

# Digital Etiquette: Educating Primary School Children via Mobile Game Application

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## ABSTRACT

Today, internet accessibility is no longer a privilege. It could be accessed anywhere and by anyone regardless of age. Being exposed to the internet at an early age is harmful without proper parental guidance. Thus, there is a need to build awareness among children on digital etiquette when going online. Learning digital etiquette would allow children to know the correct use of the internet which will lead them to understand the concepts of accountability, respect, privacy and etc. These concepts can help guide them to build good attitude and avoid them from being victims of cybercrimes such as internet abuse - pornographic, information theft, cyber bullying and so forth. The purpose of this paper is to build awareness on digital etiquette among primary school children. An online survey was conducted to assess the children's understanding and awareness about digital etiquette. The online survey was distributed via social network sites (such as Facebook, Twitter and Google+) to parents or guardians with children aged between 7 to 12 years old. As a result of the survey, we found the need to educate children on proper digital etiquette. Hence, we proposed a design for an Android-based game application to educate the primary school children on digital etiquette. In future, we hope to complete the development of the application and implement it for primary school children in Malaysia. Therefore, this paper is focused on the early stages of our research that revolves on the background study and initial results of the survey, which led to the need of such conclusion.

**Keywords:** digital etiquette, ethic education, internet safety, internet ethics, netiquette.

## I INTRODUCTION

Digital etiquette is a term that describes the positive behavioral or attitude of digital technology users. The scope of this term is wide, encompassing not only internet usage but also other technologies such as mobile phones, tablets etc. Some also refer to the term

as Digital citizenship in view of the virtual world created by the usage of various technologies. Hence technology users are called digital citizens (Ribble, Bailey & Ross, 2004). In a focused scope of internet, this etiquette is called netiquette while the Internet users are often referred to as online citizens or netizens (Preece, 2004). In another perspective, this virtual world is also called the cyber-world.

The power of the world-wide web is now bigger than its first initial introduction. This technology made the impossible possible (i.e. people all over the world could read one piece of content from the same source at any given time and location). While we were cheering at the success of the technology, the setback was just around the corner. The different backgrounds of internet users determine the interpretation of content. As highlighted by Preece (2004), "Internet users come from many cultures and walks of life. They arrive with a mix of expectations using a variety of technologies, which they access in different ways." The technology has also been misused by users in many ways. It has acted as a gateway for criminals to freely conduct their activities in anonymity. This is referred to as cyber-crimes. Despite the various setbacks, the diversity of internet usage alleviates its value with an increase in the demographic background of users accessing it especially at different ages range for different purposes. The technology has now reached our children as early as four months old. Without proper guidance, these children could become potential victims to various crimes in the virtual world.

Knowledge management is interpreted as the ability to 'selectively capture, archive and access the best practices of work-related knowledge...for both employees and managers' (Bergeron, 2003, pg. 6). In order to achieve this, a supportive working culture is essential within an organization (Bergeron, 2003, pg. 35). By cultivating positive digital activities from an early age, such working culture is feasible as a developing mind is easily molded and influenced (Siegel, 2012). The importance of digital etiquette from a knowledge management (KM) perspective is that it indirectly allows the children to be aware of acceptable online interactions at an early age. Such

indirect training strengthens a child's positive social norms, which would be brought into their adulthood and working environment. This training would provide a platform for developing an effective knowledge management structure, which depicts the best practices for an organization.

In recent years, there is a significant increase in the number of internet usage among children (Madden et al., 2013) where not all children will use the Internet wisely according to the cyber ethics. "*Cyber-ethics is the discipline of using appropriate and ethical behaviors and acknowledging moral duties and obligations pertaining to online environments and digital media*" (iKeepSafe, 2012). Children like to use internet for socializing purposes at home and they may have been exposed only to the basic online awareness via their parents (Ktoridou, Eteokleous & Zahariadou, 2012). Although Internet use provides numerous valuable benefits but misusing it can cause serious risks. Due to the lack of awareness and knowledge about digital etiquettes, it can lead to undesired negative impacts on children. Therefore, it is important to expose and make them understand about unethical online activities (Freestone & Mitchell, 2010) such as plagiarism, software piracy and privacy violation, (Jung, 2009) not to mention the existing online threats (Lazarinis, 2010) such as viruses.

Based on current research available, a number of efforts have been put forward in response of unethical conduct while users are online on the internet (Chou & Peng, 2011; Sipalan, 2012). However, there is no specific Android-based digital etiquette game application built to cater for primary school children about internet ethics and safety (Wishart, 2004; Shabalina et al., 2010; Chou & Peng, 2011).

Most researchers agree that, primary school children are at high risk while they are online (Chou & Peng, 2011; Sipalan, 2012). They are easily exposed to cyber threats such as identity theft, cyber bullying, hacking, pornography and many more. Besides that, internet safety of young internet users should be the primary concern. Hence, the main goal of this research is to study the issues related to increasing awareness among primary school children in Malaysia on internet safety and how to use the technology wisely. Nowadays, most of primary school children in Malaysia have their own smart phones, tablets and laptops. On the other hand, the use of this technologies without proper parental observation could lead to negative consequences (Wishart, 2004). Educators also play an important role in educating students on how to make ethical decision while they are in cyber space (Chou & Peng, 2011; Taherdoost et al., 2011). Thus, it is important to provide support from an education

context by teaching them digital etiquette during their early education years.

Our initial study begins with a short survey that was conducted online to evaluate the level of digital etiquette knowledge among primary school children (7 to 12 years old) from all around Malaysia. Based on the result of the survey, we will design an Android-based game application known as Mobile Digital Etiquette Game (MDEG). It can act as a medium of learning in educating primary school children about digital etiquette and how to apply it in real life.

Firstly, we will review previous studies related to the internet risks, digital etiquette on primary education and learning through mobile devices. Secondly, we will discuss about the analysis and findings from the online survey. This section is divided into 3 subsections; 1) general knowledge about digital etiquette, 2) digital etiquette practiced by primary school children and 3) understanding digital etiquette through situations. Finally, we propose the design of the MDEG application along with our conclusion and related future work.

## II BACKGROUND STUDY AND RELATED WORK

### A. Internet and its Risk

The internet has created massive communication opportunities with unlimited freedom for its users. But such freedom comes with high risks. As internet accessibility increases, it is difficult for users to know who they are dealing with and what they are getting into. Internet risk can be in any form such as cyber bullying, cyber stalking, pornography, identity theft and many more.

Based on related research conducted by Wishart (2004) in the Internet Safety in Emerging Educational Contexts research paper, children's unsupervised online activities could lead to unhealthy content access and communication with strangers. Wishart (2004) also indicates that, children tend to give out their personal details without knowing the consequences of their actions. Their personal information such as name, address and pictures might be exploited by strangers. Thus, parents need to monitor their children while they are online as they will be exposed to unknown threats. Furthermore, findings by Flander et al. (2009) found that 24% of children felt upset or distressed after being exposed to inappropriate content on the internet. As a result, they found that 59% of the children who were online were exposed to nude

images. Meanwhile, another 46% were exposed to sexual activity images on the internet. This greatly impacts on a child's emotional development as they require good psychological and emotional support while growing up.

In Malaysia, the major ethical issue that arose among primary school children is cyber bullying (Masrom et al., 2012). This phenomenon is new in Malaysia but should not be overlooked. In the year 2007, 60 cyber-bullying cases were reported to Cyber Security Malaysia (Sani, 2012). Statistics reported by Cyber Security Malaysia also found that 13,173 incidents on cybercrimes were reported in 2011 as compared to 6,969 in 2010. Cyber Security Malaysia also stated that most of the threats were targeting under age children (Chan, 2012). This shows the great risks faced by young internet users such as primary school children. Another research by Kavuk et al. (2011) indicated that unethical acts while online are also related to gender and the amount of time spent online.

### **B. Digital Etiquette on Primary Education**

Ethics can be described as justification of action determining what is right and wrong. Ethics should be morally accepted by others. Computer ethics is defined as the analysis of the nature, social impact of technology, the corresponding formulation and justification of policies for the ethical use of such a technology (Taherdoost et al., 2011). Based on this area of research, many researchers agree that early education about good internet ethics and safety practices should be nurtured from the primary school level (Wishart, 2004; Masrom et al., 2012). The education contexts should include various aspects such as computer crimes, privacy, intellectual property, accuracy, accessibility, morality, and awareness (Taherdoost et al., 2011). This is because; they should know how to use the internet in the correct way.

A research done by (Chou & Peng, 2011) state that teachers should have more awareness while using the internet as a teaching medium in order to ensure students' safety. Teachers should be able to identify potential threats and unethical internet behavior by students. With this in mind, they can have a positive teaching session while promoting good practices on how to use the computer and internet on a daily basis. The research also classified internet safety in four major areas such as communication security and safety, information decency and appropriateness, online interpersonal safety and computer or internet use safety (Chou & Peng,

2011). Thus, teachers are also eligible to educate primary school children about digital etiquette while they are using the internet within the school environment.

### **C. Learning through Mobile Devices**

Rapid development of smart phones has increased the technology in terms of the way users utilize mobile phones. Nowadays, the processing capability of a smart phone is equal to a notebook. Most current research on mobile technology explores the possibility of optimization and how a learning environment can be adapted through mobile phones. Mobile games has captured children's attention due to the rapid growth of technology and various game genres developed by game developers, which has increased the total amount of time spent online. As a result, more researchers are proposing mobile games applications for learning purposes (Shabalina et al., 2010; Diah et al., 2010).

Mobile learning stimulates children's thinking towards better learning experience (Shabalina et al., 2010). Traditional learning approaches are considered passive and incomprehensible at times which motivated (Shabalina et al., 2010) to introduce mobile learning through games application. M-learning is related to E-learning but differs in terms of context and hardware used (Cavus & Al-Momani, 2011). The education material via M-learning is accessible anywhere regardless of the user's location as long as there is internet connection. Meanwhile (Diah et al., 2010) pointed out the reason mobile devices are suitable as a medium for learning which is due to the portability, connectivity, low cost, social interactivity among its other features (Diah et al., 2010; Kim et al., 2008). With the help of the latest technology hardware support, the performance of mobile learning can be increased. Cavus and Al-Momani (2011) suggested improvements to the current M-learning through a combination of hardware, location and network use such as Local Area Network (LAN) and Wide Area Network (WAN).

## **III ANALYSIS AND FINDINGS**

The online survey involved parents or guardians with children age between 7 to 12 years old in Malaysia. The involvement of parents or guardians allows the children to answer the survey sufficiently if they have problems understanding the questions. The online survey was conducted in English and distributed via social networks such as Facebook, Twitter and Google+. The duration of the survey was two weeks which

produced a total of 102 respondents. Table 1 shows the demographics of our respondents.

**Table 1. The Demographics of Respondents.**

Demographics	Group	%Age
Gender	• Male	• 28
	• Female	• 72
Age	• 7	• 0
	• 8	• 0
	• 9	• 7
	• 10	• 25
	• 11	• 36
	• 12	• 31
Race	• Malay	• 90
	• Chinese	• 5
	• Indian	• 1
	• Others	• 4
State	• Johor	• 27
	• Melaka	• 2
	• Negeri Sembilan	• 3
	• Pahang	• 3
	• Selangor	• 11
	• Pulau Pinang	• 3
	• Perak	• 10
	• Kedah	• 8
	• Perlis	• 1
	• Kelantan	• 17
	• Terengganu	• 5
	• Sabah	• 4
	• Sarawak	• 1
	• Wilayah Persekutuan	• 6

Based on the findings, the survey was responded mostly by female participants (72%) compared to male (28%). The findings showed that respondents between the age of 10 to 12 had actively responded to our survey; 36% and 31% respectively. There were no respondents from the age of 7 and 8 while there were only a handful of respondents at the age of 9 (7%). Such result could indicate that fewer children from that age range (7 to 9 years old) have active social network accounts.

### A. General Knowledge about Digital Etiquette

As mentioned earlier, this is an initial survey that would provide us with a starting point in determining the categories of digital etiquette which requires attention. The first question from the survey enquired about the children's understanding on the meaning of digital etiquette. Figure 1 reveals that majority of the children were extremely uninformed about the meaning of digital etiquette. They only understood the meaning upon reading our description of digital etiquette provided through the survey. From the survey, only 33% of the respondents knew what digital etiquette is. The result highlights that without a clear understanding of digital etiquette, it is impossible for children to follow or apply the

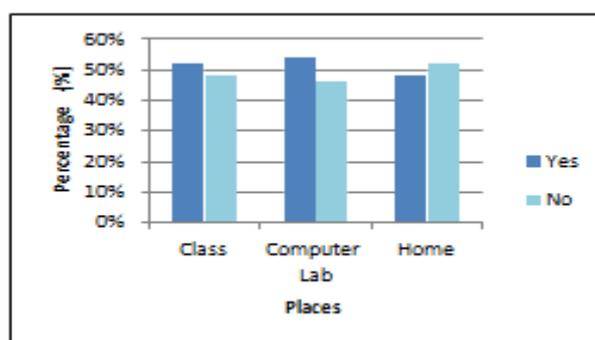
appropriate etiquette to their online activities. Figure 1 also shows that while a majority of the children did not understand the meaning of digital etiquette, most of the children agreed that it is compulsory for them to follow ethical practices while online, after reading our description of digital etiquette.



**Figure 1. General knowledge about digital etiquette. a) Do you have already known about the meaning of digital etiquette before you read the meaning above?. b) Do you think it is compulsory to follow digital etiquette when you online?**

### B. Digital Etiquette Practiced by Children

Figure 2 shows the result from the third question: Where do you apply digital etiquette: at home, class or computer lab?. Most of the children are more likely to practice digital etiquette practices in their class and computer lab but not when they are at home. Children are more likely to use the internet for socializing purposes at home (NISD, 2012). When children are online within an education environment, they are required to follow the digital etiquettes because their online behavior is closely monitored by their teacher. Most children are rarely monitored at home by their parents.



**Figure 2. The Result of Third Question.**

### C. Understanding Digital Etiquette by Situation

There is a difference between knowing about digital etiquette and practicing it online. The knowledge of digital etiquette does not prove that children really understand what digital etiquette rules are. Therefore, in our survey, we have developed situation-based questions related to the digital etiquette in order to assess the children's

understanding about digital etiquette rules. The questions was developed based on Shih’s book chapter (2010) on what is considered the online social norms. Below are the five situation-based questions where the respondents are required to provide a True/False respond:

- a) *When you are online, it might not seem important to act appropriately because you don’t know the people you are communicating with.*
- b) *Publishing a post or write an email in all CAPS is normal.*
- c) *There are no consequences when you publicly upload funny pictures of yourself because you uploaded it in your own Facebook account.*
- d) *Giving your personal details to your online “friend” while chatting is not very dangerous because it is not a real- life conversation and it cannot harm you later.*
- e) *There is no need to cite a source while you use material from the Internet because you are rephrasing the word and it can be considered as your original work.*

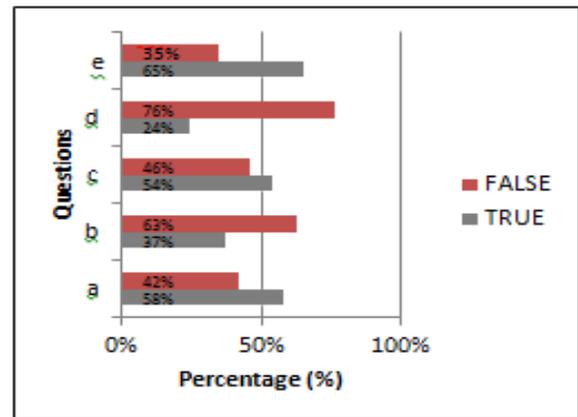


Figure 3. The Responds for Situation-based Questions.

Questions	The correct answer	Percentage of correct answers
a	f	42%
b	f	63%
c	f	46%
d	f	76%
e	f	35%

Table 2. Percentage of Children who Choose the Correct Answers.

Figure 3 shows the children’s responds for the situation-based questions provided in our survey. Table 2 shows the answer for each of the five situation-based questions with the percentage of children selecting the correct answer. If the total percentage of children who selected the correct answer is below 50%, it means that the children did not have a clear understanding about digital etiquette. But if the percentage is higher than 50%, it means that the children have a clear understanding of digital etiquette. The findings from Table 2 revealed that the situation-based questions for A,C and E have low percentages which means the children did not have a clear understanding of digital etiquette. It is assumed that questions A and C focuses more on online behavior within a social networking environment which children are not commonly exposed to. For question E which involves proper citation, most children at their age are not exposed to related activities which require them to cite other people’s work. This may have led to the low percentage for that particular question.

#### IV PROPOSED WORK

Based on the survey and literature review of related work, we proposed to develop a game based learning application that relates to digital etiquette. There are some relevant game-based learning applications such as BrainPOP Digital Etiquette Quiz game (2012) and Carnegie Mellon University’s Betty Netiquette’s Quiz game (2012). But many of the applications were developed to run using the PC platform with limited online playability. Furthermore, some of the application is only installed on school computers which students are only able to access during school hours. It seems that the dissemination of game-based learning on digital etiquettes is not widely available. As the Android platform is more open compared to the iOS platform in terms of application customization for developers, we are proposing an Android-based application game called Mobile Digital Etiquette Game (MDEG) for the purpose of educating primary school children about Netiquette or digital etiquettes. Figure 4 shows our MDEG application architecture. For the design of our proposed MDEG application, we created three sections in our game: 1) Learning section, 2) Exam section, and 3) Score section. In the Learning section, the user can go through the section without a time limit. The section also provides explanations for each question in order to make the topic more comprehensible for children. In the Exam section, users are required to go through the section within a specific time limit and they are

given a score after they complete the section. In the Score section, the user is able to review their previous score.

In order to make the game accessible to children, language suitable for their level is used. We also considered a scenario-based learning technique rather than giving fact-based questions which children may not be interested. In addition, we also suggest utilizing a variety of question formats such as True/False and multiple choices in order to capture the children's attention while playing the game.

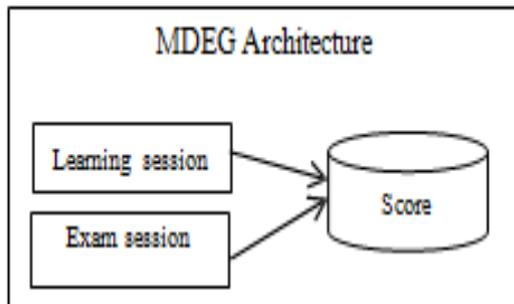


Figure 4. Our Proposed Game Application Architecture.

## V CONCLUSION

As a result of this study, we found that not all children are aware on how to apply digital etiquette in a proper manner. This is due to their lack of knowledge and exposure about digital etiquette in their learning environment or school. Therefore, it is important to educate and provide a level of awareness to primary school children about digital etiquettes. This study is the initial step in our research to achieve the basic requirement in developing an effective game-based learning application. For our future work, we aim to further develop the MDEG application that has been proposed. Furthermore, we hope that we can test the usability and effectiveness of the application with primary school children. This would allow us to gain much needed feedback from the children on the application and also indirectly assess their knowledge about digital etiquette which could enhance the application further.

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