ICT Integration In Education: Incorporation for Teaching & Learning Improvement

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ABSTRACT

Over the last two decades, the rapid growth of ICT has become one of the most important topics discussed by the scholars in education. This is due to the capability of ICT in providing a dynamic and proactive teaching and learning environment. In line with the current digital era, teachers are required to integrate ICT in their daily teaching and replace their traditional methods with modern tools and facilities. The main focus of this paper is on effectiveness of ICT integration in education. More specifically, this paper aims at identifying the level of computer skills and knowledge of primary school teachers in the teaching and learning process. Moreover, the objective of this paper is to identify the level of ICT integration in teaching and learning process in classroom by primary school teachers. A total of 61 teachers from 10 public primary schools in Klang Valley, Malaysia have been selected randomly to complete this quantitative study's survey questionnaire. The findings illuminate that most of the teachers are normal users, and many teachers more frequently use ICT in the teachers' room for their work rather than using it in their classroom for teaching and learning. Moreover, results show that teachers should always be ready and well-equipped in terms of ICT competencies and positive attitude to provide ICT-based learning opportunities for students to improve their learning quality. Future studies need to consider other aspects of ICT integration specially from the management point of view such as strategic planning and policy making

Keywords: *ICT integration, Education, Teaching and learning process, Primary School Teachers,*

INTRODUCTION

Information and Communications Technology (ICT) has gone through innovations and transformed our society that has totally changed the way people think, work and live (Grabe, 2007). As part of this, schools and other educational institutions which are supposed to prepare students to live in "a knowledge society" need to consider ICT integration in their curriculum (Ghavifekr, Afshari & Amla Salleh, 2012). In conjunction with preparing students for the current digital era, teachers are seen as the key players in using ICT in their daily classrooms. This is due to the capability of ICT in providing dynamic and proactive teaching-learning environment (Arnseth & Hatlevik, 2012).

There is no doubt that technology in this contemporary society is used more and more widely,

especially for the purpose of teaching and learning. This is because modern technology offers many tools that can be used in classrooms to improve teaching and learning quality (Bruniges, 2003; Lefebvre, Deaudelin, & Loiselle, 2006; Bingimlas, 2009; Hamidi et al., 2011; Hussain et al., 2011). Rosnaini Mahmud and Mohd Arif (2008) define ICT integration as the process of determining where and how technology fits in the teaching and learning scenario. It is able for everyone can enter the websites from everywhere at any time to use the free information by the internet. Worldwide research has shown that ICT can lead to improve students' learning as well as better pedagogical practices.

In addition, ICT has the potential in preparing students for life in the 21st century. Through learning ICT skills, students are ready to face future challenges based on proper understanding (Grimus, 2000). Bransford, Brown, and Cocking (2000) believe that ICT use can help students to develop the competencies needed for the current globalization. This is because ICT can help students to develop their skills, boost up their motivation and widen their knowledge and information (Grabe & Grabe, 2007; Hussain et al., 2011).

In line with globalization and the information highway, the Malaysian education system is planned to educate students as the future workforce who are technology- savvy, innovative and conversant in technical know-how (Ghavifekr & Sufean, 2011). This is to enable the nation to be creative and competitive for the current globalization (Abas, 2009). Hence, the need for effective ICT-based curriculum is one of the main elements in strategic planning for ICT integration in the Malaysian education system. This will ensure that technology investment decisions are optimized in the system and well planned (Suhaimi et al., 2007).

Integrating technology in education is a complex task due to its dynamic nature. Hence planning for ICT integration in education is considered as a key element for improvement and development. Previous research shows that due to the issues and challenges related to the use of learning technologies in the Malaysian education system, ICT integration and implementation is a complex process which requires strategic planning by the policy and decision makers (Hashim, 2007; Ghavifekr & Sufean, 2010; Zellweger, 2006).

ICT Integration in Education

Information and Communications Technologies (ICTs) have become the most basic building block of modern industrial society in a very short time. Mastering information technology and understanding basic skills and concepts of ICT are now highly regarded by many countries (Daniels, 2002; Rampersad, 2011). ICT has been increasing at an amazing rate in instruction among teachers.

The need for development of ICTs is a global resolution and has been a subject of great significance to all mankind (Olaofe, 2005). These technologies have become central to contemporary societies. Whether one is talking on the phone, sending an email, going to the bank, using a library, listening to sports coverage on the radio, watching the news on television, working in an office or in the field, going to the doctor, driving a car or catching a plane, one is using ICTs. Information and communications technology is a shorthand for the computers, software, networks, satellite links and related systems that allow people to access, analyze, create, exchange and use data, information and knowledge in ways that were almost imaginable (Association of African Universities, 2000). The prevalence and rapid development of ICTs has transformed human society from the information technology age to the knowledge age (Galbreath, 2000). Kitschner and Davis (2003) identified the following competence required by lecturers in ICT utilization in instruction in education. These include: competence to make personal use of ICT in instruction, competence to master a range of educational paradigms that make use of ICT in instruction, sufficient competence

to make use of ICTs as mind tools, competence to make use of ICT in instruction as a tool for teaching, competence in mastering a range of assessment paradigms which make use of ICT in instruction, competence in understanding the policy dimensions of ICT use in instruction for teaching and learning. The ICTs have the potentials not only in ensuring effectiveness and efficiency in these two areas of teaching and learning; but also in erasing the administrative duties. According to the Organization for Economic Co-operation and Development (2005) and Gbenga (2006), ICT can work in a number of general ways as follows:

- It can be used to train students in skills which they will need in further education and as an ongoing learning process throughout the rest of their lives and for their future jobs, e.g., wording processing, email communication etc.
- It can provide access to information and communication outside the classroom e.g., via the internet.
- It can be used to support teacher development via external networks.
- It can support and potentially transform the learning and teaching process.

Jones and Preece (2006) reported that both students and teachers need to learn to trust the technology for technological performance as well as enhance the uptake and reduce resistance to technology. Teachers need to be confident and competent in using various ICT tools to build their trust in the technology. Without teachers' competency and mastery skills of ICT integration which is appropriate to their needs, ICT could not be put into good use for instructional delivery. In this regard, teachers should have a range of different technical and communication skills which include using chat rooms, word processing skills, web page authoring and using various kinds of ICT tools such as File Transfer Protocol (FTP), compress and decompress of files, e.g., Win zip and so forth (Barker, 2002). As Grabe and Grabe (2007) suggested, before attempting to answer this question one must point out that in the current information society a country could choose to be an e-tiger (a country determined to take radical policy decisions to be a front runner), e-floater (a country trying to keep pace with the most dynamic countries), e-follower (a country that makes the best use of what reaches it in due course), or e-skeptic (a country which does not believe in the transformation and development potential of ICT and does not take any active step). So only the first two can stay networked. The best will receive residual e-fallout (willing in the case of e-follower and unwilling in the case of e-skeptic). Kozma and Anderson (2002) claim that ICTs are transforming schools and classrooms by bringing in new curricula based on real world problems, providing scaffolds and 17 tools to enhance learning, giving students and teachers more opportunities for feedback and reflection, and building local and global communities that include students, teachers, parents, practicing scientists, and other interested parties. Similarly, Hepp et al. (2004) state that the roles ICTs play in the educational system can be pedagogical, cultural, social, professional and administrative.

ICT Policy as the National Aspiration

The Ministry of Education (MOE) in Malaysia has noted the importance of integrating ICT into the national curriculum for primary and secondary school. Hence, the element of ICT has been included as one of the transformation shifts in Malaysia's latest Education Blue Print (PPPM) 2013-2025 as the national education future development focus. The transformal shift of ICT named as "Leverage ICT To Scale Up Quality Learning Across Malaysia" emphasizes three aspects:

     i)   By 2013, the government aims to establish and provide more internet accessibility

in the national schools to create virtual learning environment via education development program called "1BestariNet" for all 10,000 schools

ii)   Augment online best practices content starting with video library of best teachers delivery lessons in critical subjects in 2013

iii)   Maximize the use of ICT for distance learning and self-paced learning to expand capacity of learning outcome and allow for more customized learning requirements

Under the ICT transform focus, the MOE is trying to strengthen ICT capacity in different stages. In the first wave of reform, they review the current ratio of teacher-student for ICT devices allocations, ICT innovations on distance learning to determine the best suggestion to give the Malaysian students access to the full spectrum of the curriculum and achieve the best outcome of their learning. While for the second wave of reform, the Ministry of Education will introduce a few ICT education programs to create interactivity during the teaching and learning process, culturally-relevant content for indigenous students, and improve the accessibility offine quality learning resources for students including those in schools located in remote areas (Education Blueprint, 2013, Chap 4, pp.13-15).

The intention of government is to upgrade the quality of ICT skills among schools especially schools in the remote areas such as Sabah, Sarawak, and Pahang. Furthermore, it is also trying to narrow down the gaps of ICT capacities both in terms of quantity and quality between urban, rural and remote areas in the whole nation. In this regard, this could enhance the quality of teaching and learning once the quality and quantity of ICT capacities is being improved. However, Tinio (2003) considers ICT integration in schools as one of the most challenging tasks due to the possible issues and problems regarding resistance to change from the stakeholders that may result in failure especially at the early stages of implementation. Any unsolved problem in ICT integration in schools especially in remote areas may result in further gap between students in urban and rural areas; this will create a deep economic and social inequality for the whole nation (Tinio, 2003).

RESEARCH OBJECTIVES

This research is based on the following objectives:

1. To identify primary school teachers' level of computer skills and knowledge in the teaching and learning process.

2. To identify level of primary school teachers' ICT integration in teaching and learning process in the classroom.

3. To identify the relationship between teacher's level of computer skills and knowledge and ICT integration in teaching and learning process in classroom.

RESEARCH QUESTIONS

The research questions to be answered are:

1. What are the level of computer skills and knowledge for primary school teacher in teaching and learning process?

2. What is the level of primary school teacher's ICT integration in teaching and learning process in classroom?

3. What is the relationship between teacher's level of computer skills and knowledge and ICT integration in the teaching and learning process in classroom.

METHODOLOGY

Research Design

A quantitative research design was used to carry out this study. The purpose of this study is to identify primary teachers' level of computer skills and knowledge, level of ICT integration in teaching and learning process in classroom. Besides, this study also investigates the relationship between teachers' computer skills and knowledge and the ICT integration in their daily teaching and learning process in classroom. The population surveyed consists of teachers in public primary schools in the Klang Valley.

Participants

The sample consisted of 61 primary school teachers, 37 female teachers and 24 male teachers. They voluntarily completed the questionnaires. All of the samples were teaching at public schools located in the same geographic region and had the same organizational and hierarchical structure, which makes no formal distinction between teachers' duties and position in school. As the statistics for total population of Klang Valley is unreachable, the researcher did not mention the total population for male and female teachers in this research.

Instrument

The researchers utilized the instrument from two researches which are Albirini (2006) regarding the teacher's attitudes and Isleem (2003) about teacher's level of ICT usage. Both instruments were adopted into this research and distributed among teachers with some modification.

The questionnaire consists of 4 sections. The first section is about the teacher's profile, where a basic demographic question such as the participant's sex, educational qualification, age, years of teaching experience and subjects of teaching was included; it was followed by their school ICT equipment conditions. Second and third sections referred to teacher's attitude toward ICT integration and perceived teacher's level of ICT skills and knowledge in the teaching and learning process. The last section is about the level of ICT integration in educational purposes.

As for the scale used, the questionnaire adopted a four-point Likert scale format to assess teachers' responses for each related section. (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). On the other hand, there is a sub section in this questionnaire assessing teachers by a 3-point Likert scale, where 1= Often, 2 = Sometimes, 3 = Never, to rate their frequency on ICT tools and materials usage in teaching and learning process.

The total number of participants who took this questionnaire was 61. That is a response rate

of approximately 61%. See Appendix A for a copy of the questionnaire distributed to respondents.

Procedures

Data collection occurred via random distribution. The researchers distributed the survey questionnaire to primary public school teachers that they met in campus without any special arrangement. The distribution was handled by the researchers. At the same time, the survey questionnaires were sent via email to primary school teachers. Once the survey was sent out, the participants had 2 days (hand distribution) and a week (email) to complete the survey questionnaire. Once the participation deadline lapsed researchers combined a raw data file from both schools for data analysis.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) version 21.0, basic descriptive statistics, cross tab, independent samples *t*-tests, and so forth were utilized to analyze data from the survey questionnaire.

FINDINGS

Research Question 1: What are the level of computer skills and knowledge for primary school teacher in teaching and learning process?

To answer the research question 1, descriptive analysis were used to see the frequencies of teachers' competencies on: ICT skills and knowledge, and instructional tools and materials usage. Moreover, the frequencies of score for teachers' training regarding using computers in the curriculum were also analyzed. The elaboration of the analysis is presented in Table 1, 2 and 3:

Table 1 Frequencies of Teacher's Competencies on ICT Skills and Knowledge

		Strongly Disagree	Disagree	Agree	Strongly Agree
		%	%	%	%
1	I know computers and its functions	-	-	78.7	21.3
2	I repair my own computer	18	52.5	27.9	1.6
3	I install software on my own	4.9	27.9	47.5	19.7
4	I search teaching aids from the Internet	1.6	1.6	67.2	29.5
5	I use the computer to prepare lesson plans	1.6	18	59	21.3
6	I can create teaching aids with the computer	3.3	3.3	68.9	24.6
7	I can construct a learning website	3.3	52.5	42.6	1.6

8	I prepare notes for my students with the Internet	1.6	41	50.8	6.6
9	I find questions for my students from the Internet	1.6	13.1	68.9	16.4
10	I always use the computer in my classroom	3.3	41	47.5	8.2
11	I always look for the latest additional information through the Internet	-	19.7	60.7	19.7
12	I use the Internet in the computer lab with my students	14.8	42.6	41	1.6
13	I teach my students on how to find information on the Internet	1.6	27.9	52.5	18
14	I use the Internet for my personal use	-	11.5	57.4	31.1

The first research question is to identify the level of computer skills and knowledge for primary school teachers in the teaching and learning process; therefore, the percentage of how teachers used computers and percentage of how teachers responded to actions related to using ICT in the teaching and learning process in school were generated.

From Table 1, the frequencies of teachers' competencies on ICT skills and knowledge have been generated. As item 1 shows, all of respondents agreed (78.7%) and strongly agreed (21.3%) that they know the computer and its functions; however, more than half of respondents disagreed (52.5%) and strongly disagreed (18%) that they are able to repair their computers. This means that most of the teachers are normal users who know how to use their computers but are not up to expert user level where they can repair their computer, or able to install software on their computer (27.9% for disagreed and 4.9% strongly disagreed in item 3).

As shown by the data from item 13, 27.9% and 1.6% of teachers stated that they do not teach their students how to find information on the internet, which means teachers are usually using computer in classroom as a tool to show certain teaching materials or aids while conducting ordinary lessons, instead of teaching students how to find information via internet. This is reasonable and supported by data from item 12. Some 42.6% and 14.8% of respondents said that they are not using Internet in the computer lab with their students. It is because most of the schools are conducting a computer lessons by computer instructors employed by the school, and these are not included as research respondents who are those officially employed by the Ministry of Education.

There are 52.5% and 3.3% of respondents who do not construct a learning website, and it might be because in the Malaysian curriculum, it is not compulsory for teachers to construct a learning website in preparation for teaching, and teachers are allowed to get any relevant learning materials and aids on their own. Besides items stated above, the rest of the items in Table 2 show that the respondents have above average ICT skills and knowledge.

Table 2 Frequencies of Teacher's Competencies on Instructional Tools and Materials Usage

	Instructional Tools and Materials	Often		Sometimes		Never	
		N	%	N	%	N	%
1	Board	48	78.7	10	16.4	3	4.9
2	Overhead Projector	17	27.9	32	52.5	12	9.7
3	Document Camera	10	16.4	31	50.8	20	32.8
4	Multimedia Computer	22	36.1	31	50.8	8	13.1
5	Computer – Projector System	22	36.1	35	57.4	4	6.6
6	Internet/Web Environment	16	26.2	32	52.5	13	21.3
7	Television/Video	13	21.3	29	47.5	19	31.1
8	Radio Cassette Recorder	9	14.8	16	26.2	36	59
9	Video Camera	5	8.2	20	32.8	36	59
10	Slide Projector	22	36.1	20	32.8	19	31.1
11	Printed Materials (journals, books)	37	60.7	23	37.7	1	1.6

The frequencies of teacher's competencies on instructional tools and materials usage was shown in Table 2. According to the table, the most frequent tools and materials that teachers used are board with 78.7% of teachers often to use it and 16.4% sometimes used it. Besides, teachers also prefer to use printed materials such as books or journals (60.7% often used them and 37.7% sometimes used them).

Referring to the electronic devices and tools, the two most frequent used by teachers are multimedia computer (36.1% often used and 50.8% sometimes used) and computer-projector system (36.1% often used and 57.4% sometimes used). These are followed by overhead projector (27.9% often used and 52.5% sometimes used) and internet/ web environment (26.2% often used and 52.5% sometimes used).

From the electronic devices and tools that teachers preferred to use, we can find that most of the time teachers used electronic tools to show the teaching material to students, for example showing printed pictures or document via overhead projector or projector system. In addition, teachers also used multimedia computer to show certain materials prepared in PowerPoint slides or from Internet and projected it via projector. On the other hand, the Radio Cassette Recorder and Video Camera are less used compared to others tools and materials with same rate of 59% teachers never use it. It might because those tools are no longer popular and have been replaced by MP3 with recorder or Digital Camera or Smartphone with similar functions.

Table 3: Frequencies Score for Training Received to Use Computers in Curriculum

Department/ Party	N	Percent (%)
KPM		
Yes	13	21.3
No	48	78.7
JPN		
Yes	13	21.3
No	48	78.7
PPD		
Yes	25	41.0
No	36	59.0
School		
Yes	39	63.9
No	22	36.1
Family and Friend		
Yes	30	49.2
No	31	50.8
Own Studied		
Yes	46	75.4
No	15	24.6
Others		
Yes	4	6.6
No	57	93.4

According to the first research question, to know what the level of computer skills and knowledge are for primary school teacher in teaching and learning process, we also look for the training that teachers received to be clearer about the common level of computer knowledge and its usage.

It has been found that the frequencies of teacher's competencies on instructional tools and materials usage are at above average level, where most of the teachers are at least using electronic tools for teaching and learning in some of the lessons and involved those devices were part of their teaching aids.

Table 3 refers to the frequencies score for training received by teachers to use ccomputers in the curriculum. Based on the figures, only 21.3% of teachers perceived that they received training from KPM (Ministry of Education), 21.3% of teachers perceived that they received training from JPN (State Office of Education), and 41.0% of teachers perceived that they received training from PPD (District Office of Education).

The rate of received training from central office whether through KPM, JPPN or PPD was much lower compared to training from school with 63.9% and from family and friends with 49.2%. However, the highest rate that teachers gained training for using computer in curriculum is by their own studies; in fact, 75.4% of teachers learned by themselves how to use computers in the teaching and learning process.

This cause another issue that the level of knowledge and skills for every teacher on using computer in curriculum are varied due to no proper or planned training provided to teachers from the central office from KPM, JPN or even PPD. It also may affect the level of ICT integration in teaching and learning process, and furthermore, create non-standardized learning outcome for students.

Research Question2: What are the levels of primary school teacher's ICT integration in teaching and learning process in classroom?

Table 4:Score for Venue of Teachers using ICT in School

Venue of Using ICT	N	Percent (%)
Classroom		
Yes	32	52.5
No	29	47.5
Computer Lab		
Yes	24	39.3
No	37	60.7
Teachers Room		
Yes	38	62.3
No	23	37.7
Admin Office		
Yes	22	36.1
No	39	63.9
Others		
Yes	12	19.7
No	49	80.3

Based on the second research question, the level of ICT integration through the survey score that we gained from our respondents has been identified. Table 4 shows the score for venue of teachers using ICT in school. The percentages of teachers using ICT in the classroom was 52.5%, which means about half of teachers integrated ICT in classroom for their teaching and learning process. However, this also brought another meaning that 47.5% of teachers did not integrate ICT in their teaching and learning process.

Surprisingly the highest score for the venue where teachers were using ICT is in teachers' room (a percentage score of 62.3%). This shows that teachers are more frequent using ICT in the teachers' room for their work compared to using ICT in classrooms for teaching and learning purpose.

We can relate this to the current issue of teachers being burned out with too much paperwork such as keying- in students' profiles into various online systems, keying in students' assessment records into the centralized portal provided by KPM, keying in different teachers' particulars into different portals by KPM, JPN or PPD. The data and marks entry are not one time work but are continuous procedures throughout the years.

Lastly the percentage rate for using computer lab, administration office and others are 39.3%, 36.1% and 19.7%. These scores are lower and considered normal because teachers' main duty in school should be involving in the teaching and learning process instead of other paperwork.

Table 5: Score for Purpose of Teachers using ICT in School

Purpose of Using ICT	N	Percent (%)
Administration		
Yes	52	85.2
No	9	14.8
Communication		
Yes	50	82
No	11	18
Research		
Yes	44	72.1
No	17	27.9
Teaching and Learning		
Yes	55	90.2
No	6	9.8
Knowledge Sharing		
Yes	38	62.3
No	23	37.7

Besides frequency scores for venue of teachers using ICT in school, we also looked for the purpose of teachers using ICT in school to identify the level of primary school teachers' ICT integration in the classroom teaching and learning process.

The purpose of teachers using ICT for teaching and learning is the greatest score with 90.2%. This means 90.2% of teachers are using computer or ICT for teaching and learning. This also shows that the level of ICT integration is very high among our respondents. It is followed by the purpose of using ICT for administration by teachers (85.2%). As mentioned before, nowadays public school

teachers are required to be involved with much paperwork and administrative and clerical tasks using electronic systems. Teachers had to spend more time to enter marks online for the KPM portal, and at the same time they had to key in the same marks offline for the school report card system too.

Communication purpose of teachers using ICT in school scored 82%. Besides the responsibilities with work, it may be related to the technology habits practiced by teachers in their routine. People are used to online to communication with others via ICT by using computers, laptops, iPads and smart phone to surf the Internet. The current trend of technology is that people like to go online to access social networks anytime, anywhere when they are free; this might be one of the reasons the communication purpose obtained high score in this survey.

Lastly, the lowest score was given for the purpose of knowledge sharing for teachers using ICT in school (62.3%). From this data, we can say that collaboration among public primary teachers for knowledge sharing is weak, and some of the teachers (37.7%) are still working without sharing their professional knowledge with others.

Table 5: Frequencies of ICT Integration in Teaching and Learning Process

		Strongly Disagree	Disagree	Agree	Strongly Agree
		%	%	%	%
1	I use computer as a tool for demonstration working with presentations I have made myself (e.g., PowerPoint)	-	-	65.5	34.4
2	I use computer as a tool for demonstration working with existing presentations, or those someone else has made for me	-	6.6	70.5	23
3	I use computer as a tool to teach new subject knowledge, i.e. the pupils acquire knowledge directly from the computer	-	8.2	77	14.8
4	I use educational software with my students for learning subject knowledge through drill and practice	-	31.1	63.9	4.9
5	I encourage pupils in class to search for relevant information on the Internet	-	9.8	72.1	18
6	I ask my students to undertake tasks or follow up class work at home on the computer	-	41	54.1	4.9
7	I teach my students to consider the implications and opportunities of computer use	-	24.6	65.6	9.8
8	The school has clearly articulated the vision and mission of using ICT integration	-	24.6	68.9	6.6

Table 5 refers to the frequencies score of ICT integration for public primary school teachers in the teaching and learning process. Generally the ICT integration rate is high from the item scored.

		Strongly Disagree	Disagree	Agree	Strongly Agree
9	The school vision of ICT integration motivates teachers to use ICT integration effectively in their teaching	-	19.7	73.8	6.6
10	ICT integration has been perceived as an important factor in maintaining the school's competitive advantage	-	9.8	80.3	9.8
11	Important decisions about ICT integration are made at all levels	-	26.2	67.2	6.6
12	The school encourages autonomy and teamwork to enhance ICT use among the teaching staff	-	31.1	67.2	1.6
		Strongly Disagree	Disagree	Agree	Strongly Agree
		%	%	%	%
13	The school gives flexibility for teacher to adapt ICT integration in the classroom	-	19.7	65.6	14.8
14	I have the freedom and responsibility on the use of ICT integration technology in order to make learning better	-	8.2	78.7	13.1
15	I am supported to attend workshops or training programs in order to use ICT integration effectively	1.6	24.6	63.9	9.8
16	Financial support is provided for teachers to attend conferences and seminars on ICT integration	13.1	52.5	27.9	6.6
17	Training programs are provided for teachers to increase their awareness about the value of ICT learning	3.3	31.1	62.3	3.3
18	The school organizes the appointment of an ICT coordinator who can provide technical support for all the teaching staff	8.2	23	62.3	6.6
19	The school provides consistent hardware and software updates	11.5	29.5	54.1	4.9

Most of the scores fall in the column of Agree or Strongly Agree. This means the degree of ICT integration of teachers in the teaching and learning process is high. This is shown from item 1 where all respondents (65.5% agreed, and 34.4% agreed) were able to use the computer as a tool for demonstration working with presentations they have made themselves such as PowerPoint. Besides, for item 2, 3, 4, 10, and 14, over 90% agreed and strongly agreed with the ICT integration statements.

However, a few items appear certain scores of disagreement, which are item 4 and 7 that mentioned teachers are disagreed (31.1%) about how they use educational software with their students for learning subject knowledge through drill and practice, and 24.6% of respondents disagreed that they teach their students to consider the implications and opportunities of computer use. This may be because teachers did not teach about computer matters in class but they are just using the computer or ICT in classroom as a tool to help in their teaching and learning process.

The disagreement of item 8, 9, 11, 12, 15, 16, 17, 18 and 19 are all related to the school administration and management's policy and support for teachers integrating ICT in the teaching and learning process. For example, the item 8 and 9 are about the school vision and mission on ICT integration in teaching and learning, where 24.6% of respondents disagreed for item 8 and 19.7% of respondents disagreed for item 9. This means some schools still lack a clear vision and mission of using ICT integration and do not determine a clear vision to motivate teachers on ICT integration.

This also can relate via item 12, where 31.1% of respondents disagreed that the school encourages autonomy and teamwork to enhance ICT use among the teaching staff, and 26.2% of respondents denied that important decisions about ICT integration are made at all levels.

The support from school administration and management is seen as discouraging. Some 24.6% and 1.6% of respondents felt that they are not supported by school to attend workshops or training programs in order to use ICT integration effectively; and about 35% (31.1% disagreed and 3.3% strongly disagreed) of respondents commented that training programs are not provided for teachers to increase their awareness about the value of ICT learning. In addition, for item 19, some 29.5% of respondents disagreed and 11.5% strongly disagreed that the school supported consistent hardware and software updates.

Lastly also related to disagreement of school support for ICT integration, some 52.5% disagreed and 13.1% of strongly disagreed for item 16, where the financial support is provided for teachers to attend conferences and seminars on ICT integration. This is proven and can traced from findings in Table 5 where the highest rate that teachers gained training for using computer in curriculum is by their own study. Some 75.4% of teachers learned by themselves on how to use computer in the teaching and learning process because the financial support from the school was low.

Research Question 3.What is the relationship between teachers' level of computer skills and knowledge with ICT integration in teaching and learning process in classroom.

Table 6: Frequencies of Teacher's Attitudes on ICT Integration

		Srongly Disagree	Disgree	Agree	Strongly Agree
		%	%	%	%
1	I would like to learn more about effective ICT integration approaches to teaching and learning	-	-	54.1	45.9
2	I would like to know what resources are available if the school decides to adopt ICT Integration	-	-	67.2	32.8
3	I would like to know how ICT integration delivers better performance than traditional learning	-	-	68.9	31.1
4	I would like to know how the ICT integration system increases school competitiveness and reputation	-	-	77	23
5	I would like to know how ICT integration improves the quality of interaction among students and instructors	-	-	60.7	39.3
6	I would like to know how to use technology and how to shift the way in which I organize and deliver material	-	-	68.9	31.1
7	I would like to know what qualifications I must have to deliver effective instructions	1.6	3.3	62.3	32.8
8	I will use ICT in learning and teaching in the future	-	-	55.7	44.3
9	I plan to use ICT in school as a part of learning and teaching often	-	3.3	52.5	44.3
10	I am not concerned about the ICT integration system in school	45.9	44.3	6.6	3.3

For the third research question, the relationship between teacher's level of computer skills and knowledge and ICT integration in teaching and learning process in the classroom will be identified. As displayed in Table 6, frequencies score of teacher's attitude on ICT integration in classroom teaching and learning was calculated.

Basically respondents had agreed or strongly agreed on the items asked. For example, from item 1 to item 6, and item 8, all of respondents agreed and strongly agreed about its statement that they would like to learn and were keen to know more about ICT, and they also will use ICT in learning and teaching in the future. This is a very strong positive attitude that can be perceived from respondents.

Only a minority of less that 5% of respondents are disagreed about item 7 and item 9, where they are not interested to know what qualifications they must have to deliver effective instructions, and they do not plan to use ICT in school as a part of learning and teaching often. It should not have big effect on teachers' attitude on ICT integration in the teaching and learning process.

Referring to the last item, "I am not concerned about the ICT integration system in school", 45.9% of respondents strongly disagreed and 44.3% disagreed on it. This means those respondents are concerned about ICT integration in schools. Again, it shows positive attitude of respondents toward the ICT integration in the education system.

The cross tabulation test was run for identifying the relationship between teacher's level of computer skills and knowledge and ICT integration in teaching and learning process in the classroom (via purpose of using ICT in Classroom) with the results displayed in Table 7.

Table 7: Cross-tabulation Between Integration of ICT in Teaching and Learning and Purpose of Using ICT in Classroom

	Teacher's Competencies on ICT Skills and Knowledge	Using ICT in Classroom	
		Yes (%)	No (%)
1	I know computers and its functions	100	-
2	I repair my own computer	29.5	70.5
3	I install software on my own	67.2	32.8
4	I search teaching aids from the Internet	96.8	3.2
5	I use the computer to prepare lesson plans	80.4	19.6
6	I can create teaching aids with the computer	93.4	6.6
7	I can construct a learning website	46.2	53.8
8	I prepare notes for my students with the Internet	57.4	42.6
9	I find questions for my students from the Internet	85.3	14.7
10	I always use the computer in my classroom	55.7	44.3
11	I always look for the latest additional information through the Internet	80.4	19.6
12	I use the Internet in the computer lab with my students	42.6	57.4

| 13 | I teach my students on how to find information on the Internet | 70.5 | 29.5 |
| 14 | I use the Internet for my personal use | 88.5 | 11.5 |

Table 7 shows moderate positive relationship between the percentage for the purpose of teachers to using ICT in classroom and teacher's competencies on ICT skills and knowledge. More than 7 items gained over 80% of respondents that skilful and knowledgeable in ICT using ICT for classroom for teaching and learning. Besides, item 3, 8, 10 and item 13 are scored more 50% for the purpose using ICT in classroom for teaching and learning process.

Basically, the percentages show respondents who are not using ICT in classroom for teaching and learning are related to school policies or management issue instead of teachers' competencies on ICT skills and knowledge. Therefore, it would not be counted in the contribution of the relationship as mentioned in research question 3.

DISCUSSION & CONCLUSION

The tremendous potential of ICT in promoting the learning outcome with more latest of knowledge without and obstruction on accessibility and distance limitation, and yet straighten students' thinking skills is undeniable (Education Blueprint, 2013). With ICT integration in the classroom, students will be able to engage in interactive tasks with a wider range of information and knowledge during their learning. At the same time, the teachers' beliefs and attitudes will influence them to integrate ICT in their teaching practice (Hatlevik & Arnseth, 2012; Rampersad, 2011). With the full support by Ministry of Education in integrating ICT in teaching, teachers will able to access updates and richer resources to improve their teaching practices. The teaching and learning with ICT specific in internet accessibility will make the teaching and learning knowledge borderless and create a virtual learning environment for both teachers and students.

The findings of this study indicate that most of the teachers in the Klang Valley are more likely to use ICT applications and resources for educational purposes, such as the Internet, multimedia computer, projector system, PowerPoint presentation, or word processor programs during the teaching and learning process. At the same time, the advanced usage of ICT like build a learning website or creating learning software such as educational games appear to be rarely used in the teaching and learning process or even preparation for educational purposes (Hussain et al., 2011).

These findings are supported by Rogers's theory of diffusion of innovation (1995), that teachers are used to integrating ICT elements with relevance to the curriculum or learning objectives emphasized by the Ministry of Education of Malaysia. This is why teachers who know the function of computers and have above average ICT skills and knowledge do not construct a learning website (55.8% of teachers); it is because in the Malaysian curriculum, it is not mandatory for teachers to construct a learning website in their preparation of teaching, and teachers are allowed to get any relevant learning materials and aids on their own.

Nevertheless, teachers are one of the important factors in students' high achievement. The teachers' beliefs will influence them to integrate ICT in their teaching practice (Arnseth & Hatlevik, 2012). As found in this study, the knowledge and skills about ICT that teachers are equipped with will encourage teachers to integrate ICT into the teaching and learning process that will increase

student learning outcomes (Malaysia Education Blueprint, 2013).

Besides ICT skill and knowledge, the teachers' attitudes are also another key factor that plays a role in ICT integration in education. Many studies have found that the teachers' attitude toward ICT will affect ICT integration for teaching and learning purposes (Albirini, 2004; Hatlevik &Arnseth, 2012). The Ministry of Education of Malaysia has acknowledged the importance of integrating ICT into the national curriculum for primary and secondary school. As suggested by Summers (1990), teachers' attitudes and skills will influence their perception on education and will determine their teaching style. Hence, the element of ICT has been included as one of the transformational shifts in the Malaysia Education Blueprint 2013-2025 as a national education future development focus.

Another issue is that teacher training and development are not well provided by the Ministry of Education (KPM) with only 21.3% of teachers perceived that they received training, 21.3% of teachers perceived that they received training from JPN (State Office of Education), and 41.0% of teachers perceived that they received training from PPD (District Office of Education). The rate of received training from central office no matter KPM, JPPN or PPD was much lower than expected. Component in itself is sufficient to produce good teaching (Bingimlas, 2009, p. 234). To ensure the successful integration of ICT into primary school, it required integration of didactic concept in teachers' education and in-service training for primary school teachers (Grimus, 2000).

Professional training and development refers to many types of educational experiences to learn and apply new knowledge and skills that will improve teacher performance on the job related to the individual's work (Mizell & Forward, 2010). No doubt training and professional development programs for teachers would allow them to have opportunities to learn more from time to time. Moreover, such programs will ensure teachers stay up-to-date on education information in certain research areas and the latest curriculum implemented and that teachers are engaging with new technology available and several resources that help to improve their teaching. The training provided by central office will provide a platform for teachers to upgrade their skills and knowledge, sharing knowledge with peers, and connecting to the latest changes in the education field.

The findings of this research on importance of teachers' attitudes and skills regarding ICT implementation in school system is in line with some previous studies such as Hatlevik and Arnseth (2012) and Al-Zaidiyeen, Mei and Fook (2010). Similarly, Peeraer and Van Petegem (2012) claim that to ensure successful ICT integration in primary schools, scholars have to emphasize that it is about how teachers integrate ICT into the teaching and learning process as the implementation process to foster students' thinking skills and lastly promote better learning outcomes. Therefore, teachers of today should always be ready and well equipped with ICT competencies and positive attitude to provide ICT-based learning opportunities for students to improve their learning quality (Hamidi et al., 2011).

Policy makers realized that the foundation and basic skill of ICT should be introduced into the primary school curriculum, to equip children with 21st century skills in their early learning environment due to the rapid growth of global information. The equipped multimedia and established network will benefit learning outcomes by facilitating students to more self-direction and self-control in the learning process. Hence, by teaching ICT skills in primary school the students are ready to face challenges in the ICT networked world (Grimus, 2000).

Besides enhancing teacher professionalism, ICT also benefits students by developing their confidence in using ICT and developing competency to be more successful in the future high technological world (Panangalage & Pasqual, 2008). Many studies also show ICT brought positive

significance in student learning achievement in subjects such as Mathematics, Science, and English Language (Ahmadi, Keshavarzi, & Foroutan, 2011; Chaamwe, 2010; Hussain et al., 2011). The supportive policies, subsidies funding allocation in ICT from government in education are also important in ensuring successful ICT integration in schools.

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