.4 shows, more Australian teachers reported that they felt very comfortable searching online (AU=80%; MY= 62%), while more Malaysian teachers described themselves as moderately comfortable (AU=20%; MY= 28%) or uncertain/not using the technology (AU=0%; MY= 9%). The latter category includes 2% of respondents in Malaysia who reported they don't know what searching online is and 4% who admitted they don't use it.

More teachers in Australia (87%) also reported feeling very comfortable in using email, compared with only 54% of Malaysian teachers. Another 40% of Malaysian teachers reported to be moderately comfortable in using email. A small minority (8%) of Malaysian teachers reported they don't use email. The chi-square test confirmed this was a significant difference between countries, $\chi^2(5, N=228) = 37.26, p<.001$.

Australian teachers also reported to be more comfortable using communication programs such as Skype, with 40% very comfortable compared with only 21% of Malaysian teachers. Furthermore, 24% of teachers in Malaysia responded they don't use Skype, compared with only 9% in Australia. A chi-square test showed there was a significant difference between these groups, $\chi^2(5, N=225) = 23.18, p < .000$.

In contrast, for the use of social network programs such as Facebook and Twitter, the Malaysian teachers in the study reported more confidence, with a total of 87% saying they were either very comfortable (47%) or moderately comfortable (40%), while Australian teachers reported lesser comfort levels with 36% very comfortable and 30% moderately comfortable. A chi square test confirmed that this was a significant difference between the two groups of teachers, $\chi^2(5, N=229) = 17.31, p = .004$.

In summary, Australian and Malaysian teachers reported similar levels of comfort in using a range of digital technologies, but differed in their comfort in some Internet activities, with Australian teachers more comfortable using Web searching, email and Skype, while Malaysian teachers were more comfortable in using social networking programs such as Facebook and Twitter.

4.4 TEACHERS' COMFORT WITH DIGITAL TECHNOLOGIES AND THE INTERNET (RELATIONSHIPS WITH AGE, TEACHING EXPERIENCE AND EDUCATION LEVEL)

Summary scores for comfort with technology and comfort with the Internet were calculated for use in inferential analyses, by averaging across the items that made up each scale. A total comfort with technology score was also calculated, averaging across all items. These summary scores were used to examine the relationship between comfort with technology and teachers' age, teaching experience, and education level. Because there were differences in age, teaching experience and in education level (and the education system)

between the two countries, these relationships were examined separately for Australian and Malaysian teachers.

Table 4.5 shows the correlations between the Australian and Malaysian teachers' overall technological comfort level, and comfort level with Internet use and technology in relation to their age and teaching experience, using Pearson's Correlation Coefficient. Australian teachers are represented above the diagonal in this table, and Malaysian teachers below the diagonal.

Table 4.5
Correlations between Australian (above diagonal) and Malaysian Teachers' (below diagonal) Comfort with Internet, Comfort with Technology, Age and Teaching Experience

	1.	2.	3.	4.	5.
1. Technological comfort (overall)	1	.92**	.90**	-.37**	-.29*
2. Comfort with Internet	.95**	1	.66**	-.33**	-.20*
3. Comfort with Technology	.96**	.82**	1	-.35**	-.32**
4. Age	-.38**	-.35**	-.38**	1	.69**
5. Teaching experience	-.48**	-.49**	-.43**	.84**	1

*p < .05 (two tailed), **p < .001 (two tailed)
Note: Australian teachers (N=131), Malaysian teachers (N=103).

For both Australian and Malaysian teachers, there were statistically significant and moderate negative correlations between all three comfort scores and age, indicating that older teachers tended to report less comfort with technology. Teaching experience was also negatively correlated with technological comfort in both groups, indicating that teachers with more teaching experience (who also tended to be older) tended to be less comfortable with technology. This relationship was stronger for Malaysian teachers, and weak for Australian teachers. Table 4.5 also shows that the overall technological comfort score and the specific scores focusing on Internet and other digital technologies were strongly correlated,

particularly in the Malaysian sample. Given these high intercorrelations among the technological comfort measures (indicating multicollinearity), and their similar pattern of relationships with other variables, only the overall technological comfort scores were used in further analyses.

Independent groups Analyses of Variance (ANOVAs) were used to investigate the relationship between teachers' technological comfort (overall) and their education level. For the Australian teachers, technological comfort did not differ across teachers' education level, $F < 1$. There was, however, a significant difference in technological comfort as a function of education level for the Malaysian teachers, $F(6,94) = 4.90, p < .001$. Post Hoc Tukey tests showed that Malaysian teachers with the lowest level of education (school completion, SPM or equivalent) reported significantly less comfort with technology than all other groups. There were no other differences either within or across countries.

4.5 TEACHERS' BELIEFS ON DIGITAL TECHNOLOGIES AND INTERNET USE IN CLASSROOMS

Teachers' beliefs about the importance and relevance of technology and Internet use in early childhood classrooms are reported in Table 4.5. The questions have been grouped into two factors, based on an analysis from the larger KWEB study which determined that teachers' beliefs were best explained by two factors. The first factor comprises eight items that relate to teachers' beliefs about the relevance and importance of the Internet in early childhood classrooms. The second factor contains four items related to the practicalities or potential impediments of using the Internet in the classroom. Summary scores for these two factors were also calculated for use in inferential analyses.

Teachers' Beliefs about Using Technology in the Classroom. Whereas Table 4.6 provides details data on the teachers' reported beliefs about the relevance of digital technologies and the Internet in their classrooms, and impediments to using this technology, Figures 4.3 and 4.4 summarise this information, by showing the percentage of teachers who

reported having positive beliefs about the relevance of technology and Internet use in early childhood classroom for both Australia and Malaysia (Figure 4.3) and the proportion of teachers who agreed with statements concerning potential impediments to technology use in the classroom (Figure 4.4).

Table 4.6

Teachers' Beliefs about the Relevance of, and Impediments to Technology and Internet Use in Classrooms

	Strongly Agree, Agree		Unsure		Disagree, Strongly Disagree	
	AU	MY	AU	MY	AU	MY
Relevance of technology use in classroom						
I am concerned that children spend too much time with technology.	57.0%	79.4%	18.8%	4.1%	24.2%	16.5%
It is important to build on children's existing experiences with technology.	86.6%	89.6%	11.8%	7.3%	1.6%	3.1%
Having one or more computers in the classroom is an essential part of learning.	72.7%	91.8%	9.4%	6.2%	18.0%	2.1%
It is good to use technology to build on the interests children bring to the classroom.	91.5%	91.7%	7.8%	3.1%	0.8%	5.2%
It is good for young children to have experiences with the computer at home.	82.7%	89.7%	14.2%	5.2%	3.2%	5.2%
Young children learn literacy skills through use of the computer.	85.4%	74.0%	9.2%	13.5%	5.4%	12.5%
Using technology in the classroom is an everyday part of learning.	63.6%	74.2%	14.0%	15.5%	22.5%	10.3%
A computer enables learning opportunities for children to interact with each other.	69.0%	77.7%	19.4%	14.9%	11.7%	7.4%
Impediments to technology use in the classroom						
I find my main technology role is to ensure that the hardware and software are working.	23.0%	70.8%	16.7%	20.2%	60.3%	9.0%
Young children do not have the literacy skills necessary for Web searching.	17.8%	41.9%	26.4%	33.3%	55.8%	24.8%
Safety concerns stop me using the Internet in the classroom.	17.2%	19.1%	14.1%	25.5%	68.7%	55.3%
I find my main technology role is to assist children when they request help.	42.9%	82.5%	25.4%	11.3%	31.8%	6.2%

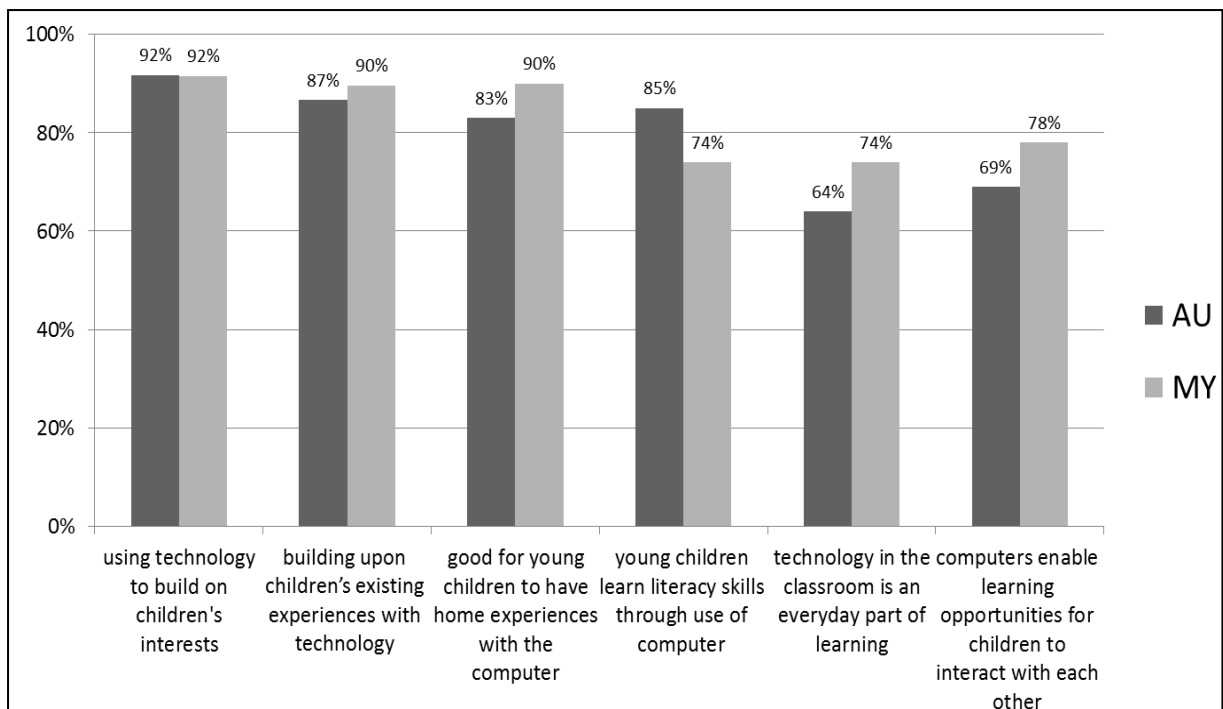


Figure 4.3. Percentage of Australian and Malaysian teachers' who reported positive beliefs on technology use

Figure 4.3 shows that overall, the vast majority of teachers in both countries reported positive beliefs about the relevance and usefulness of technology and the Internet in their early childhood classrooms, with few significant differences between the two countries in terms of teachers' beliefs on the usefulness of ICTs in the classroom. More than 80% of teachers in both Australia and Malaysia agreed on the value of using technology to build on the interests children bring to the classroom, the importance of building upon children's existing experiences with technology, and that it is good for young children to have experiences with the computer at home. Almost three quarter of Malaysian teachers (74%) and 85% of Australian teachers also agreed that young children learn literacy skills through use of the computer while more than 60% of teachers in both countries agreed that using technology in the classroom is an everyday part of learning, and that computers enable learning opportunities for children to interact with each other.

Teachers' Impediments in Using Technology. Figure 4.4 shows the differences in the views of teachers in Malaysia and Australia on the potential impediments to using technology in the classroom. (See Table 4.4 for more detailed data.) Significant differences between the countries emerged in considering potential impediments to Internet use

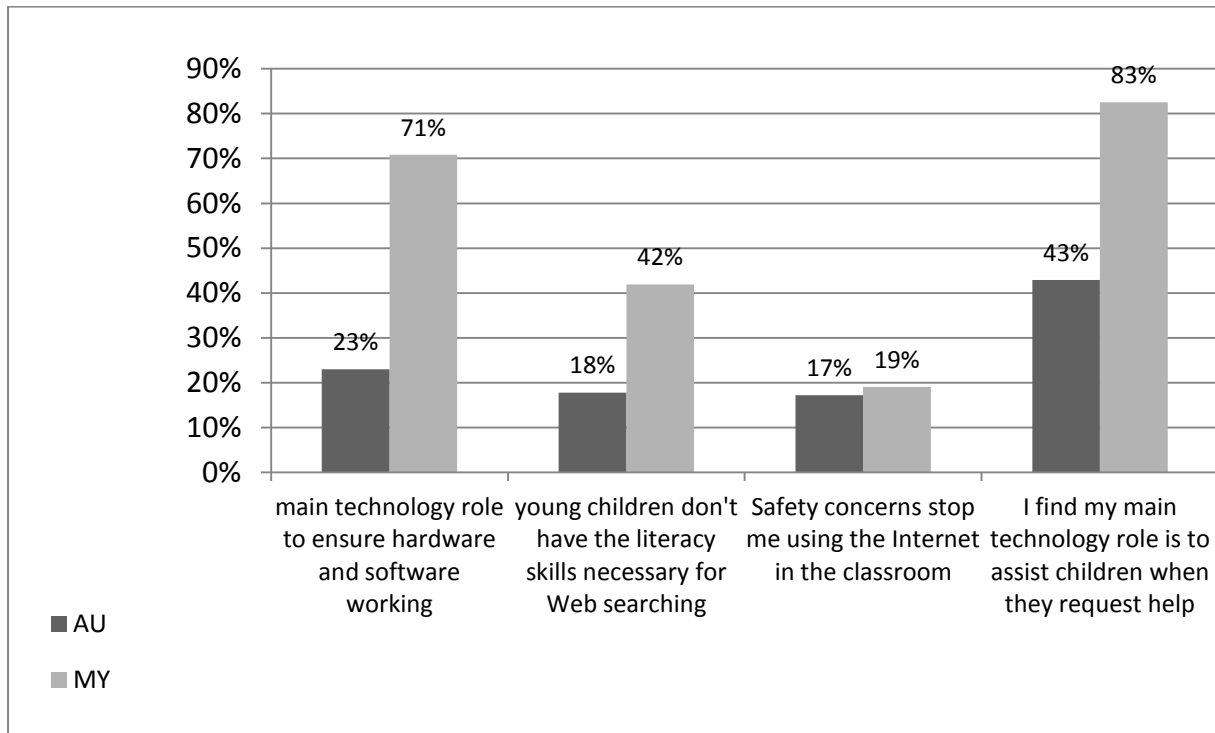


Figure 4.4. Percentage of Australian (AU) and Malaysian (MY) teachers who agreed with statements about possible impediments to technology use in classrooms

Whereas less than a quarter of Australian teachers (23%) considered that their main technology role to ensure that the hardware and software are working, nearly three quarters of the Malaysian teachers (70.8%) agreed with this statement. The chi square test shows the statistically significant difference between the two groups of teachers. $\chi^2(4, N=215) = 63.41, p < .001$. Also, more Malaysian teachers (42%) than Australian teachers (18%) believed that young children do not have the literacy skills necessary for Web searching, $\chi^2(4, N=222) = 28.05, p < .001$. More Malaysian teachers (83%) agreed that a teachers' role is to assist children when they request help with technology, whereas only 43% of Australian teachers

agreed with this statement. The chi square test showed this was a statistically significant difference between the two groups of teachers, $\chi^2(4, N=223) = 41.49, p < .001$. In contrast, few teachers in either country agreed that safety concerns stopped them using the Internet in the classroom, with no difference between the two groups of teachers. $\chi^2(4, N=222) = 9.48, p = 0.50$.

In summary, there were similarly high levels of agreement amongst both Australian and Malaysian teachers about the relevance and importance of Internet use in early childhood classrooms. Nevertheless, more Malaysian teachers believed that young children do not have the literacy skills needed for Web searching, and Malaysian teachers saw a more active role for the teacher to assist children when they request help and in maintaining computer hardware and software. Few teachers in either country rated safety concerns as a significant impediment to using these technologies in their classrooms.

4.6 ICT AND INTERNET USE IN CLASSROOMS

Teachers must have access to computers and the Internet in the classroom if they are to incorporate ICTs and Internet activities into their classroom practice. Table 4.7 shows the availability of computers or other ICTs (desktop computers, laptops, netbooks, or tablets) in the classroom. Most teachers reported having access to at least one computing device (desktop computer, laptop, netbook, and tablet) in their classroom. A chi-square test showed that there were statistically significant differences in the availability of ICTs devices in the classroom, $\chi^2(8, N=234) = 17.97, p < .01$, reflecting higher reported availability of computing devices in the Malaysian classrooms. A greater proportion of Malaysian classrooms had three such devices in the classroom, whereas a greater proportion of Australian classrooms had just one computer device. Furthermore, although the majority of teachers in both countries reported to have at least one ICT device, more Australian teachers (13.7%) reported

having no ICT devices in their classrooms when compared with their Malaysian counterparts (7.8%).

Table 4.7

ICT devices in Australian and Malaysian Early Childhood Classrooms

		Number of ICT devices in class					
		None	1	2	3	4 and above	Total
Malaysia	Count	8	17	30	36	12	103
	% within country	7.8%	16.5%	29.1%	35.0%	11.7%	100.0%
Australia	Count	18	38	34	24	17	131
	% within country	13.7%	29.0%	26.0%	18.3%	13.0%	100.0%
Total	Count	26	55	64	60	29	234
	% both country	11.1%	23.5%	27.3%	25.6%	12.4%	100.0%

Table 4.8 shows the number of different types of computing devices with Internet access reported by teachers in Australia and Malaysia. In contrast to the relatively widespread availability of at least one computer per classroom, only 53% of Australian teachers and 43% of Malaysian teachers reported having Internet-enabled devices in their classrooms. There were no statistically significant differences between the countries in terms of number of different Internet enabled ICT devices in classrooms, $\chi^2(3, N=234) = 4.27$, $p=.23$.

Table 4.8

Internet-enabled ICT devices in Australian and Malaysian Early Childhood Classrooms

		Number of different Internet enabled ICT devices in class			
		None	1	2	3
Malaysia	Classrooms	59	37	5	2
	% within country	57.3%	35.9%	4.9%	1.9%
Australia	Classrooms	62	50	14	5
	% within country	47.3%	38.2%	10.7%	3.8%

This widespread lack of Internet access must be taken into account when considering the level of ICT and Internet-based activities teachers report in their classrooms.

Table 4.8 shows the frequency with which teachers reported that a range of computer-based activities happened in their classrooms. In terms of teachers' own use of ICTs within the classroom, the most common ICT activities reported classroom practices were word processing and Web searching by the teacher. There was a significant difference between the two groups of teachers in their use of word processing packages, $\chi^2 (5, N=213) = 34.17, p < .001$. More teachers in Australia (54%) reported using a word processing package on daily basis as compared to Malaysian teachers (18%), whereas, 30% of Malaysian teachers said they either never use or do not have word processing facilities in their classroom, compared to 19% of Australian teachers. The majority of teachers (AU = 73%, MY = 59%) reported doing Web searching at their workplace every day, most days or some days each week. However, this activity was sometimes only accessible in the office, and not accessible in classrooms without Internet access. A chi-square test showed there was no significant difference in Web searching activity between the two groups, $\chi^2 (5, N=214) = 6.73, p = .241$. Both Australian and Malaysian teachers reported as infrequent users of drawing programs, with a larger percentage of Australian teachers (47%) reporting that they never use them, compared with Malaysian teachers (17%), $\chi^2 (5, N=214) = 28.4, p < .001$.

Table 4.9

Frequency of ICTs and Internet Use in the Classroom

	Every day		Most days		Some days		Not weekly		Never		Do not have in classroom	
	AU	MY	AU	MY	AU	MY	AU	MY	AU	MY	AU	MY
Educational games playing(e.g. online educational websites)	8.9%	5.5%	8.9%	13.2%	11.4%	38.5%	11.4%	12.1%	30.1%	12.1%	29.3%	18.7%
Web searching by teacher	18.1%	19.5%	24.4%	18.4%	30.7%	20.7%	5.5%	6.9%	6.3%	12.6%	15.0%	21.8%
Web searching by children	2.5%	0.0%	10.8%	8.4%	30.8%	25.3%	10.8%	14.5%	20.0%	20.5%	25.0%	31.1%
Word processing by teacher	54.0%	18.4%	18.3%	23.0%	7.1%	17.2%	1.6%	11.5%	6.3%	13.8%	12.7%	16.1%
Word processing by children	1.6%	2.4%	4.9%	8.3%	17.9%	29.8%	17.1%	14.3%	36.6%	25.0%	22.0%	20.2%
Drawing program by teacher	4.1%	4.6%	0.8%	13.8%	13.1%	28.7%	17.2%	17.2%	46.7%	17.2%	18.0%	18.4%
Drawing program by children	4.9%	1.2%	5.7%	8.1%	15.6%	31.4%	17.2%	17.4%	34.4%	20.9%	22.1%	20.9%
Other programs	10.0%	2.4%	10.0%	10.8%	17.0%	25.3%	8.0%	15.7%	28.0%	20.5%	27.0%	25.3%

Overall, teachers reported fairly low levels of ICT and Web-based activities involving the children in their classrooms. This would have been influenced by the availability of Internet access for the teachers and children to perform this activity. Table 4.8 shows that few teachers in either country reported regular (i.e., daily or most days) use of educational games, children's Web searching and word processing and using drawing packages. More teachers in Malaysia reported at least weekly use (i.e., 'some days') of these activities, whereas a similar proportion of teachers in Australia reported never using these activities in their classrooms. However, chi-square tests showed that these differences between countries were only statistically significant for educational games, $\chi^2(5, N=214) = 28.4, p < .001$. Differences between the two countries were not statistically reliable for children's use of Web searching, word processing, or drawing packages.

4.6.1 Classroom Practice

Table 4.10 shows the frequency of teachers' pedagogical practices around Internet and Web searching within the classroom, revealing low frequencies of practice overall reported by teachers in both Australia and in Malaysia. A high percentage of teachers reported never undertaking specific intentional teaching of Web searching skills (AU=55%, MY=55%), children working individually at a computer (AU=49%, MY=51%) or children working individually doing Web searching (AU=84%, MY=75%). Only a very small number of Australian teachers (2.5%) reported having these activities on a daily basis.

The only significance differences in classroom practice between Australia and Malaysia were with child-initiated discussion with the teacher about how to find out information, $\chi^2(4, N=218) = 14.50, p = .006$, and child-adult interacting doing Web searching, $\chi^2(4, N=218) = 17.49, p = .002$. Both of these activities happened more often in Australian classrooms than in Malaysian classrooms, with Australian teachers reporting more frequent (daily, most days or some days) child-initiated discussion with the teacher about how to find out information

(AU= 47%, MY=30%) and child-adult interacting doing Web searching (AU= 40%, MY=26%) compared with Malaysian teachers.

There were no significant differences between teachers in Australia and Malaysia in class discussion of Internet searching (more than 40% of teachers in both countries reported never having this activity in their classroom) or in child-led demonstration with classmates about how to use technology (26% of Australian teachers and 34% of Malaysian teachers reported that this occurred daily, most days or some days, but 52% of Australian teachers and 43% of Malaysian teachers reported that this never happened in their classrooms). About half the teachers in both countries (AU=59%, MY=47%) reported combining various different sources of information searching (e.g. books, brochures, Internet) on a daily or most days basis, whereas more than a quarter of teachers in both countries reported never having this kind of activity.

In summary, there was wide variability in reported practice surrounding Internet activities across these classrooms. Although a substantial proportion of teachers reported that children were never engaged in Internet activities in their classrooms, there were also a smaller minority of classrooms featuring more frequent Internet activities (every day or most days). Although the high proportion of classrooms in each country without Internet access mitigates against Web-based classroom practice, there was a low baseline of Web-based activities even in classrooms with Internet access. There were few differences in Internet-based classroom activities across the two countries.

Table 4.10

Teacher-Reported Frequency of Internet-related Practice in the Classroom

	Every day		Most days		Some days		Not weekly		Never	
	AU	MY	AU	MY	AU	MY	AU	MY	AU	MY
Whole class discussion led by teacher about how to find out information on the Web	3.1%	2.1%	4.7%	6.4%	26.0%	33.0%	26.0%	12.8%	40.2%	45.7%
Small group discussion led by you about how to find out information on the Web	3.9%	1.1%	3.1%	3.3%	39.8%	28.3%	27.3%	21.7%	25.8%	45.7%
Intentional teaching of Web search skills	2.3%	1.1%	3.9%	2.2%	14.0%	25.0%	24.8%	16.3%	55.0%	55.4%
Child-led demonstration with classmates about how to use technology	2.3%	0.0%	4.7%	4.3%	18.8%	30.1%	22.7%	22.6%	51.6%	43.0%
Child-initiated discussion with the teacher about how to find out information	3.2%	0.0%	9.5%	1.1%	34.1%	29.3%	25.4%	23.9%	27.8%	45.7%
Child-adult interacting together at computer	8.7%	2.1%	19.0%	7.4%	34.1%	37.9%	15.1%	16.8%	23.0%	35.8%
Child-adult interacting doing Web searching	3.1%	0.0%	11.8%	3.3%	34.6%	23.1%	21.3%	20.9%	29.1%	52.7%
Child working individually at a computer	7.9%	0.0%	11.1%	6.5%	17.5%	22.8%	14.3%	19.6%	49.2%	51.1%
Child working individually doing Web searching	2.5%	0.0%	1.7%	2.2%	0.8%	10.1%	11.6%	12.4%	83.5%	75.3%
Combining various different sources of information searching (e.g. books, brochures, Internet)	10.3%	4.3%	17.5%	12.0%	31.0%	30.4%	15.9%	22.8%	25.4%	30.4%

4.7 PREDICTING TEACHERS' CLASSROOM PRACTICE

From the data gathered from both Australian and Malaysian survey, it is possible to examine the predictors teachers' reported classroom Internet practices based on their country, teaching experience, comfort with technology, and beliefs about technology, by using regression analysis. Because a sizeable proportion of teachers in each country did not have Internet access in their classrooms, and therefore were not able to use the Internet in their classroom practice, regardless of their beliefs or intentions, these regression analyses were only carried out for teachers who had the opportunity to use the Internet in their classrooms. Table 4.11 shows the correlation between teachers' reported classroom practice and the predictor variables.

Table 4.11

Correlations between Reported Classroom Practice, Country, Years of Teaching, Comfort with Technology, Beliefs about Internet Use (Internet relevance; impediments), and Number of Internet-enabled Devices in the Classroom

	1.	2.	3.	4.	5.	6.	7.
1. Classroom practice	-						
2. Country	.12	-					
3. Years teaching	-.03	.34	-				
4. Internet enabled devices	.29**	.12	.21	-			
5. Comfort with technology	.28**	-.04	-.30	.11	-		
6. Beliefs (Internet is useful)	.44**	-.16	-.11	.28	.27	-	
7. Beliefs (impediments)	-.05	-.57	-.21	-.27	-.02	.13	-

** $p < .01$

The table shows a moderate positive correlation between classroom practice and teachers' beliefs about the value of the Internet, and weak positive correlations between

reported classroom practice and teachers' technological comfort and, with the number of different Internet-enabled devices in the classroom. Years of teaching, country, and teachers' beliefs about impediments to Internet use were not significantly correlated with reported classroom practice.

A standard multiple regression analysis was performed to estimate the proportion of variance in Internet related classroom practice reported by teachers in Australia and Malaysia which could be explained by these predictor variables. Prior to interpreting the results of the multiple regression analysis, several assumptions were evaluated. First, histograms indicated that each variable in the regression was normally distributed. Secondly, inspection of the normal probability plot of standardised residuals as well as the scatter plot of standardised residuals against standardised predicted values indicated that the assumptions of normality, linearity and homoscedasticity of residuals were met. The results of this regression analysis can be seen in Table 4.12.

Table 4.12

Unstandardised (B) and Standardised (β) Regression Coefficients for Each Predictor in a Regression Model Predicting Teachers' Reported Internet Related Practice in Classrooms

Variable	B	[95% CI]	β	Sig.
Country	.342	[.012, .673]	.219*	.042
Years of teaching	-.003	[-0.19, .012]	-.041	.673
Internet-enabled devices in classroom	.217	[-.029, .462]	.166	.083
Teachers comfort total	.168	[-.029, .364]	.155	.093
Teachers beliefs (Internet is useful)	.573	[.293, .853]	.376**	.000
Teachers beliefs (impediments to use)	.073	[-.163, .310]	.065	.540

N= 113, CI = confidence interval

*p<.05 **p<.01

In combination, the predictor variables of country, years of teaching, teachers' comfort with technology, teachers' beliefs about the Internet (its usefulness and impediments to Internet use) and number of Internet-enabled devices in classroom, accounted for a significant 28% of variability in teachers' reported Internet related practice in the classroom, $R^2=.28$, *adjusted R*²=.24, $F(6,103)=6.73$, $p<.001$. Unstandardised (*B*) and standardised (β) regression coefficients for each predictor in the regression model can be seen in Table 4.12.

The most important predictor of teachers' reported Internet related practice in the classroom was positive teachers' beliefs that the Internet is useful and important to children's learning. Teachers' beliefs about the usefulness of the Internet in their classrooms uniquely explained 11.5% of the variance in reported classroom practice. The only other significant predictor was country. Although country was not itself correlated with reported classroom practice (see Table 4.11) it was a marginally significant predictor in the regression model, when considered in combination with other variables. The positive relationship between country and reported classroom practice suggest the greater use of Internet-related practice in Australian classrooms than in Malaysian classrooms, once the other factors were controlled. Although teachers' comfort with technology was weakly correlated with reported classroom practice (see Table 4.11), it was not a significant predictor in the regression model, once other variables were considered. Years of teaching and teachers' beliefs regarding impediments to Internet use, which were not correlated with reported classroom practice (see Table 4.11), were not significant predictors in this model.

4.8 SUMMARY

In summary, the chapter has outlined the research findings of the current research. Demographically, there were substantial differences in teachers' age and teaching experience across the two countries. Australian teachers were, on average, 10 years older, and had 10 years more teaching experience, compared with Malaysian teachers. Nevertheless, teachers'

comfort with ICT, their beliefs about the role of the Internet in children's learning, and their reported level of classroom practice were, for the most part, similar across the two countries. The majority of teachers in Australia and Malaysia reported as being frequent users of ICT. There was a weak negative relationship between teachers' age and overall technology comfort in both countries. In Malaysia, there was a significant negative correlation between teaching experience and technological comfort, and Malaysian teachers with the lowest education level were also found to have significantly lower technological comfort, compared with those with higher qualifications.

Overall, both Australian and Malaysian teachers reported similar **beliefs** about the usefulness and importance of Internet and digital technologies in early childhood classrooms. There were differences in their **beliefs** on the potential impediments of using technology in their classrooms, but these were not predictive of their reported classroom practice. There were some differences in the availability of ICT devices (desktop computers, laptops, tablets) in classrooms across the two countries, with more ICT devices in the Malaysian classrooms compared with Australian classrooms. Nevertheless, there was an overall similar low level in availability of Internet enabled ICT devices for both Australian and Malaysian classrooms; only 53% of Australian teachers and 43% of Malaysian teachers reported having Internet-enabled devices in their classrooms. For reported classroom practice, the data show a low baseline in reported Internet use for teachers in both countries, even taking into account that nearly half the classrooms in both countries did not report having Internet access. A high proportion of teachers in both countries reported that children were never engaged in Internet activities in their classrooms.

Finally, a regression analysis predicting teachers' reported Internet-related classroom practice found that teacher' beliefs that the Internet is useful for children's learning was the emerging predictor, accounting for moderate impact on their reported implementation of

Internet in the classroom. The implications of these findings will be discussed in the next chapter.

Chapter 5: Discussion and Conclusions

The chapter first discusses the background of the research, and findings based on key themes identified in the study. As well as discussing the strengths and limitations, the constraints and challenges, the chapter discusses the implications of the study in relation to early childhood teachers' professional development and pre-service teachers' education in the contexts of Australia and Malaysia. The chapter concludes with recommendations for future research.

5.1 INTRODUCTION

We live in a world today where Information and Communication Technologies (ICTs), including the Internet, have become integral to life in the 'knowledge society'. Though there is public debate about the safety and overuse of ICTs by children, and some questioning of the possibility of very young children's use of these technologies, there is widespread acceptance of the value of ICTs in the field of education in facilitating learning across the diverse range of educational settings. Failure to have access to ICTs and the Internet is recognized increasingly as an issue of social equity (Doctor, 1991; Warschauer, Knobel, & Stone, 2004; Warschauer & Matuchniak, 2010). The recognition of the integral role ICTs play in access to knowledge is evident in curriculum documents across different nations that include embedding of access to digital technologies from the very beginnings of the education system (Yelland, 2001).

The emerging trend of young children using ICTs (Wohlwend, 2009) and accessing the Internet (Calvert et al., 2005; Media & Rideout, 2011; Vandewater et al., 2007) has been the underlying motivation for this study. Education policy

makers, as well as researchers, have a shared interest in optimizing the use of ICTs in early childhood classroom settings to address the needs of this group of young children born into a digital age (Holmes, 1999). Provision of infrastructure of hardware and software, while a necessary condition for ICT use in the classroom, is unlikely to be sufficient to optimize practice (Livingstone, 2011). This thesis identified factors that are associated with early childhood educators' ability to positively and confidently integrate ICTs and Internet use into their everyday teaching practice.

Although there are arguments on the appropriateness and risks of Internet use by young children (Ey & Glenn Cupit, 2011; Grey, 2011; Staksrud & Livingstone, 2009; Valcke, De Wever, Van Keer, & Schellens, 2011), recent empirical studies identify many positive outcomes of Internet use in early childhood education (Davidson, 2012; Fesakis et al., 2011; Katz, 2011; Spink et al., 2010). These studies suggest that the various Web-based activities that engage these young children benefit their development of literacy and numeracy skills and knowledge, and also the ability to multitask when using Internet activities as multi-faceted tools. These studies draw attention to the preschool teachers' role as the de facto determinant or gatekeeper of ICTs implementation in their own classrooms.

While there are studies that discuss the uptake of ICTs among early childhood teachers and their beliefs (Gialamas & Nikolopoulou, 2010; Wood et al., 2008; Yurt & Cevher-Kalburan, 2011), there are few studies that explicitly focus on the use of the Internet in early childhood education settings, and fewer still that take a cross-national perspective, as in the current study.

The current study has investigated the 'state of play' of ICTs and Internet use reported by early childhood teachers in a cross-national comparative study of

Australian and Malaysian early childhood education contexts. The study focused on the teachers' self-reported current use of ICTs and the Internet, overall comfort with ICT and the Internet from a personal and professional perspective, as well as teachers' beliefs on the use of both ICTs and the Internet in the early childhood education context in the two countries, and their reported educational practice. The study is significant in addressing both structural factors (ICT and Internet availability within the classroom, age of the teaching workforce) and attitudinal variables (teachers' confidence in using ICTS and the Internet, and beliefs towards incorporating ICT and Internet in the classroom), to examine the joint influence of these factors on teachers' classroom practices around using ICTs and Internet in the preschool years of education in Malaysian and Australian context. The results have direct implications for education policy makers in preparing new teachers, and directing professional development of existing staff.

5.2 KEY FINDINGS

This section discusses the findings of the study in relation to the key themes and research questions as outlined in Chapters 1 and 3. Following a brief overview of the factors that have been found to influence teachers' reported ICT and Internet practice in the classroom, a more detailed discussion of the results in relation to each specific research question will be provided, by examining findings in relation to teachers' comfort levels with ICTs and the Internet, their beliefs towards ICTs and Internet in the classroom, and their reported classroom practice (sections 5.2.1 to 5.2.3). Similarities and differences across Australian and Malaysian teachers' comfort levels, beliefs, and reported Internet usage in the classroom are considered for each factor. These finding will be considered in light of existing theory and research, and their implications discussed.

The key finding of this study is that there are common patterns across reported practices of early childhood teachers in the two countries studied. Teachers were somewhat younger in Malaysia, with less teaching experience, and access to computers in classrooms somewhat higher. Access to the Internet in classrooms was uniformly low in both countries. In both countries there was recognition by teachers of the importance of ICTs for children, yet very few teachers were integrating their use into their classrooms. Among both Australian and Malaysian teachers, beyond the clear structural barriers of access to hardware and Internet connection, the key factor that predicted (albeit moderately) teachers' reported level of integration of ICT into their practice was teachers' positive beliefs that the Internet provides useful and important learning opportunities for young children. The current low baseline in Internet related practice reported among the teachers studied in both countries attests to the need to build teachers' comfort, confidence and knowledge of possible learning opportunities, in addition to provision of ICTs and Internet access in classrooms.

The results indicate that there is a need for greater availability and access to ICTs and the Internet in early childhood classrooms and also suggest that, alongside this, initial training and on-going professional development is necessary to show possibilities and increase comfort, confidence, and implementation.

5.2.1 Teachers' Comfort Level of ICTs and Internet Use

What are the teachers' comfort level of ICTs and Internet use in their personal and professional early childhood education contexts, and how does that map onto age, experience and education level? There were several key findings in relation to the multidimensional nature of this research question. Teachers' comfort with technology was assessed in two dimensions: their comfort in using non-Internet

based ICTs such as word processing, PowerPoint, digital photo and paint programs, and their comfort level of Internet use, involving activities such as online searching, using email, using social network like Facebook and Twitter, and using communication program such as Skype.

In general, preschool teachers in Australia and in Malaysia possess very similar, and moderate to high, comfort levels of ICT and Internet use, though they varied in certain aspects of use. Most teachers in both countries were either very comfortable or moderately comfortable in using a range of digital technologies. This comfort level likely reflects the high computer and Internet penetration for teachers in both countries, with more than 80% Internet penetration in teachers' homes, regardless of their cross-national context.

There were no differences between Australian and Malaysian teachers in their reported comfort using general ICTs, but differences emerged in their comfort with online or web-based activities. Australian teachers reported being more comfortable, compared with teachers in Malaysia, in online searching, using email, and communication programs such as Skype, whereas teachers in Malaysia reported a significantly higher comfort level in using social networking programs such as Facebook and Twitter compared with their Australian counterparts. The majority of teachers in both countries reported being very comfortable doing online searching. Teachers were somewhat less comfortable (i.e., very or moderately comfortable) in explaining how to use technology to children. Despite some cross-national differences, these two aspects of comfort with technology were highly correlated, and summary scores were combined into one 'comfort with technology' scale for inferential analyses.

The second aspect of this question concerns the relationship between teachers' comfort with technology and the demographic factors of age, teaching experience, and education level. These relationships were investigated separately within Australian and Malaysian cohorts. Teachers' age and teaching experience were highly inter-correlated. The correlations suggest that older teachers (who also have more teaching experience) were somewhat less comfortable in their use of ICTs and the Internet compared with younger teachers. This applied in both Australian and Malaysian contexts, although the relationship between teaching experience and comfort with technology was stronger for Malaysian teachers, and weak for Australian teachers.

Teachers' education level had only a minor relationship to comfort levels, with only those Malaysian teachers with the lowest level of education (school completion, SPM or equivalent) reporting significantly less comfort with technology than all other groups. While there are limited previous studies on teachers' academic qualification affecting Internet usage, Teo (2001) found that higher academic qualifications were positively related with usage, as higher educational level could mean better knowledge about ICTs. An earlier study by Brancheau & Wetherbe (1990) also found that early adopters of spreadsheet software were those with a higher education level. In another study in Singapore, however, Teo, Lim, and Lai (1999) found that their higher education group spent less time on Internet use, but with more diverse use when compared with those with lower education levels, who spent more time with the Internet but with lesser diversity. As the current study investigated frequency of Internet use, there may be education-related differences in the diversity or quality of Internet usage that were not captured in the survey.

5.2.2 Teachers' Beliefs on the Relevance and Importance of Internet

What are the teachers' beliefs on the relevance and importance of ICTs and Internet usage for young children in the early childhood context?

In seeking teachers' beliefs on the importance of Internet use, the study included questions asking teachers about their beliefs on computers and general ICT use. Teachers' views or beliefs about ICTs and Internet use in early childhood classrooms centred on two factors: their beliefs about the usefulness and importance of computer technologies in early childhood classrooms and in young children's learning, and their beliefs concerning potential impediments to incorporating ICTs in the classroom. The majority of early childhood teachers in both Australia and Malaysia held positive beliefs that ICTs and the Internet are useful and an everyday part of learning in early childhood contexts. For example, the vast majority of teachers from both Australia and Malaysia agreed with the idea of using technology to build on interests that children bring to the classroom or children's existing technological experience. Many teachers in both countries also agreed that it is advantageous for the children to have experience with computers at home, and that ICT and Web searching support children's literacy skills and enable learning opportunities for peer interaction among these young children. However, more teachers in Malaysia expressed their concern about children spending too much time with technology.

There were few cross-national differences in the strength of these beliefs, and teachers' beliefs about the usefulness of ICTs and the Internet were moderately predictive of their reported classroom practice. This finding is similar with previous studies showing teachers' overall positive beliefs and attitudes towards computers (Chen & Chang, 2006; Teo et al., 2009).

There were differences in teachers' beliefs about the potential impediments to ICT and Internet use across the two countries, with more Malaysian teachers believing that young children do not have the literacy skills to engage in Web searching, and more Malaysian teachers endorsing the belief that their role is to deal with technological issues surrounding ICT and Internet use. This difference may reflect the constructivist pedagogy more prevalent in Australia. Previous researchers (Eugene, 2006; Roehrig, Kruse, & Kern, 2007) found that teachers who hold a more constructivist pedagogy are student-centred and have higher levels of technology use compared to those with traditional beliefs, who had a lower level of technology utilization. Constructivist teachers are more likely to agree with the statement that the young children, as young as three years of age, could have the necessary literacy skills in doing Web searching, despite of their young age. Differences in beliefs about the technology role of the teachers may reflect differences in the availability of technological support for teachers in both countries. This consideration was not measured in the current study.

Teachers' beliefs about impediments to Internet use, however, were not predictive of their reported classroom practice. Overall, the results of the current study of teachers' comfort with technology and teachers' beliefs towards technology use are comparable with previous studies of Malaysian and Singaporean teachers by Teo, Lee, Chai, & Wong (2009) and Mukti (2000). Teachers in both countries reported high to moderate levels of comfort with technology, and endorsed beliefs about the importance of ICTs and Internet technology in their early childhood classrooms.

Some possible contextual factors such as the push and incentives for ICT usage in both countries may have impacted the teachers' comfort level with technology.

For example, the incentives to purchase personal computers, technological devices or gadgets, especially for educational purposes, for example in the latest education blueprint in Malaysia (Ministry of Education Malaysia, 2012), and in the former Australian Digital Education Revolution initiatives (O’Connell, 2009; Rosman et al., 2008; Rudd et al., 2007) includes rebates and incentives to subscription of broadband services, to name a few, has increase the number of digital technology and Internet users in education and at large.

5.2.3 Teachers’ Reported Use of ICTs and the Internet in Classrooms

What are the approaches adopted by early childhood teachers in their classrooms when using ICTs and the Internet?

Although a high percentage of teachers in both countries reported positive beliefs about the use of technology and the Internet in early childhood contexts, their reported classroom practices did not match these beliefs. Overall, there were very low baselines in teachers’ reports of ICT and Internet related practice in both Australian and Malaysian classrooms.

The low level of reported classroom practice using the Internet is in large part due to the significant percentage of teachers in both countries who reported not having Internet access (and in some cases, a computer) in their classroom. Only 53% of Australian teachers and 43% of Malaysian teachers reported having Internet-enabled devices in their classrooms. This lack of Internet access will directly impact the implementation in classrooms with no Internet-enabled devices. These teachers, regardless of their beliefs about the importance of ICTs and the Internet in young children’s education, were not able to conduct any Internet or Web-based activities in their classrooms.

These data therefore show that many teachers' use of ICTs and the Internet in classrooms is still limited by a basic lack of access to Internet, both in Australia and Malaysia. This issue of lack of computers in some classrooms and widespread lack of Internet access is not in parallel with the description of ICT use within early childhood curriculum guidelines. In Queensland, the policy framework *Building Waterfalls I* (Creche & Kindergarten, 2011) promotes enriching young children's learning experiences by using ICT as one of the available tools in a wide range of activities that involve communications, investigations, information seeking, designing, draw and composing content. In Malaysia, ICT use is supported in various curriculum documents in early childhood (Basri, 2006; Curriculum Development Centre, 2001) and in previous research undertaken in terms of ICT implementations in Malaysian education contexts (Lateh & Muniandy, 2010; Zain, Atan, & Idrus, 2004) as well as previous research examining technology incentives by the government of Malaysia. The current data suggest that there is still a large gap between educational policy and aspirations, and provision of basic ICT infrastructure to support early childhood classroom practices.

The low baseline of reported computer and Web-based activities in early childhood classroom practice, however, is not entirely explained by this significant lack of infrastructure in these classrooms. Approximately half of teachers in both countries reported that they never undertook activities such as intentional teaching of Web searching skills, or encouraging children to work individually at a computer. Activities where children worked individually doing Web searching were reported as a rarity in both countries; more than 75% of Australian and Malaysian teachers said this never happened in their classroom. The only significant difference between Australia and Malaysia was related to child-initiated discussions where the teacher

encouraged seeking information, and child-adult interactions associated with Web searching, with both these activities reported more frequently in Australian classrooms than in Malaysian classrooms.

There were, however, a very small number of early adopters in Australia who reported using both computers and Internet in their classrooms on daily basis. For example, between 2% to 7% of Australian teachers reported daily activities in the range of: 1) child-initiated demonstration with classmates about how to use technology, 2) child-initiated discussion with the teachers about how to find out information, 3) child-adult interacting doing Web searching, 4) child working individually at computer and 5) child working individually doing Web searching, whereas no Malaysian teachers in this sample reported daily use of the same range of activities. Of course, this finding should not lead to the generalisation that there were no teachers in Malaysia who provided these activities on a daily/regular basis. The existence of such a group is important, because it may be possible to harness the enthusiasm and expertise of the early adopters to support their colleagues in integrating ICTs and the Internet into their own classroom practice. Further actions in terms of teachers' peer mentoring, leadership and professional support are discussed in the section discussing the implications of the study. As for the gap between the teachers' beliefs and their practice, there are possible reasons such as teachers' workload, preparation time needed for implementing ICT and lack of technological support in their classrooms as reported in many previous studies (Bingimlas, 2009; Keengwe & Grace, 2009; Mumtaz, 2000).

5.2.4 Predicting Teachers' Internet Use in the Classroom

Given the strong mismatch between teachers' relative comfort with digital technology and positive beliefs about its usefulness in the classrooms, on the one

hand, and the very low levels of reported classroom practice, on the other hand, what are the factors that predict teachers' classroom practice?

The regression analysis in the current study examined both structural and attitudinal factors as predictors of teachers' reported classroom practice among those teachers who had access to computers and the Internet in their classrooms. The significant predictor that emerged was teachers' beliefs that the Internet is useful and important to children's learning.

Previous studies by Teo et al (2009) and Mukti (2000) revealed teachers' attitudes towards computers, perceived usefulness and perceived ease of use as strong primary factors that contribute to behavioral intention of using ICT. The current findings on the factors that predict reported classroom practice, however, suggest that teachers' positive beliefs are not as strongly predictive of actual classroom practice as they were of teachers' behavioral intentions in the Teo et al (2009) study. The current findings are in line with the original model of Technology Acceptance Model or TAM (Davis, 1989), which suggests these factors and others (perceived usefulness, perceived ease of use, subjective norms, supportive conditions, and attitude towards computer use) to be moderate determinants in predicting the practice or behavior of teachers. In Malaysia, many studies have used TAM and its extended model as the theoretical basis for exploring technology acceptance of users in various fields in the Malaysian context (Ramayah & Jantan, 2004; Ramayah, Jantan, & Ismail, 2003), including for in-service teachers of ESL (English as Second Language) (Md Yunus, 2007) and pre-service teachers (Teo, 2010b). Many of these studies have concluded that perceived usefulness of technology is significantly associated with technology use. It appears, however, that

teachers' beliefs are more predictive of their intentions than they are of actual classroom practice.

Teachers' overall comfort with computer and ICTs was also somewhat weakly correlated with their reported classroom practice, but did not emerge as a significant predictor of classroom practice in the regression model, once other variables were controlled. Previous research suggests that early adopters are teachers who have a high comfort level, and that this is inherently important in classroom practice (Chong, 2012; Rachael, 2004; Rogers, 2003; Wohlwend, 2009). Teachers in both Australia and Malaysia, however, reported moderate to high ICT comfort levels and that they were frequent users of ICTs, with high percentage having Internet access at home. This familiarity and comfort with technology did not translate into their classroom practice. Early adopters may be able to lead the way in helping their fellow teachers to develop strategies for classroom practice that connect with their pedagogical beliefs (Edwards, 2005; Marshall, 2004).

Structural factors, specifically the availability of computers as well as Internet access in the classroom, clearly also impacts on classroom practice of ICT among teachers (Mumtaz, 2000). The infrastructure support is essential for teachers, to enable the practice of ICT and Internet use to take place in their classrooms. The issue of not having sufficient computers or Internet access in classrooms is still one barrier that holds back ICT integration in both Australian and Malaysian classrooms, where teachers reported diverse responses in terms of ICT facilities available in their classroom.

In an earlier study of Malaysian teachers' perceived readiness for online collaborative learning, Koo (2008) found that inadequate access to technology, such as computers and the Internet, as well as time restriction, were two key impediments

to implementation. This finding is present also in the current study, which demonstrates that a significant factor impeding actual classroom practice was the availability of technological devices in classroom. Besides having a positive attitude and being comfortable with technology, teachers need access to appropriate computer infrastructure to allow the use of technology itself. Having access to the right computer hardware and software, and having Internet access, is important as it will allow teachers to venture into Internet use with the young children once other supportive factors are present.

While the majority of the teachers in both countries reported that they had at least one computer (desktop, laptop, netbook, or tablet), more than half reported no Internet access in their classrooms. Thus, the functionality and the Internet penetration were still low, despite supportive ICT policies in early childhood education for both countries. There is a need for a sustainable solution and this issue needs to be resolved urgently to ensure this infrastructure impediment will not deter teachers with positive attitudes towards these technologies to harness their enthusiasm effectively and to further engage more teachers to feel comfortable with implementing ICT or the Internet in their classrooms, and have the resources to do so.

Finally, regression analysis also identified differences across the two countries as a significant predictor of reported classroom practice, indicating somewhat higher levels of reported practice in Australia, once the other predictor variables were controlled. This may reflect the fact that Australian classrooms were somewhat more likely to have the Internet use compared with Malaysian classrooms, and there were more (though still few) early adopters of computer and Internet activities in Australia than in Malaysia. This difference might also reflect structural differences in early

childhood delivery in the two countries, with differences in the structure and type of early childhood settings, their purposes, and the age of the children who attend them. Despite these structural differences, there were more similarities than differences between the two countries in teachers' beliefs and comfort with technology.

5.2.5 ICT Integration for Early Childhood Teachers

An Australian study by Edwards (2005) identified three main reasons why preschool teachers use computers in their classrooms. The first was the teachers' wish to keep abreast with technology; the second was because a decision was made by the school management body to use computers in the classroom; the third was, because computer use was going to give an edge in young children's learning experience.

Concerning the first point (keeping abreast with technology), teachers in the current study reported fairly robust levels of computer and Internet literacy, and moderate to high levels of comfort with technology. With regard to the second point (provision of ICTs in the classroom), the current study's results show that there are still many classrooms, in both Australia and Malaysia, in which the basic computer and Internet infrastructure needed to incorporate these technologies into the classroom is still missing. Clearly, a significant structural barrier to teachers incorporating ICT and Internet activities in their classrooms is the widespread lack of appropriate computers and Internet connectivity, both in Australia and in Malaysia. These structural factors restrict the ability of even the most technologically savvy and enthusiastic teachers to implement ICT and Internet technologies in their classrooms (McManis & Gunnewig, 2012).

With respect to Edwards' (2005) final point, the Australian and Malaysian teachers in the current study reported overall positive beliefs about the usefulness of

ICTs and the Internet in young children's learning. These positive beliefs were the strongest predictor of classroom practice in those classrooms with Internet access. There was, nonetheless, a significant gap between teachers' beliefs and their classroom practice, even in those classrooms with Internet access. Statistically speaking, less than 30% of the variability in classroom practice in these classrooms could be predicted by teachers' positive beliefs and the other predictor variables.

This gap between beliefs and implementation suggests that there are other factors that must be in place to encourage a strong uptake of ICTs and Internet technology in early childhood classrooms. Earlier studies found a much stronger connection between teachers' beliefs and their intention to implement ICTs in the classroom (Mukti, 2000; Teo et al., 2009) compared to the relationship between teachers' beliefs and reported classroom practice found in this study and by Davis (1989). This gap between intention and practice suggests that access to training and professional development are needed to help teachers develop skills and pedagogically sound strategies for incorporating ICTs and the Internet into their classroom practice. Although access to training was not assessed in the current study, its importance has been highlighted in many previous studies (Martin et al., 2010; Richards, 2006; Rosen & Jaruszewicz, 2009; Shillady, 2012; Yurt & Cevher-Kalburan, 2011). This issue of professional development and training to allow teachers' comfort with technology and positive attitudes to translate into sound pedagogical practice will be discussed further in the implications section of this chapter.

5.3 STRENGTHS AND LIMITATIONS

This study is the first, to the author's knowledge, to provide a comprehensive and cross-national survey of the computer skills, comfort levels, attitudes, and classroom

practices around ICTs and Internet use of early childhood teachers in an established and an emerging economy. Key strengths of the study include the relatively good response rate (though not ideal) in both Australia and Malaysia, the opportunity to collect data using the same survey questionnaire (with minor modifications) in both countries, and the comprehensive nature of the survey itself. In addition, the Malaysian survey was provided in both English and Malay, as suggested by a confirmation panel in early childhood from Malaysia. This decision proved to be advantageous, as many Malaysian teachers chose to answer the Malay version of the survey.

In conducting the research, there were also some challenges and limitations. Overall, there were five key limitations identified in the study.

First, there are differences in the structure of the early childhood education systems in Australia and Malaysia, in terms of the children's age of entering the first year of kindergarten or preschool, the size of their classrooms, duration of preschool education per child, as well as the type of administrative organization endorsing each of them. Overall, the Malaysian early childhood system is structurally more variable than Queensland's Crèche and Kindergarten system that comprised the Australian cohort. In Malaysia, there are several key bodies overseeing early childhood centres, covering a wider age range (3 to 6 years of age), compared with Australian centres (3 to 5 years of age). In addition, there are different agendas in terms of the educational focus in early childhood. When comparing the two groups of teachers from the two countries, it is important to remember that these differences in systems are likely to impact various factors in the current study. For example, cross-country differences in teachers' early childhood education curriculum may have some impacts on how the teachers conduct their teachings and practices with ICTs in their classrooms, as

well as their pedagogical beliefs. Nonetheless, despite these structural differences, there were more similarities than differences in the comfort level and attitudes towards ICTs of the teachers in both countries.

Second, differences in organizational structure between the two countries also affected the recruitment process. Participants in Australia were from one umbrella organization (the Crèche & Kindergarten Association), an established community-based and government supported domain, whereas in Malaysia the target groups were more diversified in terms of having various public government-based preschools and also some private kindergartens. In the recruitment process in the Malaysian data collection, there were many organisations involved in the study, leading to limitations in gaining access to teachers. An advantage, however, was that the Malaysian data collection surveyed more diverse types of preschools, ranging from different early childhood classroom backgrounds and various organisation types that differed in terms of their organisational policies and procedures.

Third, the nature of the survey and its implementation online were also likely to produce a sampling bias in both countries. Although steps were taken to avoid this, through follow-up phone calls, and provision of paper-based surveys if teachers preferred, teachers who aren't familiar and comfortable in using the Internet may have been less likely to participate. The impact on the results of the study may be over-estimating factors such as Internet penetration, and teachers' comfort with technology, and their positive attitudes and also classroom practice, as teachers who are not familiar with technology are less likely to respond. In order to overcome this issue, the survey invitations were extended to all groups of teachers and hard copies were also sent to centers without Internet access. Furthermore, when contacting the participants, teachers were informed that the study is not only for teachers with

Internet access or having Internet use in the classroom, and they were told about the overall benefits the research could bring. In both Australian and Malaysian surveys, printed copies of the survey were sent to centers that did not have Internet access.

Fourth, there are some variables of interest that were not included in the survey questionnaire. As it was important that the survey be of a length that did not discourage teachers completing it, it was not possible to gather data on every potentially significant aspect of the teachers' experiences, practices and beliefs. For example, information was not sought on the level and nature of professional training in using ICTs undertaken by teachers. Future studies should consider useful additional sources of information. In addition, feedback from the candidate's confirmation panel led to the addition of two new questions in the Malaysian survey that had not included in the Australian survey (which had already been completed). Thus, these variables could not be compared across the countries. This was an inevitable limitation since feedback was given during the candidate's confirmation seminar and before the second phase of data collection.

Finally, the survey relied on teachers' self-reports, which are subject to biases such as positive self-presentation and memory limitations. Teachers were assured of the confidentiality of their responses, which may serve to facilitate honest and accurate responding. In addition, given the low levels of Internet-based classroom practice reported by the teachers, there is no evidence of a significant self-presentation bias in teachers' responses.

In conclusion, there were different limitations met by the candidate in conducting the research in the two different cross-national early childhood settings in Australia and Malaysia. The different nature of organisations and childcare centre management in the two different settings posed unique challenges, although the

similarities in results for the Australian and Malaysian teachers suggest more similarities than differences between the two countries. The results must be interpreted cautiously, with an eye to potential sampling bias (with teachers who are not Internet-savvy probably less likely to respond). Lastly, with the benefit of hindsight, there are other variables, particularly regarding professional development and support, which would have added useful information to the survey.

5.4 IMPLICATIONS

The key findings of this study were as follows: First, there remains a widespread lack of ICTs and Internet infrastructure in many early childhood centres in Australia (Queensland) and Malaysia (Selangor). This finding leads to the first key implication of this study; ICT and Internet infrastructure needs to be more fully provided in early childhood classrooms, in line with current educational policy in both Australia and Malaysia.

Second, early childhood teachers in both Australia and Malaysia were reasonably computer literate and confident in their use of ICTs and the Internet, although there were some teachers who lacked ICT skills and confidence, and this was moderately correlated with age. This finding suggests the need for ongoing professional development for teachers (particularly older teachers) to support the development of ICT skills.

Third, most early childhood teachers in both countries reported positive beliefs about the usefulness and value of ICTs and the Internet in their early childhood classrooms, and these beliefs were the strongest predictors of reported classroom practice in those classrooms that had Internet access. Nevertheless, there is a large gap between teachers' generally positive beliefs about ICT and Internet use in the classroom and their reported classroom practice. Moreover, teachers' beliefs and the

other variables assessed in this study accounted for less than a third of the variation in teachers' reported classroom practice. Although Teo et al. (2009) and Sang (2010) found a strong positive relationship between teachers' beliefs about the usefulness of ICTs and the Internet in their classrooms and their intention to incorporate ICTs and the Internet into their classroom practice, the present study and others (Davis et al., 1989) found that the link between teachers' beliefs and actual classroom practice is much weaker. This gap between intention and practice is likely to reflect the difficulties that teachers experience in effectively incorporating ICTs and Web-based activities into their classrooms in an integrated and pedagogically sound way (Martin et al., 2010). This finding suggests the need for effective professional development for early childhood teachers to support them in effectively incorporating ICTs and Web-based activities into their classroom practice.

Overall, there are two major recommendations based on this study: better resourcing of early childhood classrooms to ensure the availability of computers and the Internet for classroom use; and the need for in-service professional development for teachers to ensure that all have the opportunity to develop computer literacy, to understand the value of ICTs in young children's education, and importantly, to develop pedagogically-sound strategies for successfully incorporating ICTs into their early childhood classrooms.

5.4.1 In-service Teachers' Professional Development (PD)

The lack of computing and Internet facilities needs to be addressed in order to allow positive ICT integration to happen in early childhood classrooms, while having professional support for those teachers who have ICTs and Internet access. Structural factors still remain important for teachers' uptake of ICT and their Internet use. As indicated in the study, at least half the classrooms surveyed do not have Internet

access – a situation which will deter even teachers with the most positive attitudes and comfort with ICT and Internet from implementing ICT and Internet practices in their classrooms.

The wide gap between teachers' positive beliefs about the importance of ICTs in the classroom and their low levels of classroom practice thus points to the need for targeted professional development to help teachers implement ICT practice in their classrooms. Although most teachers have a positive mind set towards ICTs and a moderate to high comfort level with ICTs, implementation in the classroom will be constrained if they lack the know-how or the right skills in integrating ICTs in early childhood classrooms, which is very different from using ICTs for their own use.

In early childhood education, there are various challenges for educators to integrate ICTs in their classrooms (Keengwe & Grace, 2009; Wood et al., 2008) as everyday pedagogical practice. Although debate on the appropriateness of having ICTs in the classroom has been considered now for many years (Fleer, 1996a, 1996b), many teachers are still hesitant in implementing ICTs in the classroom. Various challenges that involve intrinsic factors, such as teachers' skills, knowledge, confidence and beliefs, or extrinsic factors, such as infrastructure and culture, make a difference in uptake of ICT use (Ertmer & Ottenbreit-Leftwich, 2010).

To incorporate ICT or Internet use as a concrete pedagogical practice for teachers, rather than just having technological devices present in the classroom, is clearly not an easy task. It requires concerted effort by education providers and centre management to not only provide appropriate infrastructure, but also to support the teachers' professional development, as well as providing strong policy support for implementation (Ertmer & Ottenbreit-Leftwich, 2010; Lloyd & Esjeholm, 2010; Martin et al., 2010; Mukti, 2000; Romeo et al., 2012; Shillady, 2012). Ertmer and

Ottenbreit-Leftwich (2010) identified five variables that are needed for changes in teaching practice, including teachers' knowledge, self-efficacy, their pedagogical beliefs, subject and school culture.

One suggestion arising from this study, therefore, is to ensure that all teachers have access to professional development that supports teachers to implement pedagogical change to equip them with the right skills and support needed to feel comfortable in using technology and exploring new techniques in their classrooms, in order to improve the learning process for young children. In other words, having a positive attitude towards technology use is not enough; there is a need for professional training and development to support teachers in using technology or the Internet in their early classrooms.

Martin et al.(2010) recommend that instructional-technology professional development that is directly associated to a program's main conceptual basics can yield positive teacher and student outcomes. Keengwe and Grace (2009) also suggest that teachers need to be able to develop appropriate strategies to assimilate technology into their teaching and children's learning, in line with constructivist pedagogy, through an appropriate professional development model.

A recent trend in teacher professional development that could prove useful in the current context is the peer mentoring model (Heikkinen, Jokinen, & Tynjälä, 2012) that can provide positive lifelong learning experiences that are more practical for teachers to adapt. Some teachers in the current study who were early adopters of ICTs and the Internet, for example, may prove to be valuable resources for such a model. Interrogating their practices may provide insights into how best to support other teachers in integrating these technologies into their classrooms.

Of course, pre-requisite to teachers' professional development is the requirement for concrete and continuous support from all stakeholders, including school management and higher administrative policymakers. It is important for them to understand that teachers' professional development in technology integration is crucial for harnessing current technology trends to benefit the educational needs of young children. One implication evident from the study is the role of teacher professional development. This study proposes two major initiatives in relation with teachers' professional development, specifically for early childhood context.

The first proposal is the development of teacher role models in early childhood ICT implementation (using the concept of a teachers' peer-mentoring system and harnessing the ideas and expertise of early adopters), where there will be an in-house or peer support teacher that allows knowledge sharing, peer discussions and transferable ICT skills to be in place. This may not necessarily require having a physical existence in every early childhood centre, but a virtual model could be a possible way to begin. In achieving professional development, Parette et al. (2013) recommend the potential of technology user groups for early childhood teachers, to be led by facilitators to assist teachers to gain both operational competence and functional competence to apply ICTs in their teaching, and to incorporate these activities into daily planning, where possible.

The second proposal is to have an effective training system where resources to develop teachers' ICT skills and pedagogical practice will be available through self-assessed, self-directed learning, or collectively, to provide strategic, continuous dynamic ICT training for teachers with different ICT competencies. Comprehensive resources on ICT integration and Internet based learning resources for early

childhood education needs to be made available in online (Downer, Kraft-Sayre, & Pianta, 2009) or offline mode. This proposal is underway in Malaysia.

In the most recent Malaysian blueprint education document (Ministry of Education Malaysia, 2012), the government of Malaysia indicated the need for continuous development of teaching professionals. One measure starting in 2013 was an individualised continuous professional development (CPD) program for every teacher that includes involvement in common training requirements and electives, guided by network of peers including teacher coaches, senior teachers, and principals to propagate best practice (Ministry of Education Malaysia, 2012, p. 35). The focus is on supporting teachers who may have different levels of teaching competency to develop effective strategies for teaching practices and also to positively adapt pedagogical perspectives with digital lifestyles that will benefit children and themselves.

Ongoing professional development is crucial for early childhood teachers to determine the success of overall ICT and Internet deployment in classrooms. Apart from having positive views and confidence in using ICT and the Internet, teachers need basic technical skills to implement ICTs and the Internet into their classroom practices. Teachers should be given sufficient technical training to ensure that they are digitally literate themselves, and specific training on how to embrace digital technologies and Internet for their daily teaching practices. This training includes how to engage young children with technology, such as using scaffolding to assist their active learning process.

Findings suggest that exposure to, and familiarity with, appropriate software or mobile applications would help to jumpstart teachers' use of ICT in daily classroom activities. First, teachers could gain familiarity with use of educational software in

helping children acquire understandings of literacy and numeracy. Associated with this recommendation is support for teachers to develop Web searching skills, for their own use and also for implementation with children in the classroom. There is abundance of tested and proven software available nowadays for use by young children, as well as software for educators that are either offline, Web-based or mobile in nature. For example, the use of educational software packages that nurture early literacy skills for young children at kindergarten classroom showed that consistent and regular use of technology bring out affirmative learning effects on young children's literacy development, at least in cases when facilitated by adults (Voogt & McKenney, 2008). Teachers tapping into this potential of digital tools could assist in children's learning.

Teachers can support young children to demonstrate their interest in the Web by using search engines tools (Spink et al., 2010) to encourage discussions of Web-search results among the children themselves, and with their teachers. This approach encourages positive use of the Internet for information-seeking purposes and for application of knowledge exploration skills at an early age, with guidance from teachers. A recent study by Houen (2012) suggests that the Web searching activities of young children with their teachers supports positive teacher-child interaction, promoting *in-situ* children's interactional competency, as well as use of various interactional resources to accomplish Web searching.

Mobile technologies are becoming more prevalent. For example, tablets such as iPads are becoming increasingly affordable digital tools to enhance young children's spontaneous and imaginative play, communication and collaborative activities (Verenikina & Kervin, 2011). There still a lack of guidance, however, on

how teachers can use digital technologies for play and creativity in the early childhood classroom.

Young children are exposed to and engaged in extensive range of media literacy (Marsh, 2004; Marsh et al., 2005). When combined with the notion that “creativity as an art of practice is intensely multimodal” (Marsh & Hallet, 2008, p. 148), teachers can be encouraged to use the potential of ICTs’ multimodality to nurture children’s creativity in early childhood classrooms. Hence, teachers require thorough understandings of how to engage young children with ICTs to expand their creativity domains.

An essential element for early childhood teachers’ professional development is a model that affords possibilities for teachers to develop positive understandings and be creative with multimodal use of ICTs in their classroom practice. Yelland (2007) urges bold moves in taking this initiative, suggesting a quest for a curriculum that supports new learning (Yelland, 2011). She calls for educators to reform their thinking to understand the importance of preparing and accommodating a collaborative and creative atmosphere for young children afforded through ICT use. This model of professional development requires specific, targeted professional development.

In summary, planning for strategic teacher professional development is crucial in ensuring the success of ICT integration in early childhood classrooms, and a priority in policymaking agendas. To transform their pedagogical perspectives and practice, these initiatives require continuous evaluation to deliver solid assistance to teachers and to meet the diversity of teachers’ ICT background and competency.

5.4.2 Pre-service Teachers' Education

In a previous Queensland pre-service teachers study, Tennent (2003) found that there was a gradual increase in the use of technology that comes with increase in knowledge of technology and an increased confidence level. This positive shift can be supported in pre-service teacher education. With most teachers' education nowadays including ICT as one modules for pre-service teachers (Connell, Kable, Linnane, Shearer, & Taylor, 2006; Creche & Kindergarten, 2011; NAEYC, 2012; Siraj-Blatchford & Siraj-Blatchford, 2006), this has opened up the potential for more new teachers to include ICTs in their teaching planning once they start teaching. Milman (2008) found that teachers' confidence evolved positively after completing an educational technology course during their pre-service teacher education experience.

From this study of early childhood teachers' beliefs and reported practices in both Australia and Malaysia, there are four suggestions for pre-service preschool teacher education:

- The value of ICTs and Internet use to be communicated clearly for pre-service teachers, as these positive attitudes are predictive of uptake in the classroom. Existing perspectives can affect the ways teachers conduct their classroom practices and make well-informed decisions for future ICT usage (Angeli, 2004).
- Having specific and clear ICT principles in early childhood curriculum objectives and enabling customizable modules that give pre-service teachers exposure to practical ICT tools. The TPACK framework model (Harris et al., 2009; Koehler et al., 2007; Mishra & Koehler, 2006; Mishra & Koehler, 2008) includes teachers' pedagogical knowledge (PK), technological

knowledge (TK) and content knowledge (CK). All three domains should be acquired by teachers prior to beginning their actual teaching experiences.

- Offering extensive training on actual ICT integration into classroom practice; by having in-house or actual practical workshops in preschools. More hands-on practice means more opportunity for pre-service teachers to be conscious about their possible choices of practices and opportunities for evaluating or reflecting upon technology integration in early childhood classrooms (Keengwe & Grace, 2009).
- Having a collaborative network with in-service teachers to give them exposure and involvement in discussion on the actual ICT implementation issues in early childhood classrooms, for them to be pro-active and prepare themselves for the real-world challenge, also to serve as an informal channel to enrich their learning experience.

In conclusion, a solid foundation is necessary for pre-service teachers' education, not only to support teachers to grasp the benefits and importance of ICTs as part of early childhood education, but also to ensure as much optimized exposure is given on how ICT usage should be part of their pedagogical practice..

5.5 FUTURE STUDY

Several possibilities for future studies can be suggested based on the current findings in both countries. First, it would be possible to replicate this comparative study model in other countries with different early education models and different economic status, and compare the result to the Australian and Malaysian contexts.

Second, future studies could further extend the study's recommendations concerning professional and peer support for teachers; for example, investigations of professional development for in-service teachers and how these have an impact on

attitudes and classroom practice in both countries. Focus group research may allow better understandings of teachers' professional development needs, and how these may best be met, in Australia and Malaysia. It is likely that there are different needs and unique challenges in each country's early childhood education contexts.

Future studies in both Malaysia and Australia could add more dimensions and depth to the current research by using a mixed-method approach for a more in-depth analysis that includes both qualitative and quantitative data on teachers' comfort level in technology use, teachers' beliefs in technology and current practice. Future research could be extended to include other stakeholders in the early childhood education context, including parents and young children themselves. Possible additions to the techniques used in the current study would be interviews, parent surveys, and video recording classroom practices on teachers' and children's interaction with technology (The ARC project, with which this study is associated, is pursuing this latter strategy).

5.6 CONCLUSIONS

In summary, the study has provided a cross-national comparison between Australian and Malaysian early childhood teachers, which enables a primary investigation on similarities and differences in teachers' overall confidence in using technology, their beliefs, and ICT use in early childhood classrooms across these two country settings. While most teachers in both countries reported reasonably high comfort levels in terms of personal ICT usage, and positive attitudes about the importance of ICTs and the Internet in early childhood education, this did not translate into their ICT classroom practice.

The study concluded that teachers' positive attitudes on Internet use moderately predict their classroom practice, but there is still a substantial gap

between positive attitudes and practice, even for those teachers in Internet-enabled classrooms. A substantial impediment is the very high proportion of classrooms still without Internet access. Teachers need to be equipped with Internet-enabled technological devices in their classroom in order to translate their positive attitudes into classroom practice. In addition, although teachers need to feel comfortable in using ICTs and Internet use, and to understand the relevance of ICTs and the Internet to early childhood education (which the majority of teachers surveyed in both Australia and Malaysia reported), a gap remains between their positive beliefs and classroom practice which suggests the need for effective professional development to support implementation in the classroom. There was little difference between Australian and Malaysian preschool teachers' in their overall personal ICT comfort and positive beliefs in ICT and Internet use, either in their classroom, nor in their low baseline in practice. Implications from the study, therefore, were in form of in-service teachers' professional development and pre-service teachers' curriculum, and suggested major paradigm shift of ICT use in early childhood education is needed by both teachers and policymakers.

In conclusion, this comparative study of early childhood teachers' resources, comfort, attitudes, and classroom practice around ICTs and the Internet in the two countries, Australia and Malaysia, has provided important information about the current status of ICTs and Internet use in early childhood classrooms, in the two countries, and has implications regarding the importance of having appropriate infrastructure to support ICT and Internet activities in early childhood classrooms, as well as the need for effective teachers' professional development and pre-service teachers' training as crucial factors needed to support Internet use in early childhood classrooms.

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Appendices

Appendix A– Excerpt taken from ARC project: *Interacting with knowledge, interacting with people: Web searching in early childhood*. Approach and Methodology

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Appendix A

Excerpt taken from ARC project: **Interacting with knowledge, interacting with people: Web searching in early childhood. Approach and Methodology**

APPROACH AND METHODOLOGY

Approval is given by CEO Barrie Elvish for this study to occur across 472 preschools and childcare services within the rural and urban community-based early childhood association, Crèche & Kindergarten in Queensland. Of these, a small proportion do not have Web access, but most have Web access and actively encourage children to engage in Web searching in the classroom. The C&K services the diversity of Queensland's population and are located across the state. There are a large number of programs in Brisbane and surrounding regions, and all regions will be engaged in parts of this study. A Queensland-only study was chosen on the grounds that the state of Queensland offers a diverse population and geography. Additional reasons were the support of the Crèche & Kindergarten, geographical convenience for researchers and keeping travel costs low. The large number of participants, and the diverse population and geographical locations of participants, helps offset the local nature of the sites. According to ABS (2009) data, when compared to other states, the state of Queensland sits mid-range in terms of households with access to broadband.

Appendix B

Excerpts taken from the Australian Early Years Learning Framework (EYLF) document: Belonging, Being and Becoming

OUTCOME 4: CHILDREN ARE CONFIDENT AND INVOLVED LEARNERS

Children resource their own learning through connecting with people, place, technologies and natural and processed materials

This is evident, for example, when children:

- engage in learning relationships
- use their senses to explore natural and built environments
- experience the benefits and pleasures of shared learning exploration
- explore the purpose and function of a range of tools, media, sounds and graphics
- manipulate resources to investigate, take apart, assemble, invent and construct
- experiment with different technologies
- use information and communication technologies (ICT) to investigate and problem solve
- explore ideas and theories using imagination, creativity and play
- use feedback from themselves and others to revise and build on an idea

Educators promote this learning, for example, when they:

- provide opportunities and support for children to engage in meaningful learning relationships
- provide sensory and exploratory experiences with natural and processed materials
- provide experiences that involve children in the broader community and environment beyond the early childhood setting
- think carefully about how children are grouped for play, considering possibilities for peer scaffolding
- introduce appropriate tools, technologies and media and provide the skills, knowledge and techniques to enhance children's learning
- provide opportunities for children to both construct and take apart materials as a strategy for learning
- develop their own confidence with technologies available to children in the setting
- provide resources that encourage children to represent their thinking

OUTCOME 5: CHILDREN ARE EFFECTIVE COMMUNICATORS

Children use information and communication technologies to access information, investigate ideas and represent their thinking

This is evident, for example, when children:

- identify the uses of technologies in everyday life and use real or imaginary technologies as props in their play
- use information and communication technologies to access images and information, explore diverse perspectives and make sense of their world
- use information and communication technologies as tools for designing, drawing, editing, reflecting and composing
- engage with technology for fun and to make meaning

Educators promote this learning, for example, when they:

- provide children with access to a range of technologies
- integrate technologies into children's play experiences and projects
- teach skills and techniques and encourage children to use technologies to explore new information and represent their ideas
- encourage collaborative learning about and through technologies between children, and children and educators

Appendix C
Excerpt from Malaysian's National Standard Preschool Curriculum (NSPC)
(*Kurikulum Standard Prasekolah Kebangsaan*)

Kurikulum Standard Prasekolah Kebangsaan

MATLAMAT

Pendidikan prasekolah bertujuan memperkembangkan potensi kanak-kanak berumur empat hingga enam tahun secara menyeluruh dan bersepadu dalam aspek jasmani, emosi, rohani, intelek dan sosial melalui persekitaran pembelajaran yang selamat, menyuburkan serta aktiviti yang menyeronokkan, kreatif dan bermakna. Ini adalah untuk meningkatkan kemahiran, menanam keyakinan dan membentuk konsep sendiri yang positif pada diri kanak-kanak agar mereka berjaya dalam persekitaran sedia ada dan bersedia untuk menangani cabaran dan tanggungjawab di sekolah rendah kelak.

OBJEKTIF

Kurikulum Standard Prasekolah Kebangsaan menyediakan peluang kepada kanak-kanak berumur empat hingga enam tahun untuk mencapai objektif dalam aspek jasmani, emosi dan sosial, intelek dan rohani seperti berikut:

- i. Membina kecergasan badan.
- ii. Mempunyai tubuh badan yang sihat.
- iii. Mempraktikkan amalan kesihatan yang baik.
- iv. Mempraktikkan langkah-langkah menjaga keselamatan diri.
- v. Menguasai kemahiran motor halus dan asas motor kasar.
- vi. Mempunyai kematangan emosi.
- vii. Mempunyai konsep sendiri yang positif dan jati diri.
- viii. Berani menyuarakan pandangan dan perasaan.
- ix. Berkebolehan berinteraksi dengan orang lain.
- x. Boleh bekerja secara bersendirian dan juga bekerja secara berkumpulan.
- xi. Menghormati perasaan serta hak orang lain dan seterusnya membentuk perhubungan yang positif dengan orang dewasa serta rakan sebaya.

- xii. Mengamalkan nilai mumi.
- xiii. Mengamalkan nilai-nilai Islam dalam kehidupan seharian untuk murid beragama Islam.
- xiv. Berkomunikasi menggunakan bahasa Malaysia, bahasa Inggeris dan bahasa pengantar dalam konteks kehidupan harian.
- xv. Meneroka persekitaran menggunakan kemahiran proses sains asas.
- xvi. Menggunakan kemahiran matematik asas dalam menjalankan tugas harian dan menyelesaikan masalah.
- xvii. Menggunakan kemahiran berfikir kritis, kreatif dan inovatif dalam pembelajaran dan kehidupan seharian.
- xviii. Mengembangkan daya kreatif dan estetika
- xix. Menghargai keindahan alam dan warisan budaya

Appendix D Participant Introduction page to survey, in Queensland, Australia



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Interacting with knowledge, interacting with people: Web searching in early childhood

Thank you for participating in our study investigating young children's use of the Internet and Web searching. Your responses will help us understand how children use the computer to engage in Web searching and will help inform educators and families about young children's Web use.

In this survey, we ask about classroom computer availability and usage, and classroom experience and educators' beliefs. To answer the questions, in most cases, you simply tick the box next to the answer that best describes your perspective. Please answer all questions and, if you are unsure of an answer, just give the best answer you can. Completing the questions should take no more than 15 minutes.

At the end of the survey, you will be invited to enter a draw to win an iPod Touch, to be drawn on Friday 16th March, 2012. The winner will be contacted directly, and announced in the C&K Newsletter.

We hope you enjoy completing the questions and look forward to reading your responses and sharing our findings with you.

We appreciate your help with this study.

Please read the Participant Information on the next page before proceeding to the survey.

Appendix E

Participant Information for QUT Research Project in Queensland, Australia

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PARTICIPANT INFORMATION FOR QUT RESEARCH PROJECT

-Phase 1 Teacher Survey -

QUT Ethics Approval Number 1100001480

Interacting with knowledge, interacting with people: Web searching in early childhood

Research Team Contacts

Name: Professor Susan Danby
Position: Chief Investigator, Queensland University of Technology
Email: s.danby@qut.edu.au

Name: Professor Karen Thorpe
Position: Associate Researcher, Queensland University of Technology

Name: Professor Amanda Spink
Position: Associate Researcher, Loughborough University, UK

Name: Dr Christina Davidson
Position: Associate Researcher, Charles Sturt University.

Description

This project is being undertaken as part of Australian Research Council funded study, by Professor Susan Danby, from the School of Early Childhood at Queensland University of Technology. The research team includes Professor Amanda Spink, Professor Karen Thorpe and Dr. Christina Davidson.

Today's generation of children have never known a world without digital technology. Increasingly, we know that children are using digital technology to access knowledge, and we do know that children as young as two are Web searching and engaging with digital technologies. However, we know little about what young children actually do with Web searching, and what young children do on the Internet. In this study we aim to document the ways in which Web technologies are used by young children, how young children use the Internet to find out information, and how they interact with others when using this technology, within the context of their everyday lives.

This study investigates the extent of young children's Web searching as part of their everyday home and school experiences. We will investigate what they are accessing, and in what social contexts, through videorecording their everyday interactions with the Web and digital literacy. Findings will provide new knowledge about issues that might impact on young children's knowledge and well-being when Web searching and will contribute to informing practices in early childhood education and home contexts and early years education policy, which identify through digital literacy use as essential for attaining knowledge, educational success and social equity.

This phase of the study involves an online survey of teachers, group leaders and teacher assistants in Crèche & Kindergarten (C&K) centres across Queensland. The survey focuses on computer access, and teachers' views and experiences of technology. You are invited to participate in this project because you currently teach in a Crèche & Kindergarten centre in Queensland

Participation

Your participation in this project is entirely voluntary. If you do agree to participate, you can withdraw from the project at any time without comment or penalty. Any identifiable information already obtained from you will be destroyed. Your decision to participate, or not participate, will in no way impact upon your current or future relationship with QUT or with C&K.

Participation will involve completing a 15 minute online survey. To answer the questions, in most cases, you simply place a tick in the box next to the response that best describes your perspective. Questions include items about home and classroom computer availability and usage, and classroom experience and beliefs.

If you agree to participate, you do not have to complete any question(s) that you are uncomfortable answering. At the end of the survey, you will be invited to enter a draw to win an iPod Touch. In addition, your participation may lead to an invitation to be involved in further stages of the study.

Expected Benefits

It is expected that this project will not directly benefit you. However, your responses will help us understand how children engage in Web searching through digital technologies, and will help inform educators and families about young children's Web use. We will provide a brief summary of the findings to the Crèche and Kindergarten Association for consideration for newsletter.

Risks

There are no risks beyond normal day-to-day living associated with your participation in this project. Your responses will be stored securely, with an ID number, and demographic details will be held separately to the data.

QUT provides for limited free counselling for research participants of QUT projects who may experience discomfort or distress as a result of their participation in the research. Should you wish to access this service please contact the Clinic Receptionist of the QUT Psychology Clinic on 3138 0999. Please indicate to the receptionist that you are a research participant.

Confidentiality

All comments and responses are anonymous and will be treated confidentially. The names of individual persons are not required in any of the responses.

Consent to Participate

Submitting the completed survey is accepted as an indication of your consent to participate in this project. While our preference is for you submit your responses online, you may choose to print the survey and send the scanned completed survey to s.danby@qut.edu.au or to the address below.

Questions/Further information about the project

If have any questions or require any further information about the project please contact the research team member below.

Concerns/Complaints regarding the conduct of the project

QUT is committed to research integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project you may contact the QUT Research Ethics Unit on [+61 7] 3138 5123 or email ethicscontact@qut.edu.au. The QUT Research Ethics Unit is not connected with the research project and can facilitate a resolution to your concern in an impartial manner.

Appendix F
Teacher Screening Survey questionnaire in Queensland, Australia

Centre Information

Please use the blank space to write your answer

Name of your centre

Postcode of your centre

Screening Survey

ABOUT YOU

How old are you?

Sex

Male Female

What is your highest level of qualifications?

- School completion – Year 10
- School completion – Year 12
- TAFE certificate or equivalent
- Diploma or equivalent
- University bachelor degree
- Postgraduate university degree
- Other (describe).....

How long have you been teaching?

 Years

How long have you been working in your current workplace?

 Years

How long have you been working with children aged 0-5 years?

 Years

Have you worked with school aged children?

Yes No

If yes, for how many years have you worked with children in schools?

 Years

How many of the following do you have in your home?

Desktop computers	
Laptop computers	
Netbook computers	
Tablet computers (iPads or equivalent)	
Televisions	
Game consoles	
Smart phones	
Other digital technology (describe in the next question)	
Other digital technology (describe).....	

Do you have Internet access at home?

Yes
 No

Do you use Cloud computing

Not familiar with this
 No
 Yes

In your home, how much is the Internet used in a typical week?

Please mark the corresponding box-only one per line

	Every day	Most days	Some days	Not weekly	Never	Not applicable
By you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
By your partner (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
By your children (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How often do you access the Internet using the following?

Please mark the corresponding box-only one per line

	Every day	Most days	Some days	Not weekly	Never	Do not have access
Personal access devices (E.g. iPhone, home computer)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Work access devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public access (E.g. library, Internet café)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How often do you use the following Web search engines?
Please mark the corresponding box-only one per line

	Every day	Most days	Some days	Not weekly	Never	Do not have access
Google	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dogpile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yahoo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alta Vista	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AskJeeves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ask	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (describe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How comfortable are you doing the following?
Please mark the corresponding box-only one per line

	Very	Moderate	Uncertain	Not at all	Don't know this	Don't use
Using programs on your mobile phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using DVD technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Searching online	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adding software programs to your computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using email	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using communication programs such as Skype	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Using social network programs such as Facebook and Twitter

Making presentations using programs such as PowerPoint

Using word processing packages such as Microsoft Word

Using drawing programs such as Microsoft Paint program

Using drawing/storytelling programs such as Microsoft Photo Story

Editing digital photographs

Computer game playing

Explaining how to use technology to children

ABOUT YOUR CLASSROOM AND COMPUTER ACCESS

How many children are enrolled in the classroom?

How many computers are there in the room daily?

What is your role in this room?

Class teacher /Group leader
 Class assistant
 Other (describe).....



How many of the following do you have in your classroom?

Desktop computers	<input type="checkbox"/> <input type="checkbox"/>	Used for Internet access?	Yes	<input type="checkbox"/>
Laptop computers	<input type="checkbox"/> <input type="checkbox"/>	Used for Internet access?	Yes	<input type="checkbox"/>
Netbook computers	<input type="checkbox"/> <input type="checkbox"/>	Used for Internet access?	Yes	<input type="checkbox"/>
Tablet computers (iPads or equivalent)	<input type="checkbox"/> <input type="checkbox"/>	Used for Internet access?	Yes	<input type="checkbox"/>
Televisions	<input type="checkbox"/> <input type="checkbox"/>	Used for Internet access?	Yes	<input type="checkbox"/>
Electronic whiteboards	<input type="checkbox"/> <input type="checkbox"/>	Used for Internet access?	Yes	<input type="checkbox"/>

How often are these used in your classroom?

	Every day	Most days	Some days	Not weekly	Never	Do not have in classroom
Educational game playing (eg. online educational websites)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Web searching by you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Web searching by children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Word processing by you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Word processing by children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drawing programs by you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drawing programs by children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How often do the following practices happen **in your classroom**?

	Every day	Most days	Some days	Not weekly	Never
Whole class discussion led by you about how to find out information on the Web	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Small group discussion led by you about how to find out information on the Web	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intentional teaching of Web search Skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Child-led demonstration with classmates about how to use technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child-initiated discussion with the teacher about how to find out information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child-adult interacting together at computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child-adult interacting together doing Web searching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Children interacting together at a computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Children interacting doing Web searching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child working individually at a computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child working individually doing Web searching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combining various different sources of information searching (e.g. books, brochures, Internet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

YOUNG CHILDREN'S LEARNING

How much do you agree with the following statements?

	Strongly Agree	Agree	Unsure	Disagree	Strongly disagree
I am concerned that children spend too much time with technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet use in the classroom is a learning resource like other learning resources (eg. easel or puzzles)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The practicalities of computer login and password access stop me using the Internet in the classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I like to encourage children to bring their Web search activities from home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Internet use in the classroom is an unnecessary learning resource	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important to build on children's existing experiences with technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having one or more computers in the classroom is an essential part of learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety concerns stop me using the Internet in the classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is good to use technology to build on the interests children bring to the classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Giving children access to the Internet is a priority for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find my main technology role is to ensure that the hardware and software are working	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is good for young children to have experiences with the computer at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find my main technology role is to assist children when they request help	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Young children learn literacy skills through use of the computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find my main technology role is to actively initiate ideas and engage children with the Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using technology in the classroom is an everyday part of learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I like to model how to do searches on the Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Young children do not have the literacy skills necessary for Web searching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A computer enables learning opportunities for children to interact with each other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What do you believe children experience through accessing the Internet and Web searching?

.....
.....
.....
.....
.....
.....
.....
.....
.....

We are interested in observing children in the classroom. Would you be willing to be contacted with further information? If so please provide:

Name.....Email.....
Phone (H/W)..... Mobile.....

Would you like to enter the draw to win an iPod Touch (32GB, valued at \$329)? If so, please provide your contact details here (or write 'as above' if you've already provided them above.)

Name.....Email.....
Phone (H/W)..... Mobile.....

Thank you for participating in this survey. We appreciate your time.

Appendix G
Teacher Screening Survey questionnaire in Selangor, Malaysia (English version)

Centre Information

Please use the blank space to write your answer

Name of your centre

Postcode of your centre

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Screening Survey

ABOUT YOU

How old are you?

--	--

Sex

Male Female

What is your highest level of qualifications?

- School completion – SPM or equivalent
- School completion – SPM or equivalent
- Teaching certificate or equivalent
- Diploma or equivalent
- University bachelor degree
- Postgraduate university degree
- Other (describe).....

How long have you been teaching?

--	--

 years

How long have you been working in your current workplace?

--	--

 years

How long have you been working with children aged 0-5 years?

--	--

 years

Have you worked with school aged children?

Yes No

If yes, for how many years have you worked with children in schools?

--	--

 years

How many of the following do you have in your home?

Desktop computers

Laptop computers

Netbook computers

Tablet computers (iPads or equivalent)

Televisions

Game consoles
 Smart phones
 Other digital technology (describe in the next question)
 Other digital technology (describe).....

Do you have Internet access at home?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

If yes, how long have you had Internet access?

<input type="text"/>	<input type="text"/>	years
----------------------	----------------------	-------

Do you use Cloud computing?

<input type="checkbox"/>	Not familiar with this
<input type="checkbox"/>	No
<input type="checkbox"/>	Yes

In your home, how much is the Internet used in a typical week?

Please mark the corresponding box-only one per line

	Every day	Most days	Some days	Not weekly	Never	Not applicable
By you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
By your partner (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
By your children (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How often do you access the Internet using the following?

Please mark the corresponding box-only one per line

	Every day	Most days	Some days	Not weekly	Never	Do not have access
Personal access devices (E.g. iPhone, home computer)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work access devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public access (E.g. library, Internet café)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How often do you use the following Web search engines?

Please mark the corresponding box-only one per line

	Every day	Most days	Some days	Not weekly	Never	Do not have access
Google	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dogpile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yahoo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alta Vista	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AskJeeves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ask	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (describe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How comfortable are you doing the following?

Please mark the corresponding box-only one per line

	Very	Moderate	Uncertain	Not at all	Don't know this	Don't use
Using programs on your mobile phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using DVD technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Searching online	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adding software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

programs to your computer

Using email

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Using communication programs such as Skype

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Using social network programs such as Facebook and Twitter

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Making presentations using programs such as PowerPoint

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Using word processing packages such as Microsoft Word

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Using drawing programs such as Microsoft Paint program

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Using drawing/storytelling programs such as Microsoft Photo Story

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Editing digital photographs

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Computer game playing

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Explaining how to use technology to children

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

ABOUT YOUR CLASSROOM AND COMPUTER ACCESS

How many children are enrolled in the classroom?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

How many computers are there in the room daily?

What is your role in this room?

Class teacher/Group leader

Class assistant

Other (describe).....

Do you have Internet access in your classroom??

Yes

No

If yes, how long have you had Internet access?

years

How many of the following do you have in your classroom?

Desktop computers

Used for Internet access?

Yes

Laptop computers

Used for Internet access?

Yes

Netbook computers

Used for Internet access?

Yes

Tablet computers
(iPads or equivalent)

Used for Internet access?

Yes

Televisions

Used for Internet access?

Yes

Electronic
whiteboards

Used for Internet access?

Yes

How often are these used in your classroom?

	Every day	Most days	Some days	Not weekly	Never	Do not have in classroom
Educational game playing (eg. online educational websites)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Web searching by you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Web searching by children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Word processing by you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Word processing by children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drawing programs by you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drawing programs by children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How often do the following practices happen **in your classroom?**

	Every day	Most days	Some days	Not weekly	Never
Whole class discussion led by you about how to find out information on the Web	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Small group discussion led by you about how to find out information on the Web	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intentional teaching of Web search Skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child-led demonstration with class-mates about how to use technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child-initiated discussion with the teacher about how to find out information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child-adult interacting together at computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child-adult interacting together doing Web searching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Children interacting together at a computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Children interacting doing Web searching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child working individually at a computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Child working individually doing Web searching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combining various different sources of information searching (e.g. books, brochures, Internet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

YOUNG CHILDREN'S LEARNING

How much do you agree with the following statements?

	Strongly Agree	Agree	Unsure	Disagree	Strongly disagree
I am concerned that children spend too much time with technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet use in the classroom is a learning resource like other learning resources (e.g. easel or puzzles)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The practicalities of computer login and password access stop me using the Internet in the classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I like to encourage children to bring their Web search activities from home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet use in the classroom is an unnecessary learning resource	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important to build on children's existing experiences with technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having one or more computers in the classroom is an essential part of learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety concerns stop me using the Internet in the classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is good to use technology to build on the interests children bring to the classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Giving children access to the Internet is a priority for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find my main technology role is to ensure that the hardware and software are working	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is good for young children to have experiences with the computer at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find my main technology role is to assist children when they request help	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Young children learn literacy skills through use of the computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I find my main technology role is to actively initiate ideas and engage children with the Internet

Using technology in the classroom is an everyday part of learning

I like to model how to do searches on the Internet

Young children do not have the literacy skills necessary for Web searching

A computer enables learning opportunities for children to interact with each other

What do you believe children experience through accessing the Internet and Web searching?

.....
.....
.....
.....
.....
.....
.....
.....
.....

Would you be willing to be contacted with further information? If so please provide:

Name..... Email.....
Phone (H/W)..... Mobile.....

Would you like to receive a certificate of participation? If so, please provide your contact details here (or write 'as above' if you've already provided them above.)

Your Name..... Email.....
Phone (H/W)..... Mobile

Thank you for participating in this survey. We appreciate your time.

Appendix H
Teacher Screening Survey questionnaire in Selangor, Malaysia (Malay version)

Maklumat Pusat (Pusat Jagaan/Tadika/Prasekolah/Tabika)

Sila gunakan ruang yang disediakan untuk menulis jawapan anda

Nama pusat
Poskod

--	--	--	--	--

Borang Soalselidik Guru

TENTANG ANDA

Berapakah umur anda?

--	--

Jantina

Lelaki Perempuan

Apakah tahap pendidikan tertinggi anda?

- Tamat sekolah menengah – SPM atau setaraf
- Tamat sekolah menengah – STPM atau setaraf
- Sijil Perguruan atau setaraf
- Diploma atau setaraf
- Ijazah Sarjana Muda Universiti
- Ijazah Sarjana Universiti
- Lain-lain (Namakan).....

Berapa lamakah anda telah mengajar?

--	--

 tahun

Berapa lamakah anda telah bekerja di tempat kerja sekarang?

--	--

 tahun

Berapa lamakah anda telah bekerja dengan kanak-kanak berusia 0-5 tahun?

--	--

 tahun

Pernahkah anda bekerja dengan kanak-kanak sekolah ?

Ya Tidak

Jika ya, berapa tahun anda telah bekerja dengan kanak-kanak sekolah?

--	--

 tahun

Nyatakan bilangan peralatan berikut yang terdapat di rumah anda.

Komputer meja(*desktop*)
Komputer riba (*laptop*)
Komputer *netbook*
Komputer *tablet* (*iPad* atau setaraf)

Televisyen
 Game consoles
 Smart phones
 Teknologi digital lain (terangkan dalam soalan berikut)
 Teknologi digital lain (terangkan):.....

Adakah anda mempunyai akses Internet di rumah?

Ya
 Tidak

Jika Ya, berapa lamakah anda telah mempunyai akses Internet? tahun

Adakah anda menggunakan 'Cloud computing'?

Tidak biasa dengan istilah ini
 Tidak
 Ya

Nyatakan kekerapan penggunaan Internet di rumah anda dalam masa seminggu.

Sila tanda kotak berkenaan -hanya satu bagi setiap baris

	Setiap hari	Kebanyakan hari	Hari-hari tertentu	Bukan setiap minggu	Tidak pernah	Tidak berkenaan
Oleh anda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oleh pasangan anda (Jika berkenaan)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oleh anak-anak anda (Jika berkenaan)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Berapa kerapkah anda mengakses Internet menggunakan yang berikut?

Sila tanda kotak berkenaan -hanya satu bagi setiap baris

	Setiap hari	Kebanyakan hari	Hari-hari tertentu	Bukan setiap minggu	Tidak pernah	Tiada akses
Peranti akses peribadi (E.g. iPhone, komputer di rumah)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Peranti akses tempat kerja	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Akses di tempat umum
(Contoh: perpustakaan, Internet café)

Berapa kerapkah anda menggunakan enjin carian web berikut (*Web search engines*)?

Sila tanda kotak berkenaan -hanya satu bagi setiap baris

	Setiap hari	Kebanyakan hari	Hari-hari tertentu	Bukan setiap minggu	Tidak pernah	Tiada akses
<i>Google</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Dogpile</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Yahoo</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Bing</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Alta Vista</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>AskJeeves</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Ask</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lain-lain (terangkan)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sejauh manakah anda selesa melakukan / menggunakan perkhidmatan yang berikut?

Sila tanda kotak berkenaan -hanya satu bagi setiap baris

	Sangat	Sederhana	Tidak pasti	Tidak selesa	Tidak tahu	Tidak menggunakan
Menggunakan program pada <i>mobile phone</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Menggunakan teknologi DVD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Membuat carian di atas talian (<i>Searching online</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Menambah program perisian (<i>software</i>) untuk komputer anda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Menggunakan email	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Menggunakan program komunikasi seperti <i>Skype</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Menggunakan program <i>social network / jaringan social</i> seperti <i>Facebook</i> and <i>Twitter</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Membuat penyampaian /pembentangan menggunakan program seperti <i>Microsoft Powerpoint</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Menggunakan pakej <i>word processing / pemprosesan perkataan</i> seperti <i>Microsoft Word</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Menggunakan program melukis seperti program <i>Microsoft Paint</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Menggunakan program melukis/bercerita seperti <i>Microsoft Photo Story</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mengedit fotograf digital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bermain permainan komputer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Menerangkan bagaimana untuk menggunakan teknologi kepada kanak-kanak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TENTANG KELAS DAN AKSES KOMPUTER

Berapa ramaikah kanak-kanak yang mendaftar di dalam kelas ini?

Berapa banyak komputer yang terdapat di dalam kelas ini setiap hari?

Apakah peranan anda di dalam kelas ini?

Guru kelas /Ketua pendidik

Pembantu guru kelas

Lain-lain (terangkan).....

Adakah anda mempunyai Internet akses di dalam kelas?

Ya

Tidak

Jika ya, berapa lamakah anda telah mempunyai akses Internet? tahun

Nyatakan bilangan alatan berikut yang terdapat di dalam kelas anda.

Komputer meja(<i>desktop</i>)	<input type="text"/>	Digunakan mengakses Internet?	Ya	<input type="checkbox"/>
Komputer riba (<i>laptop</i>)	<input type="text"/>	Digunakan mengakses Internet?	Ya	<input type="checkbox"/>
Komputer <i>netbook</i>	<input type="text"/>	Digunakan mengakses Internet?	Ya	<input type="checkbox"/>
Komputer <i>tablet</i> (<i>iPad</i> atau setaraf)	<input type="text"/>	Digunakan mengakses Internet?	Ya	<input type="checkbox"/>
Televisyen	<input type="text"/>	Digunakan mengakses Internet?	Ya	<input type="checkbox"/>
Papan elektronik (<i>Electronic whiteboards</i>)	<input type="text"/>	Digunakan mengakses Internet?	Ya	<input type="checkbox"/>

Nyatakan kekerapan aplikasi teknologi berikut di dalam kelas anda.

	Setiap hari	Kebanyakan hari	Hari-hari tertentu	Bukan setiap minggu	Tidak pernah	Tiada di kelas
Bermain permainan pendidikan (contoh: laman Web berasaskan pendidikan)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Carian <i>Web</i> oleh anda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Carian <i>Web</i> oleh kanak-kanak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Word processing oleh anda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Word processing oleh kanak-kanak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program melukis oleh anda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program melukis oleh kanak-kanak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program lain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Nyatakan kekerapan aktiviti berikut di dalam kelas anda.

	Setiap hari	Kebanyakan hari	Hari-hari tertentu	Bukan setiap minggu	Tidak pernah
Perbincangan seluruh kelas diketuai oleh anda tentang bagaimana pencarian maklumat pada laman Web/ sesawang	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perbincangan kumpulan kecil diketuai oleh anda tentang pencarian maklumat pada laman Web/ sesawang	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pengajaran khusus tentang kemahiran carian Web	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrasi diketuai kanak-kanak tentang penggunaan teknologi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perbincangan dimulakan oleh kanak-kanak dengan guru tentang bagaimana mencari maklumat /	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kanak-kanak dan orang dewasa berinteraksi bersama di komputer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kanak-kanak dan orang dewasa berinteraksi bersama membuat carian Web	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Kanak-kanak berinteraksi bersama menggunakan komputer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kanak-kanak berinteraksi membuat carian <i>Web</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kanak-kanak bekerja secara individu di komputer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kanak-kanak bekerja secara individu membuat carian <i>Web</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Menggabungkan pelbagai sumber pencarian maklumat yang berbeza (contoh: buku, risalah, Internet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PEMBELAJARAN KANAK-KANAK PADA PERINGKAT AWAL

Sejauh manakah anda bersetuju dengan kenyataan di bawah?

	Sangat bersetuju	Setuju	Tidak pasti	Tidak setuju	Sangat tidak bersetuju
Saya bimbang kanak-kanak meluangkan masa terlalu lama dengan teknologi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Penggunaan Internet di dalam kelas adalah salah satu sumber pembelajaran lain (seperti <i>easel</i> atau <i>puzzles</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Praktikaliti login komputer dan akses kata laluan menyebabkan saya berhenti menggunakan Internet di dalam kelas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saya suka untuk menggalakkan kanak-kanak untuk membawa aktiviti carian <i>Web</i> mereka dari rumah	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Penggunaan Internet di dalam kelas adalah sumber pembelajaran yang tidak perlu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adalah penting untuk membina sesuatu daripada pengalaman sedia ada kanak-kanak dengan teknologi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Mempunyai satu atau lebih komputer di dalam kelas merupakan sebahagian daripada keperluan pembelajaran	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kebimbangan tentang keselamatan menyebabkan saya berhenti menggunakan Internet di dalam kelas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adalah bagus menggunakan teknologi untuk memupuk minat yang dibawa kanak-kanak ke dalam kelas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Memberikan kanak-kanak akses kepada Internet ialah keutamaan saya	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saya mendapati tugas utama saya dalam aspek teknologi ialah untuk memastikan perkakasan (<i>hardware</i>) dan perisian (<i>software</i>) berfungsi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adalah baik bagi kanak-kanak peringkat awal mempunyai pengalaman dengan komputer di rumah	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saya mendapati tugas utama saya dalam aspek teknologi ialah untuk membantu kanak-kanak bila mereka memerlukan bantuan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kanak-kanak peringkat awal belajar kemahiran literasi melalui penggunaan komputer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saya mendapati tugas utama saya dalam aspek teknologi ialah untuk memulakan idea dan melibatkan kanak-kanak secara aktif dengan Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Menggunakan teknologi di dalam kelas adalah sebahagian daripada pembelajaran harian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saya suka menunjukkan cara pencarian maklumat melalui Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kanak-kanak peringkat awal tidak mempunyai kemahiran literasi yang perlu bagi carian Web	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Komputer membolehkan peluang	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

pembelajaran untuk berinteraksi antara satu sama lain

Apakah kepercayaan anda terhadap pengalaman yang ditempuhi kanak-kanak melalui akses Internet dan carian *Web* ?

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

Adakah anda sanggup dihubungi untuk maklumat lanjut? Jika ya, sila berikan maklumat dibawah:

Nama..... Email.....

No telefon (rumah/pejabat)..... No telefon mudah alih (hp).....

Adakah anda berminat untuk menerima **sijil penyertaan** (*certificate of participation*)? Jika ya, sila berikan maklumat dibawah (atau tulis '**seperti di atas**' jika anda telah memberikan maklumat di atas).

Nama Email.....

No telefon (Rumah/Pejabat).....No telefon mudah alih (hp).....

***Terima kasih kerana mengambil bahagian didalam kaji selidik ini.
Kami menghargai masa anda.***

Appendix I
Approval letter from Economic Planning Unit, Prime Minister Department,
Malaysian Government



UNIT PERANCANG EKONOMI
Economic Planning Unit
JABATAN PERDANA MENTERI
Prime Minister's Department
BLOK B5 & B6
PUSAT PENTADBIRAN KERAJAAN PERSEKUTUAN
62502 PUTRAJAYA
MALAYSIA



EPU
ECONOMIC PLANNING UNIT
PRIME MINISTER'S DEPARTMENT

Telefon : 603-8888 3333

Ruj. Tuan:
Your Ref.: UPE: 40/200/19/2875
Ruj. Kami:
Our Ref.:
Tarikh:
Date: 5 April 2012

FILZAH ZAHILAH MOHAMED ZAKI
698 Cavendish Road
Holland Park 4121 Qld
BRISBANE
Email: fzmz2u@gmail.com

APPLICATION TO CONDUCT RESEARCH IN MALAYSIA

With reference to your application, I am pleased to inform you that your application to conduct research in Malaysia has been *approved* by the **Research Promotion and Co-Ordination Committee, Economic Planning Unit, Prime Minister's Department**. The details of the approval are as follows:

Researcher's name : **FILZAH ZAHILAH MOHAMED ZAKI**
Passport No. / I. C No: **780427-03-5158**
Nationality : **MALAYSIAN**
Title of Research : **"INTERNET USAGE IN EARLY CHILDHOOD EDUCATION: A COMPARISON OF AUSTRALIAN AND MALAYSIAN TEACHERS' CURRENT PRACTICE"**

Period of Research Approved: **ONE YEAR**

2. Please collect your Research Pass in person from the Economic Planning Unit, Prime Minister's Department, Parcel B, Level 4 Block B5, Federal Government Administrative Centre, 62502 Putrajaya and bring along two (2) passport size photographs. You are also required to comply with the rules and regulations stipulated from time to time by the agencies with which you have dealings in the conduct of your research.

3. I would like to draw your attention to the undertaking signed by you that you will submit without cost to the Economic Planning Unit the following documents:

- a) A brief summary of your research findings on completion of your research and before you leave Malaysia; and
- b) Three (3) copies of your final dissertation/publication.

4. Lastly, please submit a copy of your preliminary and final report directly to the State Government where you carried out your research. Thank you.

Yours sincerely,



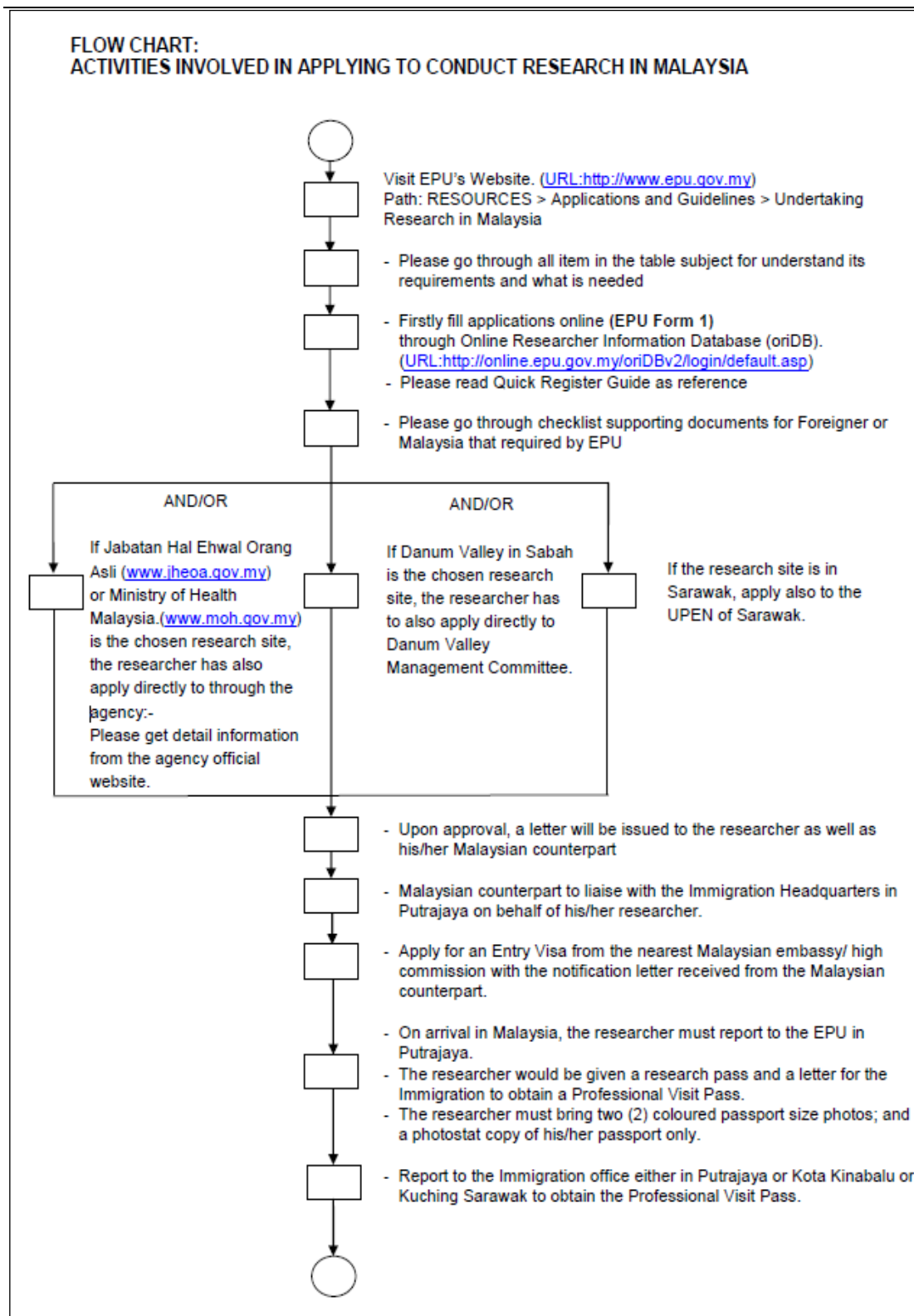
(MUNIRAH ABD. MANAN)
For Director General,
Economic Planning Unit.
E-mail: munirah@epu.gov.my
Tel: 88882809
Fax: 88883961

ATTENTION

This letter is only to inform you the status of your application and **cannot be used as a research pass.**

Appendix J

Flow chart: Activities involved in applying to conduct research in Malaysia



Appendix K
Code of Conduct for researchers in Malaysia

CODE OF CONDUCT FOR RESEARCHERS IN MALAYSIA

1. Researchers granted approval to conduct research in Malaysia should comply with the following Code of Conduct:-

1.1. On arrival in Malaysia, the candidate should report to Economic Planning Unit (EPU). The candidate will be issued a research pass which must be returned to EPU on completion of his research or on expiry of its validity.

1.2. The candidate must ensure that he/she has adequate funds for the duration of the research in Malaysia.

1.3. The candidate should confine his/her research to the research topic and location as approved by EPU.

1.4. The candidate is not permitted to make press statements or release any information to the media.

1.5. Under no circumstances is the candidate allowed to discuss policy matters with the media.

1.6. Any collection and distribution of specimens must be in accordance with the Guidelines for the Collection and Distribution of Specimens (APPENDIX B3). The candidate has to obtain written approval from the relevant department(s), stating details of the specimens if any and submit a copy of the letter of authority to EPU before taking the specimens out of the country.

1.7. The candidate should notify EPU of his/her Malaysian counterpart and in the event of a change, the candidate should obtain approval from EPU by submitting the curriculum vitae of the new Malaysian counterpart.

1.8. The candidate should periodically report to the Malaysian counterpart and EPU, the progress of his/ her research.

1.9. In the case of studies of more than one year's duration, the candidate should submit progress report in writing to EPU annually.

1.10. Prior to leaving the country at the end of the research, the candidate should submit a preliminary report to EPU. The EPU may request that the preliminary report be discussed.

1.11. On completion of the research, three copies of the final reports as well as in diskette/CD should be submitted to EPU. All research reports must be written either in Bahasa Malaysia or English.

1.12. Should the research be used for publication overseas, prior agreement must be obtained from EPU and payment of royalty should accrue to Malaysia according to the relevant international conventions in force.

1.13. Failure to adhere to the (1.12) above, and we have sufficient prove of your violation, you are liable to be sued by the government of Malaysia.

1.14. The candidate must at all times conform to this Code of Conduct and other rules and regulations that may be stipulated from time to time. EPU can revoke the validity of the research pass at any time without having to provide reasons.


Appendix L
Explanatory Notes on sensitive issues for research in Malaysia

EXPLANATORY NOTES ON SENSITIVE ISSUES

1. In the context of national security, sensitive issues mean any issue that can cause prejudice, hatred, enmity or contempt between or towards any ethnic or religious group and can affect public safety, national security and/or the integrity of the Government and is generally connected with the following acts or behaviour:
 - 1.1. Questioning the implementation of certain government policies pertaining to economic development, education and social matters.
 - 1.2. Questioning the implementation of particular provisions in the Federal and State Constitutions pertaining to Federal Laws, the freedom of religion, the special position of the indigenous community (Bumiputera), citizenship and rights of the other communities.
 - 1.3. Regarding a racial or religious group as neglected or given preference in the implementation of a particular policy without providing the background or reasons that necessitate it.
 - 1.4. Promoting the success of one racial or religious group on the basis of the preference and facilities provided by the government to individuals or the ethnic group concerned.
 - 1.5. Questioning the authority, wisdom and abilities of a group in a particular area on an ethnic basis.
 - 1.6. Associating and blaming a racial or religious group as the cause of an incident.
 - 1.7. Publicising the name or the ethnic group involved.
 - 1.8. Publicising the details of an incident or violent happening that can arouse anger amongst those who read and/or hear about it.
 - 1.9. Publicising and displaying of photograph or sketch that shows the racial origin or religion of the parties involved in causing the incident.
 - 1.10. Conveying the impression that the authorities have failed or are unable to control the situation and are rude and unjust in the discharge of their duties.
 - 1.11. Exaggerating an incident or using rumours or information as the basis for reports that can cause panic or apprehension amongst the people.
 - 1.12. Exaggerating the weakness of the government to particular groups overseas with the intention of demeaning the integrity or eroding the confidence of the international community in the authority of the government.

Appendix M

Supporting emails (excerpts) for conducting research in PERMATA childcare centres (PAPN) in Selangor, Malaysia

Filzah Mz <fzmz2u@gmail.com>

Research Proposal
4 messages

Mohd Azim Abu Samah <azim@permata.jpm.my> Thu, Jun 14, 2012 at 5:26 PM

To: fzmz2u@gmail.com
Cc: "Saidatu Akhma bt. Hassan" <saidatuakhma@permata.jpm.my>, "Mohd Zulhasmi b. Jamaludin" <mohdzulhasmi@permata.jpm.my>, "Azmaini bt. Isa" <azmaini@permata.jpm.my>, papn_putrajaya@yahoo.com.my, papnsubangjaya@yahoo.com.my, papnputrajaya2@gmail.com, permata_dengkil@yahoo.com

Salam 1 Malaysia

Puan Filzah,

Mengenai permohonan puan untuk menjalankan research proposal di PAPN Presint 16, Putrajaya, Subang dan Dengkil telahpun mendapat kelulusan dan bahagian ini tidak mempunyai sebarang halangan untuk puan meneruskan kajian puan.

U.P Ketua Pendidik/Pendidik. Dimohon kerjasama pendidik semua bagi membantu Puan Filzah di dalam menjalankan kajian ini. Dipohon semua pendidik memberi kerjasama kepada beliau. Dipohon melihat email yang telah dihantar oleh Puan Filzah sebelum ini.

Sekian, Terima Kasih

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,

MOHD AZIM ABU SAMAH
PEGAWAI PERHUBUNGAN AWAM/PEGAWAI ADUAN
BAHAGIAN PERMATA
JABATAN PERDANA MENTERI

03-83194000 (T)
03-83194001 (F)
012-9137427 (HP)

>

Pn Filzah,

Ni email PAPN Hulu Selangor/Rawang (papnrawang@yahoo.com). Nama Ketua Pendidik, Cikgu Nurhidayanti Abdul Rahman.

Terima Kasih

Appendix N
Supporting letter for conducting research in MOE preschools,
in Selangor, Malaysia

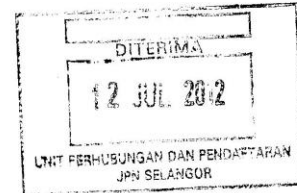


BAHAGIAN PERANCANGAN DAN PENYELIDIKAN DASAR PENDIDIKAN
KEMENTERIAN PELAJARAN MALAYSIA
ARAS 1-4, BLOK E-8
KOMPLEKS KERAJAAN PARCEL E
PUSAT Pentadbiran Kerajaan Persekutuan
62604 PUTRAJAYA.

Telefon: 03-88846591
Faks : 03-88846579

Ruj. Kami : KP(BPPDP)603/011/Jld15(08)
Tarikh : 10 Julai 2012

Ketua Pengarah
Seksyen Ekonomi Makro
Unit Perancangan Ekonomi
Jabatan Perdana Menteri
Blok B5 Aras 4
Kompleks Jabatan Perdana Menteri
Pusat Pentadbiran Kerajaan Persekutuan
62502 PUTRAJAYA
(u.p. Pn. Munirah Bt. Abd. Manan)



Puan,

Permohonan Untuk Menjalankan Penyelidikan di Malaysia
Nama: FILZAH ZAHILAH MOHAMED ZAKI

Dengan hormatnya saya merujuk kepada perkara di atas.

2. Adalah saya diarahkan memaklumkan bahawa Bahagian ini tidak mempunyai apa-apa halangan dan menyokong cadangan yang dikemukakan oleh penyelidik berkenaan untuk menjalankan penyelidikan dengan syarat tidak menggunakan sampel pelajar kelas peperiksaan:

" Internet Usage In Early Childhood Education: A Comparison Of Australian And Malaysian Teachers' Current Practice "

3. Bersama-sama ini disertakan ulasan Bahagian ini ke atas cadangan penyelidikan yang dikemukakan.

Sekian dimaklumkan, terima kasih.

" BERKHIDMAT UNTUK NEGARA "

Saya yang menurut perintah,


(DR. HJ. ZABANI BIN DARUS)

Ketua Sektor
Sektor Penyelidikan Dan Penilaian
Bahagian Perancangan dan Penyelidikan Dasar Pendidikan
b.p. Ketua Setiausaha
Kementerian Pelajaran Malaysia

Appendix O
Supporting letter for conducting research in PERPADUAN tabika,
in Selangor, Malaysia



JABATAN PERPADUAN NEGARA
DAN INTEGRASI NASIONAL
(JABATAN PERDANA MENTERI)
ARAS 7-10, BLOK E2, PARCEL E
PUSAT PENTADBIRAN KERAJAAN PERSEKUTUAN
62502 PUTRAJAYA

Telefon : 03 8883 7000
Faks : 03 8888 8584
Laman Web : <http://www.jpnn.gov.m>

Rujukan: JPN.02/550. JLD.37(73)
Tarikh: 2 Julai 2012



Pn. Filzah Zahilah Mohamed Zaki
B307, School of Early Childhood
Queensland University of Technology
Kelvin Grove Campus
GPO Box 2434,
Brisbane Qld 4001
Australia

Puan,

**PERMOHONAN MEMBUAT PENYELIDIKAN DI TABIKA PERPADUAN NEGERI
SELANGOR**

Dengan hormatnya saya diarah merujuk kepada surat email Puan bertarikh 28 Jun 2012.

2. Adalah dimaklumkan, Jabatan merakamkan jutaan terima kasih atas kesudian puan selaku pelajar Master of Education (Research) di Queensland University of Technology, Brisbane, Australia, yang berminat menjalankan kajian "*Internet usage in early childhood education : A comparison of Australian and Malaysia teacher's current practice*" terhadap Tadika Perpaduan, JPNIN.

3. Sehubungan dengan itu, Jabatan tiada halangan dan membenarkan puan untuk menjalankan kajian berkenaan. Puan dicadangkan berurusan terus dengan Pejabat Perpaduan Negeri Selangor dialamat seperti berikut :

Jabatan Perpaduan Negara Dan Integrasi Nasional
Negeri Selangor,
Tingkat 9, Wisma PKNS,
Persiaran Perbandaran, Seksyen 14,
40517 Shah Alam, Selangor.
Tel : 03-5518 4617/4618

"MEMBUDAYAKAN PERPADUAN, MERAIKAN KEPELBAGAIAN"

Appendix P
Supporting letter for conducting research in KEMAS *tabika*,
in Selangor, Malaysia



IBU PEJABAT
JABATAN KEMAJUAN MASYARAKAT (KEMAS)
KEMENTERIAN KEMAJUAN LUAR BANDAR DAN WILAYAH

Aras 5-9,
No. 47, Persiaran Perdana, Presint 4
Pusat Pentadbiran Kerajaan Persekutuan
62100 Putrajaya

Telefon : 03-8891 2000
Faks : 03-8888 2312
Laman Web : www.kemas.gov.my



Ruj. Tuan :
Ruj. Kami : KEMAS.KN 620 -
(10)
Tarikh : 13 Julai 2012

Filzah Zahilah Mohamed Zaki
Lot 596, Jalan Tanjung 11
Taman Tanjung Chat
15300 Kota Bharu
Kelantan

Puan,

**PERMOHONAN MEMBUAT PENYELIDIKAN DI PRASEKOLAH
KEMAS (TASKA DAN TABIKA) NEGERI SELANGOR.**

Dengan hormatnya saya merujuk kepada perkara di atas dan surat puan bertarikh 30 Jun 2012 adalah berkaitan.

2. Sukacita dimaklumkan bahawa Jabatan ini tiada halangan untuk puan menjalankan kajian tersebut kepada Guru-guru Taska PERMATA dan Tabika KEMAS di kawasan Negeri Selangor. Walau bagaimanapun, pihak puan dikehendaki mematuhi perkara-perkara seperti di bawah semasa menjalankan kajian :

- i. Kajian tidak menyentuh isu-isu keagamaan, perkauman dan politik;
- ii. Mematuhi peraturan-peraturan di Taska PERMATA dan Tabika; dan
- iii. Mengemukakan satu salinan hasil kajian yang lengkap kepada KEMAS


NADI PEMBANGUNAN DAN PERUBAHAN MASYARAKAT LUAR BANDAR

3. Untuk maklumat lanjut dan pelaksanaan kajian ini di Negeri Selangor, mohon pihak puan berhubung dengan Cik Shahrani binti Idderis, Penolong Pengarah Operasi 1 KEMAS Negeri Selangor di nombor talian 03 – 55193044 sambungan 15.

Sekian, terima kasih.

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah


(KHAMSIYAH BINTI HJ. YAHYA)
b.p Ketua Pengarah
Jabatan Kemajuan Masyarakat
Kementerian Kemajuan Luar Bandar dan Wilayah
Malaysia

s.k : Ketua Pengarah
Timbalan Ketua Pengarah (Operasi)
Pengarah KEMAS Negeri Selangor

Appendix Q
Sample recruitment email/letters used for MOE preschool teachers (Malay & English) in Selangor, Malaysia

Untuk makluman dan tindakan: Guru-guru prasekolah Kementerian Pelajaran Malaysia di negeri Selangor (PPD PETALING PERDANA)

Assalamu'alaikum / salam sejahtera buat guru-guru yang dihormati,

JEMPUTAN UNTUK MENJAWAB SOALAN KAJISELIDIK (SURVEY) GURU-GURU PRASEKOLAH MALAYSIA (DI SELANGOR SAHAJA) UNTUK KAJIAN BERTAJUK: "INTERNET USAGE IN EARLY CHILDHOOD EDUCATION: A COMPARISON OF AUSTRALIAN AND MALAYSIAN TEACHERS CURRENT PRACTICE".

Saya merupakan pelajar Master of Education (Research) di Queensland University of Technology, di Brisbane, Australia. Buat pengetahuan, saya telah pun mendapat kelulusan dari Bahagian Perancangan Pendidikan dan Penyelidikan (EPRD) di Putrajaya pada bulan Julai lepas bagi tujuan membuat penyelidikan (salinan surat sokongan dilampirkan). Buat pengetahuan, kajian ini melibatkan guru-guru prasekolah/tadika/tabika/taska dari pelbagai agensi kerajaan seperti Kementerian Pelajaran, PERMATA, Jabatan Perpaduan, KEMAS dan juga daripada tadika persendirian (private kindergarten) di negeri Selangor (bagi kajian di Malaysia & Queensland di Australia).

Oleh itu, kerjasama daripada guru-guru tadika prasekolah Kementerian Pelajaran Malaysia amat diperlukan bagi tujuan kajian ini. Bagi menjawab soalselidik ini (online survey), anggaran masa diambil adalah 15 minit atau kurang. Fokus survey adalah terhadap akses komputer, dan pandangan guru serta pengalaman penggunaan teknologi. Sekolah anda dipilih untuk menyertai kajian ini kerana mempunyai prasekolah (berdasarkan data diperolehi daripada Sektor Pengurusan Maklumat dan ICT, Jabatan Pendidikan Selangor) dan berada di Selangor, Malaysia.

Untuk menjawab soalan survey dalam bahasa Inggeris, sila klik pautan (link) di bawah :
<https://survey.qut.edu.au/survey/174353/2196/>.

Untuk menjawab soalan survey dalam bahasa Melayu, sila klik pautan (link) di bawah :
<https://survey.qut.edu.au/survey/174458/1bea/>

Nota:

- Penyertaan anda dalam penyelidikan ini adalah secara sukarela. Jika anda bersetuju untuk mengambil bahagian, anda masih boleh menarik diri daripada kajian ini tanpa sebarang komen atau penalti.
- Untuk sebarang pertanyaan atau untuk meminta guru lain untuk mengambil bahagian di dalam survey ini, sila berhubung dengan saya melalui email: filzah.mohamedzaki@qut.edu.au
- Survey ini akan berakhir pada 13 September 2012 (sehingga 11.59PM waktu Malaysia), bagaimanapun respon awal daripada para guru amatlah dialu-alukan dan digalakkan.

Penafian (disclaimer):

Mesej ini dan link di atas bukanlah spam/hoax email. Data dari survey akan digunakan untuk tujuan penyelidikan semata-mata. Tuan/Cik/Puan boleh menghubungi saya untuk pengesahan jika perlu. Sebagai penghargaan, Tuan/Cik/Puan akan diberikan sijil penghargaan di atas tanda terima kasih kerana mengambil bahagian dalam kajian ini.

Jutaan terima kasih diucapkan di atas segala kerjasama dan masa yang diluahkan.

Filzah Zahilah Mohamed Zaki
B307, School of Early Childhood
Queensland University of Technology
QUT Kelvin Grove Campus
GPO Box 2434
BRISBANE QLD 4001 AUSTRALIA
Email: filzah.mohamedzaki@qut.edu.au
Phone: +614 0361 3456 (Australia)

-English version-

To: All preschool teachers in Selangor,

This study involves an online survey of preschool teachers, group leaders and teacher assistants in Selangor, Malaysia. For your information, this study has an endorsement from Malaysian's Economic Planning Unit (EPU), Prime Minister Department and had gain approvals from various government agencies related to this study (Educational Planning and Research Department from Ministry of Education), Jabatan Pelajaran Negeri Selangor (Selangor Education Department), KEMAS from Ministry of Rural and Regional Development and Department of National Unity & Integration as well as PERMATA, from Prime Minister Department. The supporting document from EPRD is attached for your reference.

The survey focuses on computer access, and teachers' views and experiences of technology. You are invited to participate in this project because you currently teach in an early childhood centre in Selangor, Malaysia.

To participate in this survey please click the following (for English version)

<https://survey.qut.edu.au/survey/174353/2196/>.

To participate in this survey please click the following (for Malay version)

<https://survey.qut.edu.au/survey/174458/1bea/>

Notes:

- Your participation in this project is entirely voluntary. If you do agree to participate, you can withdraw from the project at any time without comment or penalty.
- For any query or to ask others to take part in the survey, please do not hesitate to contact this email: filzah.mohamedzaki@qut.edu.au

Disclaimer:

This message and the above links given is not a spam/hoax. Data collected will be used for a genuine research purpose.

Thank you very much for your time.

Filzah Zahilah Mohamed Zaki
B307, School of Early Childhood
Queensland University of Technology
QUT Kelvin Grove Campus
GPO Box 2434
BRISBANE QLD 4001 AUSTRALIA
Email: filzah.mohamedzaki@qut.edu.au
Phone:+614 0361 3456 (Australia)

Appendix R
Sample recruitment message used on Facebook for preschool teachers in Selangor, Malaysia

To: All preschool teachers/assistant teachers currently teaching in Selangor Darul Ehsan

Hi/ Salam Cik/Puan/Tuan,

This is an invitation to participate in Malaysian Preschool Teachers' Screening Survey: Interacting with knowledge, interacting with people: Web searching in early childhood.

This study involves an online survey of preschool teachers, group leaders and teacher assistants in Selangor, Malaysia. For your information, this study has an endorsement from Malaysian's Economic Planning Unit (EPU), Prime Minister Department and had gain approvals from various government agencies related to this study (Educational Planning and Research Department from Ministry of Education), KEMAS from Ministry of Rural and Regional Development and Department of National Unity & Integration as well as PERMATA, from Prime Minister Department.

The survey focuses on computer access, and teachers' views and experiences of technology. You are invited to participate in this project because you currently teach in an early childhood centre in Selangor, Malaysia.

To participate in this survey please click the following (for English version)
<https://survey.qut.edu.au/survey/174353/2196/>.

To participate in this survey please click the following (for Malay version)
<https://survey.qut.edu.au/survey/174458/1bea/>

Notes:

- Your participation in this project is entirely voluntary. If you do agree to participate, you can withdraw from the project at any time without comment or penalty.
- For any query or to ask others to take part in the survey, please do not hesitate to contact this email: filzah.mohamedzaki@qut.edu.au

Thank you very much for your time.