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IMPACT OF ICT AND ELECTRONIC GADGET AMONG YOUNG CHILDREN IN EDUCATION: A CONCEPTUAL MODEL

Mira Adila Mat Saruji[1], Noor Hafizah Hassan[2] , Sulfeeza Md. Drus[3]

[1]*Universiti Tenaga Nasional, Malaysia,* mira.adila@gmail.com
[2]*Universiti Tenaga Nasional, Malaysia,* hafizah@uniten.edu.my
[3]*Universiti Tenaga Nasional, Malaysia,* sulfeeza@uniten.edu.my

ABSTRACT ICT and electronic gadgets can enhance and improve students' learning process as well as provide better teaching methods. Moreover, ICT has impacted nearly every aspect of our lives transforming the way people communicate, access information, and learn. Through ICT, images can easily be used in teaching and improving the memory of students, especially young children by providing a better understanding on what they had learnt. Most past literatures had discussed the impact of ICT and electronic gadgets on teenagers. However, very limited papers can be found on the impact of using ICT and electronic gadgets among young children aged from four to 12 years old in education. Therefore, this paper will look into impacting factors that ICT and electronic gadgets may have on young children for education purpose. This paper also investigates the effects that may arise from the use of ICT and electronic gadgets. A preliminary investigation comprising literature review and interviews were conducted. A conceptual model is proposed depicting four main factors which are motivation, acceptance, ease of use, and usability. The outcome of this paper may be useful for teachers and educational organizations to consider the factors that may have a big impact on the use of ICT and electronic gadgets.

Keywords: Electronic gadget, ICT Education, young children

INTRODUCTION

Today's lifestyle is technologically-driven which is evident with the presence of electronic gadgets and ICT. The technology has been developing so quickly over time and now it has become important in our lives. The impact and effect of technology can be seen on individuals from all walks of life and age groups. Undoubtedly, technology, through the usage of electronic gadgets and ICT, also has its impact among children. As with everything that has their positive and negative effect, it also applies in situations where electronic gadgets are employed to facilitate the learning process of children. Furthermore, there appears to be more positive impact in encouraging children to use electronic gadgets and ICT in their learning process.

Previous literature was discussing how e-learning may have an impact towards the use of ICT in schools. However, with the updates in technology and implementation of ICT in schools, it has gone one-step further in educating the children, where, their behaviour have improved and their concentration also increased when tablet PCs are made available. Moreover, it was stated that tablet PCs were convenient to use in the classrooms as the children

could use the them either, on their laps, on the table, or even while standing up, or held in one arm. According to Chloe; one of the students at St Peter's CE (C) Primary School, she said that she liked tablet PCs because she can carry it around and she described it as an interactive whiteboard. However, as some parents are worried about electronic gadgets with more capabilities especially smart phones, hence, in order to balance this issue, it is necessary to impose some form of parental control (Twining et al., 2005). Furthermore, it has been reported in Subrahmayam et al. (2000), high school students who used educational software at home scored significantly higher than other students on computer literacy test.

Therefore, the objective of this research is to investigate the factors that may have an impact towards the use of ICT and electronic gadgets among young children in education purpose. Secondly, the preliminary investigation conducted is use to confirm the research gap identified. These outcomes might be useful for teachers and education organizations to consider when developing a module that may be related on ICT development.

USAGE OF ELECTRONIC GADGETS AND ICT IN EDUCATION

ICT can positively affect students' learning when teachers are well adept to incorporate it into educational modules. Schools often use ICT tools to communicate, teach, and manage information. In some context, ICT has replaced chalkboards with digital whiteboards, using students' own smartphones or other devices such as tablet PCs for learning purposes during class time. These approaches can lead to develop higher thinking skills, creative skills, and better understanding among students (Eady & Lockyer, 2013). The facts about the digital consumption of children are an eye-opener. Children nowadays spend more than seven hours daily using electronic gadgets and ICT in their lives whether in learning process, communicating, or playing games. This statement might be contributing to a burgeoning childhood development problems. ICT is heavily involved in children's development and also in the use of technology to encourage them in their education. They will get to experience this in some stage as they come across new technology every day.

METHODOLOGY

For the preliminary investigation, this paper uses conventional literature review and interviews conducted with only three respondents. The three respondents are two teachers and one parents. The selection of respondents is where the parents must have children that use electronic gadgets and ICT in school or the teachers that use the electronic gadget and ICT in the school that teach 4-12 years old children. The purpose of conducting the literature review was to analyze the previous literature on the impact of ICT and electronic gadgets among young children. Besides, interviews were conducted for the purpose of validating the factors that were derived from the literature review. Additionally, the preliminary investigation conducted through the interviews had assisted in identifying the gaps and where to conduct the possible research areas. The questions were constructed based on previous literature.

IMPACT OF ICT AND ELECTRONIC GADGET AMONG CHILDREN

Literature review revealed that the effects of technology on children's health issues were obesity and sensory skill development. The author recommended that parents monitor their children's activities when using ICT tools while studying or playing games (Hatch, 2011). There is an increase in students' motivation when tablet PCs are used in schools which led to a drop in absenteeism. Aside from improved concentration on tasks at hand, there were progress in the children's behaviour and communication skills. Other than that, tablet PCs may enhance teaching and learning (Twining et al., 2005). Moreover, a study on e-Learning found that students may develop higher thinking skills and problem solving skills. E-Learning could

also give an impact on students' achievement where using technology can motivate them to obtain higher scores in tests (Olson et al., 2011). Table 1 shows the literature review conducted on impact and effect of ICT and electronic gadgets among children.

Table 1 Summary of Literature Review

Author	Aims/Objectives	Findings
Hatch, 2011	To study the pros and cons of the use of technology and how it will affect children.	Technology enriches basic skills and physical activity, keeping track of children using the GPS trackers within the phone. On the contrary, loss of privacy, lessened ability to multitask. Health-related issues: obesity and children's sensory skill development. Changing social norms: Children feel lonely and depressed.
Twining et al., 2005	The purpose is to analyse 12 case studies involving schools in England that were using Tablet PCs in teaching and learning.	Students' motivation, behaviour, self-esteem and communication skills have improved. Enhanced teaching and learning outcomes.
Hallberg, 2008	To investigate how teaching devices are used, with focus on ICT.	Enhanced the education process, influenced the power and communicative relationship.
Bus, Takacs, & Kegel, 2015	To review the effects of digitized presentation of narratives that include oral text as well as multimedia information resources.	Helped easily distracted children to stay engaged while solving tasks and enabled them to control stress while taking on the tasks.
Olson et al., 2011	To provide information regarding the potential of e-Learning to impact learning, society and the economy in developing countries with a particular reference to secondary schools in Tanzania.	Motivated students to learn and get higher score in tests, helped students develop higher-order thinking and problem-solving skills and effect on teaching parallels and teachers gain confidence, improvement in education positively affects economic growth, and a strong motivator for young people in many countries to learn English.
Anderson, 2005	To trace the ways that IT changed and continue to change lives and how ICT are changing learning in schools.	Students actively participated in the learning process, and tend to produce and share knowledge collaboratively.
Rachel, Cobcroft, Towers, Smith, & Bruns, 2006	To study the M-learning's opportunities and challenges.	Mobile learning can contribute to quality learning experience for students.
Joseph, Corbeil, & Valdes-Corbeil, 2007	To provide information about mobile devices and their potential instructional uses and to study what are the benefits and challenges of mobile learning.	Can access the content anytime and anywhere, and enhance interaction between and among students and instructor. Support differentiation of student learning needs and reduce cultural and communication barriers.
Higgins, Xiao, & Katsipataki,	To present a synthesis of the evidence from meta-analysis about	Collaborative use of technology (in pairs or small groups) is usually more effec-

2012	the impact of the use of digital technology in schools on children's attainment, or more widely the impact of digital technology on academic achievements.	tive than individual use. The impact tends to be greater in writing inventions compared with reading or spelling. Technology can be as powerful as a short but focused intervention to improve learning, particularly when there is regular and frequent use.
Lau, Lau, Wong, & Ransdell, 2011	To study the behavioural change in promoting physical activity among children and adolescents.	Could enhance their attention towards and understanding of the materials which could lead to subsequent improvement in physical activity behavior.
Jyoti Ranjan Muduli, Ranjan, 2014	To examine the use of tech-devices by youth, i.e. the time spent with the gadgets, the purposes behind its use, and its impacts on mental health and life style.	Have positive effects on investigating skills, strategic thinking and creativity potential of the individual. Negative impact of addiction to tech-devices: Mental health: There is a positive relationship between Internet addiction and psychiatric disorder like depression, bipolar disorder, obsessive-compulsive disorder, attention deficit disorder. Change of lifestyle: Develop unhealthy lifestyle, poor time management, and poor eating habits.
Valentine, Marsh, & Pattie, 2005	To investigate the types and amount of home use of ICT by children and young people, and identify the drivers for home use of ICT by pupils and what motivates pupils to choose ICT.	Improvement in children's attainment in mathematics and English, and improved children's motivation and confidence.
Sigman, 2013	To study the impact of screen media on children.	Mental health, screen viewing leads to less reading, television viewing gives bad effects to mathematics ability, reading recognition and comprehension, Cardiovascular Disease: increased blood pressure (hypertension) in children; Metabolism and body fat: obesity among preschool children.
Cain & Gradisar, 2010	To study the impact of electronic media use on sleeping patterns of children and adolescents.	Use of electronic media by children and adolescents does have a negative impact on their sleep which delayed bedtime and shorter total sleep time associated with excessive media use.
Leena, Tomi, & Arja, 2005	To study the intensity in the use of mobile phone toward health behaviours.	Health-related issue: The use of mobile phone increased along with an increase in smoking.

FINDINGS FROM INTERVIEW

For the interview, there were nine questions asked on the issue. This section will briefly summarize the output from the interviews.

Q1: Do you use ICT in school (if teacher) / home (if parents)?

For the first question, a teacher answered that she used ICT in school for PDP, which is an acronym in Bahasa Malaysia for Teaching and Learning. VLE Frog is an application that is

used for PDP. She said that teachers in school used ICT to input data on a daily basis, such as students attendance. Moreover, ICT were also used to keyin each student's tests and examination marks. The data were inputted using application of SAPS which stands for *Sistem Aplikasi Peperiksaan Sekolah*. The other two respondents who were parents responded that they used ICT at home for their children in learning.

Q 2: What type of ICT did you use?

The teacher replied that the types of ICT used in schools included computer, LCD projector, and smartphone YES to enable teachers to access VLE Frog. Next, one parent answered that ICT used in their home were the computer, Internet, and television while the other parent said that ICT used in their home included the computer, Internet, tablet, smartphone and MS Office application.

Q 3: Which subjects use ICT in teaching and learning?

The teacher responded it is used in all subjects. Meanwhile, both parents also said that all subjects incorporate ICT elements in school, citing examples of Mathematics which used visual objects in order to learn calculating methods, and Science where ICT is used to recognize animals. .

Q 4: What is the positive effect of using electronic gadgets / ICT among children?

The teacher answered that students used VLE Frog for exercises and online quizzes that previously uploaded in the application by the teachers. The first parent said that ICT can attract children to be more interested in learning and the additional story-telling method would enable the children to understand their lessons better, and thus, cut the cost of sending children to extra classes. The other parent said that children found it easier to learn with their electronic gadgets and ICT since they can access teaching materials from anywhere, and at any time, and learning is conducted in a fun atmosphere.

Q 5: What is the negative effect of using electronic gadgets/ ICT among children?

The teacher replied that children became too busy surfing the Internet for other purposes. They are exposed to playing games and others which are not useful. Next, it requires a huge cost to buy electronic gadgets and ICT tools. Children can also get addicted on the technology aspect and spend time idly surfing the internet. Furthermore, children also tend to play more online games rather than on learning.

Q 6: If ICT is adopted in schools, as teachers do you think parents/eacherswill accept it and send their children to school?

The teacher answered that parents would accept and should accept if there is ICT adoption at schools for learning purposes and should also send their children to schools. This is because of the policies that were laid down by the Malaysian Education Ministry. Next, both parents answered that they would accept if there are ICT adoption at school for learning but would need the supervision of teachers.

Q7: Do you think children will be motivated when using electronic gadgets/ ICT?

The teacher responded that children will be motivated when using electronic gadgets and ICT if they know to make full use of ICT. Next, both parents said that children will be motivated when using electronic gadgets and ICT because the use of ICT can make learning more interactive and interesting.

Q 8: What about the usability, is it easy to use?

The teacher said that that it is easy to use Frog VLE application where children are provided with username and password. Next, both parents agreed that electronic gadgets and ICT are easy to use for learning among children and if they can use it well then they will tend to be more interested to learn.

Q 9: What are the benefits of using ICT at school?

The teacher answered that PDP will be more creative and interesting. Besides, the Frog VLE application can enhance the children's learning. This is because they can learn in a fun and comfortable atmosphere, and it can add on their interest to learn. Next, both parents agreed that using ICT in schools can improve learning. The benefits are children would easily remember what they learnt, easier to answer examination questions, and in particular, easy to learn English.

A CONCEPTUAL MODEL

Based on the previous literature review and interviews conducted, a proposed conceptual model is designed. This conceptual model shows the factors that are most commonly stated or cited during the literature review and interviews. It highlights the four main factors which are motivation, acceptance, ease of use, and usability as shown in Figure 1. These four factors contribute towards the impact of using electronic gadgets and ICT among young children.

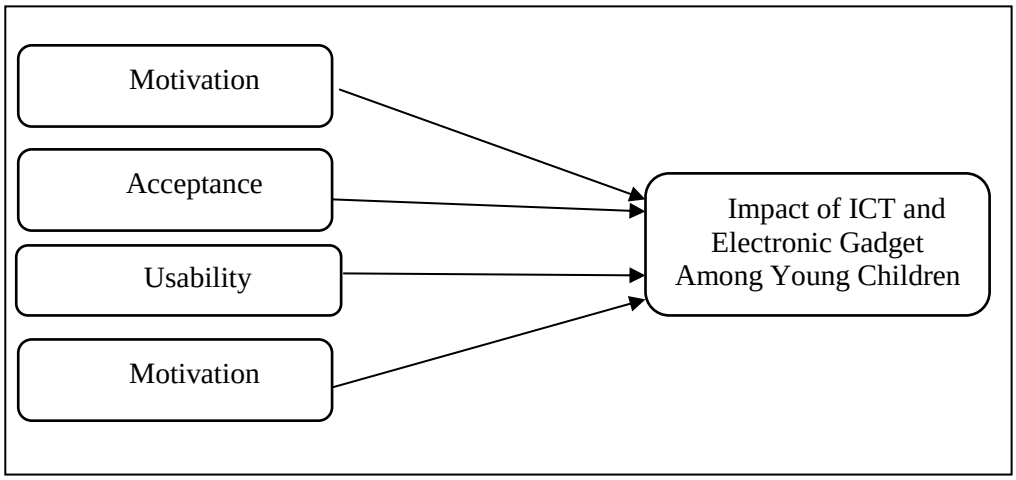

Figure 1. A Proposed Conceptual Model

CONCLUSION

Based on the preliminary investigation conducted, four main factors were found to have a significant impact of ICT and electronic gadget among young children. These are motivation, acceptance, usability and motivation. These factors will serve as a theoretical foundation to be further evaluated in the next step. This involves conducting quantitative and qualitative data collection to verify the proposed conceptual model. The research gap found form the preliminary investigation conducted confirmed that this study is useful for educators as well as education organization. This research is still in its infancy, the findings in this paper need further evaluation with educators and parents. There is a pressing need for more systematic research across the broad range of topics discussed to better understand the factors that may have a positive impact of using electronic gadget and ICT in education process with more negative effect were reported on its usage in previous literature.

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