

The Integration of ICT in Teaching and Learning: A Study in Malaysian Private Preschool

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Abstract

Over the last two decades, the rapid growth of ICT has become one of the important agenda discussed by many scholars in education. No doubt, this is due to the capability of ICT in providing a dynamic and proactive teaching and learning. Along with today's digital era, teachers were required to integrate of ICT in their daily teaching and replace them with the tools of traditional methods and modern amenities. The purpose of this study was to investigate the use of ICT in teaching and learning among the preschool teachers in private preschools in Malaysia. A total of 60 preschool teachers from 10 private preschools in Hulu Bernam in the state of Selangor, Malaysia has been chosen at random in the research study. The findings indicated that the level of computer skills and knowledge of the teachers is at low level ($M = 1.92$). The findings also indicates the level of ICT integration in teaching and learning is at a low level ($M = 1.90$). The results also showed that the attitude of the teachers on important ICT in teaching and learning is encouraging ($M = 2.66$) which can be considered as moderate level. The problem of using ICT in schools also needs to be addressed as the analysis mean score ($M = 2.19$), which indicates the level of the problem is not encouraging.

Keywords: ICT; Integration; Preschool; Teaching and learning.



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1. Introduction

According to [Burnett \(2010\)](#) children nowadays grow up in the textual landscape in which they have a variety of ways to interact and play actively in the environment that is created by digital technology such as computer games, mobile phones and various virtual world. Previous studies regarding the use of ICT among early childhood shown that exposure to multimedia computers can motivate and encourage children to learn much better, faster and effective. Accordingly, the integration of ICT in teaching and learning the young learners can foster critical thinking, enhance creativity, exploring various fields, apply knowledge and skills in situations, in addition to increasing interest and attention ([Papanastasiou and Angeli, 2008](#)). As we can see today there are fundamental concepts in learning can be delivered effectively using multimedia computer program for teaching and learning the young children.

According to [Alessi and Trolip \(2001\)](#) learning through ICT has many advantages. Among its advantages are: a learner can achieve the learning materials at any time and wherever they are located; learning materials can be networked from additional resources available worldwide; management and update the material becomes easier and faster; and various forms of communication channels may be available for the use of learners and teachers. According to [Jonassen \(2003\)](#) facilities hypertext and hypermedia in ICT can provide a constructive learning environment. Using ICT it will make the searching process of information become more exciting and entertaining information. Interactivity that occurs enable training or teaching process is carried out according to the suitability and requirements of the learner.

According to the National Preschool Curriculum Standards, teachers are urged to use a variety of approaches and activities in accordance with the development of the child, abilities, capabilities, talents and interests ([Ministry of Education, 2012](#)). Teachers need to carry out activities involving children actively so that learning becomes more meaningful, effective and enjoyable. Activities using ICT is recommended to help the process of teaching and learning; obtain information, interact with materials for self-study and with peers; and enriches the learning experience ([National Curriculum Development Centre, 2007](#)). To meet these requirements every school classes under the supervision of the MOE is supplied with two multimedia computer for 25 children. Various software that can stimulate a child's development is also supplied to the preschool classes. For preschoolers, they are given the freedom to choose their own software according to ability, age and interests. Those who are active will choose the

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form of software or arcade game moving. Thus, the software is expected to be able to meet the needs of education as an element of knowledge and featured tutorial (Rohani *et al.*, 2003).

Teachers today are increasingly knowledgeable and aware of the use of ICT in preparing teaching and learning process. According to Ghavifekr *et al.*; in Western countries the increase of ICT integration in the classroom is encouraging since thirty years ago. In the era of rapid development of ICT, teachers need to focus on two main areas where the first field is involves learning using technology whereby teachers are exposed to various how the use of ICT skills aspects of personal matters until the professional. Teachers through the learning process related to ICT as they learn it in school. ICT competence is known as ICT literacy includes knowledge about the basic concepts and operation of ICT. Aspects contained in ICT literacy including basic concepts of ICT, computer usage, word processing, spreadsheet, database, file management, creating documents, presentations, as well as information and communication (Norton and Wiburg, 2003).

There were several studies in Malaysian context in relation to the ICT integration in teaching and learning in preschool. Norton and Wiburg (2003) summarized the findings of the previous studies that ICT integration is a complex phenomenon and Ng *et al.* (2010) found that technology or computer usage among preschool teachers is a complicated process. Within years of implementing various technology in Malaysian preschool, Sharifah and Kamarul (2011) reported that teachers' level of ICT integration was still low. In a study done by Ismail *et al.* (2007) the results showed that many private preschool teachers were not computer users. It was found that only 30 percent of the sample was computer literate. Majority of the teachers did not have the basic foundation of computer literacy, hence difficult to build new technological skills. Muhammad Yusri (2011), reported that teachers in Malaysian private preschools are not competent in basic computer operations and in the use of the generic software. However, a study conducted by Ng *et al.* (2010) and Ismail *et al.* (2007) showed a slight difference in which both studies reported that the ICT integration in teaching and learning is at the moderate level.

Looking at this quite controversial issue, therefore this study would like to unravel the matter. Moreover, the Malaysian government through its agencies has allocated substantial funds for ICT to be used either public and private preschool. After a large allocation been given to intensify the use of ICT in schools, it is important to investigate the levels of teachers' competencies on ICT skills and knowledge and whether Malaysian teachers do integrate ICT in their classrooms, and if so, at what level do ICT integration has been achieved. Another issue that needs to be reviewed is problems that hinder the implementation of ICT integration in preschool.

2. Methodology

This was a cross-sectional study conducted at 10 private preschools in Hulu Bernam in the state of Selangor, Malaysia. The sample consisted of 60 preschool teachers, 34 female teachers and 26 male teachers. The researchers utilized the instrument modified from previous researches. The questionnaire is adapted from a study done by Albirini (2006) and it is regarding the teacher's level of knowledge and skills in using ICT tools and materials. Meanwhile, the questionnaires regarding the level of ICT integration, attitude and problems were adapted from Singh and Chan (2014). This study also refers to score mean score. From there, the researcher developed interpretation to classify the level: High ($M = 3.67 - 5.00$), moderate ($M = 2.34 - 3.66$) and low ($M = 1.00 - 2.33$).

3. Results

3.1. Level of Knowledge and Skills on ICT

The knowledge and skills on the use ICT is based on the result of teacher's competencies on the use ICT tools and materials as shown on Table 2. The response format for the questionnaire was incapable (1), fair (2), quite good (3) and very good (4). Besides, this study also refers to score mean and from there the researchers developed interpretation to classify the level of high ($M = 2.68 - 4.00$), moderate ($M = 1.34 - 2.67$) and low ($M = 1.00 - 1.33$).

Table-1. Level of Knowledge and Skill

Instructional Tools and Materials	Score Mean	Competencies			
		*1	*2	*3	*4
		%	%	%	%
Interactive White Board	1.35	23.3	52.3	16.7	7.7
Overhead Projector	1.18	25.7	59.3	7.9	7.1
Television	2.92	-	7.1	16.4	76.4
Video	1.36	5.3	46.4	42.9	5.4
Digital Camera	1.43	3.6	46.4	35.4	14.6
Radio Cassette Recorder	1.18	-	7.1	25.0	67.9
Smart Phone	2.36	-	7.1	66.4	26.4
Computer	2.82	-	3.6	10.7	85.7
Internet	2.72	2.6	21.3	50.4	26.2
Overall	1.92				

*1 = incapable, *2 = fair, *3 = good, *4 = very good

Referring to the above table, the analysis shows that teachers have a very good knowledge and skills in the use television (76.4%; M = 2.92), radio cassette recorder (67.9%; M = 2.71) and a computer (85.7%; M = 2.82). Based on the interpretation of mean scores (M = 3.67 - 4.00) the use of these tools can be considered as at high level.

Besides, majority of the preschool teachers have a good knowledge on using smart phone which comprises of 66.4% of them are quite good and 26.4 are very good. Furthermore, they are also have a good knowledge in using internet which comprises of 50.4% of them are quite good and 26.4 are very good as they can access internet, MS Word processing, MS Excel and PowerPoint. Based on interpretation mean scores the level of knowledge and skills of both electronic devices i.e smart phone (M = 3.36) and internet (M = 2.72) is at the moderate level (M = 2.34 – 3.66).

On the other hand, the use of interactive white board is at low competency as can be seen 52.3% are incapable and 23.3% fair knowledge and skills on it. The analysis also shows that overhead projector is at low competency as 52.3% are not capable and 23.3% are fair in using it. It might because those tools are no longer popular and have been replaced by smart phone, computer and internet which have better functions.

To summarize discussing the level of knowledge and skills on ICT its finding is a shock because the overall mean score is 1.92. From the mean score result, we can classified the level of knowledge and skills on ICT is considered low.

3.2. Level of ICT Integration in Teaching and Learning

The second section of the questionnaire is about the ICT integration in teaching and learning and it refers to the use knowledge possessed by preschool teachers in using ICT. Based on self-evaluation, the teachers were asked to rate their ICT Integration in Teaching and Learning from never (1), rarely (2), often (3) and always (4). This study also refers to score mean and based from that the researchers developed interpretation to classify the level of high (M = 2.68 – 4.00), average (M = 1.34 – 2.67) and low (M = 1.00 – 1.33). The results regarding the ICT integration in teaching and learning is shown in Table 2 below.

Table-2. ICT Integration in Teaching and Learning

I use ICT to..... in teaching and learning	Mean Score	Integration			
		*1	*2	*3	*4
		%	%	%	%
prepare lesson and reports	2.68	2.3	14.7	67.9	15.1
access internet to search teaching material	2.71	1.6	1.6	67.2	29.5
communicate with students and parents	2.69	3.3	3.3	68.9	24.6
create teaching aids with the computer	1.53	14.8	52.6	31.3	1.3
to monitor and evaluate children progress or performance	1.18	57.4	31.1	11.5	-
to make presentation slides/ delivery	1.33	41.3	47.2	11.5	-
to provide and prepare online work or assignment	1.19	78.7	21.3	-	-
Overall	1.90				

*1 = never, *2 = rarely, *3 = often, *4 = always

The analysis indicates the level of ICT integration in teaching and learning in some circumstances is encouraging. The results show that more than 80% admitted that they use ICT to prepare lessons and report (67.9% often, always 15.1) in teaching and learning. It is almost the same in the items "the teachers use ICT to access the Internet to search teaching materials" (67.2% often, 29.5% always) and "the teachers use ICT communicate with students and parents" (68.9% often, 24.6% always). Accordingly, the analysis showed that the mean score of the three items are within the range (M = 2.68 - 4.00) and therefore we can classified the level of ICT integration in such items is high.

However, the results on the item "the teachers use ICT to create teaching aids with the computer" (52.6% often, 14.8% want) shows a relatively satisfactory results. Based on the interpretation of the mean score this item is within the range (M = 1.34 - 2.67) therefore it can be concluded that ICT integration in such items is at average level.

On the other hand, the ICT integration in teaching and learning in some circumstances are unsatisfactory. This can be seen in the items “ to monitor and evaluate children progress or performance (57.4% never, 31.1 rarely), “..... to make presentation slides/ delivery” (41.3% never, 47.2 rarely) and “..... to provide and prepare online work or assignment” (78.7% never, 21.3 rarely). Based on the interpretation of the mean score this item is within the range (M = 1.00 – 1.33) therefore it can be concluded that ICT integration in such items is at the low level.

To summarize discussing the ICT integration in teaching and learning, its finding is surprising because the overall mean score is 1.90. From the mean score result, we can classified the level of ICT Integration in Teaching and Learning is considered low.

3.3. Attitudes of Preschool Teachers towards the Use of ICT

Table 3 refers to the frequencies of score for attitudes of preschool teachers towards the use of ICT in teaching and learning. The response format for the questionnaire was strongly disagree (1), disagree (2), agree (3) and strongly disagree (4).

Table-3. Attitudes towards ICT

Item	Score Mean	Response			
		*1 %	*2 %	*3 %	*4 %
ICT equipment is very important to perform a task	2.82	0	0	86.7	13.3
Playing/working with a computer is really fun.	2.69	0	6.7	56.7	36.6
It is interested to use any ICT equipments in doing work	2.68	0	10.0	53.3	36.7
I feel comfortable using ICT as a tool in teaching and learning.	2.81	0	6.7	86.4	6.7
The use of ICT equipment stresses me out.	2.18	29.7	61.6	5.4	3.3
Using of ICT in teaching and learning excites me.	2.39	14.1	66.7	15.9	3.3
Any ICT equipment is a valuable tool for teachers.	3.03	0	0	90.0	10.0
ICT will change the way children learn in the classes.	2.36	0	13.4	73.3	13.3
ICT equipment helps students to understand more effective ways.	3.01	0	3.3	90.0	6.7
Overall	2.66				

*1 = strongly disagree, *2 = disagree, *3 = agree, *4 = strongly disagree

Most of the items are agreed upon by the preschool teachers (respondents) concerning their attitude towards ICT. As it can be seen, more than 80% of the preschool teachers (86.4% agree, 6.7% strongly agree) feel comfortable using ICT as a tool in teaching and learning. Their positive attitude can also be seen in the statement ICT equipment is very important to perform a task (86.7% agree and 13.3 strongly agree), playing or working with a computer is really fun (56.7 agree and 36.6 strongly agree), they are interested to use any ICT equipments in doing work (53.3% agree, 36.7% strongly agree).

In addition, majority of the preschool teachers are very positive the use ICT will change the way students learn in class (90% agree, 6.7 strongly agree). The statement computer helps students understand concepts in a more effective way is agreed by 90% and strongly agreed 6.7% of the preschool teachers. It is almost the same to the statement that any ICT equipment is a valuable tool for teachers as the they agreed 90% and strongly agreed 10.0%. Almost all items are mean score ($M = 3.67 - 4.00$) and based on the interpretation of the mean scores the attitude of preschool teacher very positive that can be considered as at high level. However, more that 70% of the preschool teachers showed an unfavorable attitude in which the statement "using of ICT in teaching and learning excites me" seems to be disagreed (66.7%) and strongly disagreed (14.1%). It is almost the same with the statement the use of ICT equipment stresses me out as can be seen 61.6% disagree and 29.7% strongly disagree. Their attitude level is considered low as their mean score is within the range of ($M = 1.00 - 1.33$).

Lastly, to conclude the discussion the attitudes of preschool teachers towards the use of ICT in teaching and learning, its finding is quite favourable because the overall mean score is 2.66. From the mean score result, we can classified the level of ICT integration in teaching and learning is considered moderate.

3.4. Problem in Implementing ICT Integration in Teaching and Learning

Table 4 refers to the frequencies of score regarding the problems in implementing ICT integration in teaching by the preschool teachers. The response format for the questionnaire was strongly disagree (1), disagree (2), agree (3) and strongly disagree (4).

Table-4. Problems faced by the Preschool Teachers

Item	Score Mean	Response			
		*1 %	*2 %	*3 %	*4 %
Problem with technical support provided	2.73	0	5.0	66.7	28.3
Constraint of time in using ICT in teaching and learning	2.69	0	6.7	61.6	31.7
Limited knowledge on how to make use of ICT	2.71	0	19.2	66.7	14.1
Limited understanding on how to integrate ICT	2.68	0	24.2	62.5	13.3
Lack of software or websites that support teaching and learning	1.17	23.3	63.3	13.4	0
Lack of ICT equipment in school e.g computer	1.9	21.3	68.3	10.4	0
Overall	2.19				

*1 = strongly disagree, *2 = disagree, *3 = agree, *4 = strongly disagree

Majority of the preschool teachers, 66.7% (agree) and 28.3% (strongly disagree) and only 5.0% (disagree) that they have problems with technical support. Whereas, 61.6% agree and 31.7% strongly agree of the preschool teachers admitted that they have problems with the constraint of time to apply the ICT equipment in teaching and learning. In addition, 66.7% of the preschool teachers do agree and 14.1% strongly agree that they have limited knowledge and skills on how to make full use of the ICT. Only 19.2% disagree with the statement. Majority of the preschool teachers, 62.5% of them agree and 13.3% strongly agree that they have limited understanding on how to integrate ICT into teaching.

This situation is contrary to the problem of software and electronic devices. The results showed that 63.3% of the preschool teachers are disagree and 23.3% strongly disagree that there is lacking of software or websites that can support teaching and learning. Referring to this statement only 13.4% disagree with the statement. Most of the teachers, 68.3% of them are also disagree and 21.3% strongly that the school are not provided with computer or tool. Only 10.4% agree with the statement.

Lastly, to conclude the discussion regarding the problems faced by the preschool teachers in using ICT in teaching and learning, its finding is not encouraging because the overall mean score is 2.19 which can be considered as. The problems need to be addressed.

4. Discussion

The findings can be summarized under four headings, which is the level of knowledge and skills of preschool teachers in using ICT, the integration of ICT in teaching and learning, teachers' attitude towards the use of ICT, problems that hinder the use of ICT in preschools. From the findings it can help to overcome the problems of ICT in private preschool and hoping that the preschool teachers become effective technology users.

The first part of this study is regarding the level of knowledge and skills possessed by the preschool teachers in using ICT. The results reveal that the teachers' level of knowledge and skills on ICT is average as they were only good at using certain applications such as television, radio and cassette recorder, computer, smart phone and internet as these are the main applications which are commonly and often been used in the teaching and learning. However, this findings reflect that most of the teachers are normal users because these tools may be frequently use for personal use. The results seem similar to research done by [Norijah et al. \(2015\)](#) where minority group of teachers were knowledgeable on ICT. Study done by [Irfan and Amat \(2015\)](#) also confirms this research as the findings of the study reflects that the respondents were highly knowledgeable only on certain applications such as word processing and internet browsing. This study provide information on the types of tools and material that should be mastered by preschool teachers in order to increase the level of knowledge and skills of ICT among the teachers. The knowledge and skills of the teachers provide confidence to all of us for that the implementation of National Preschool Curriculum Standard can be successful. Therefore, teachers' awareness towards ICT is important and also an added advantage to the implementation of ICT related programmes.

This study also concerns about the integration of ICT in teaching and learning. The findings indicate more than half of the preschool teacher often (i) use ICT to prepare lessons and reports (ii) use the internet to search teaching material and (iii) to communicate with students and parents. However, the usage of computer in teaching and learning as well as not encouraging the usage of ICT to monitor and evaluate children progress or performance. The findings also show that the majority of teachers in private preschool never use ICT to provide and prepare online work or assignment to the children. Based on these findings the level of ICT integration in teaching and learning in private preschool is consider low. The findings seem to support [Norijah et al. \(2015\)](#) and [Melor \(2007\)](#) that found the level of ICT integration is moderate level.

The third part of the finding is related to attitudes, which demonstrate that teachers' attitude are positive. This result is in compliance with research carried out Samuel and Zaitun (2007) and Papanastasiou and Angeli (2008). These studies show that the majority of respondents have a positive attitude towards the use of ICT in teaching.

This study also looks at the problems faced by the teachers in using ICT. Majority of the preschool teachers agree that their awareness of using ICT is very low. This problem may be related to the exposure of ICT teachers and other problems such as technical support, constraint of time, limited knowledge and skill. In addition, the majority of the teachers admitted that they often have problems with technical support, constraint of time in school to fully utilize the ICT equipment, limited knowledge and skills on how to make full use of the ICT. No doubt this issue could lead to their understanding on how to integrate ICT in teaching and learning is very low. However, quite different from the problem of software and electronic devices in which this is not a big problem. Majority of them disagree that do not provide the school with computer or tool. The statement is in line with substantial funds allocated by the Malaysian government for ICT integration in public and private preschool. Looking at this circumstances, it seems there is a need to produce preschool teachers with skills and knowledge in the use of technology in instructional design and delivery. It is time to equip and learn all the necessary skills. Positive attitude surely encourage individuals to use ICT effectively and improve the skills required (Moganashwari and Parilah, 2013).

5. Conclusion

Overall, this study found that private preschool teachers have a good basic ICT knowledge and skills. However, lack of knowledge and skills in handling ICT equipment will affect the integration of ICT in teaching and learning in turn will make the teaching and learning of less attract the attention and motivate the children. Preschool teachers are actually have no reason for using ICT in teaching and learning. This is because the Ministry of Education regularly organizes short courses skills using ICT tools in order to preschool teachers received up to date ICT knowledge and skills . Preschool teachers also need to be aware of ICT will be an integral part of teaching and learning approaches in the present and the future. To ensure that ICT is used effectively preschool teachers need to be more creative and flexible in their teaching.

Preschool teachers need to be smart and innovative use of ICT during the implementation of teaching and learning in preschool classes in line with the National Preschool Curriculum Standard of developing the potential of children in a holistic and integrated in physical, emotional, intellectual and social learning environment that is conducive, enjoyable, creative and meaningful. Technology is a tool and a key enabler for the implementation of the process of teaching and learning as well as powerful and efficient management tool.

Therefore, teachers should equip themselves with knowledge-and skills related to ICT. This is because the changes and advance in technology have increased the demands on the task as a teacher even had to deal with the issue of whether they are able to use and integrate ICT in their teaching as well as guiding children to master higher levels of knowledge. Teachers must have a positive attitude and proactive in accepting and applying innovation and ICT skills that are constantly changing ICT challenges. Preschool teachers who master ICT skills are expected to be able to maximize the advantages of the technology to make teaching and learning more interesting, interactive and effective. Therefore, preschool teachers in Malaysia require intensive training in the use of ICT to facilitate integration into the classroom in ways that enhance thinking and creativity. For long term, it is recommended that in order to remain confident in their knowledge about the application of technology, teachers need to improve their skills on a regular basis and stay up to date through continuing professional development.

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