THE EFFECTS OF PERSONALIZED MULTIMEDIA APP ON KNOWLEDGE, PERCEIVED AWARENESS AND PERCEIVED MOTIVATION OF CYBER-BULLYING AMONG ADOLESCENTS

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ABSTRAK

Kajian ini bertujuan untuk merekabentuk, membangun dan mengkaji kesan app multimedia ke atas pengetahuan dan persepsi kesedaran terhadap buli siber dan juga persepsi motivasi terhadap bahan pengajaran di kalangan para remaja. Kajian ini menggunakan rekabentuk eksperimen-kuasi faktorial 2 X 2. Pembolehubah tidak bersandar untuk kajian ini terdiri daripada dua mod persembahan iaitu aplikasi multimedia dengan personalisasi ataupun ringkasnya, PMA dan aplikasi multimedia tanpa personalisasi ataupun ringkasnya NPMA. Pembolehubah bersandar untuk kajian ini pula ialah pengetahuan, persepsi kesedaran terhadap buli siber dan juga persepsi motivasi terhadap bahan pengajaran. Pembolehubah moderator yang dikaji pula merupakan jantina dan tahap persekolahan para remaja. Seramai 240 orang remaja daripada empat buah sekolah menengah harian telah menyertai kajian ini dan mereka telah dibahagikan kepada dua kumpulan. Kumpulan pelajar yang pertama telah menerima rawatan mod persembahan PMA manakala kumpulan kedua menerima rawatan mod persembahan NPMA. Data yang telah dikumpul melalui kajian ini telah di analisa menggunakan statistik deskriptif dan statistik inferential iaitu ujian ANOVA. Hasil keputusan kajian menunjukkan bahawa prestasi remaja yang menggunakan mod persembahan PMA telah mengatasi remaja yang menggunakan NPMA secara signifikan dalam pengetahuan dan persepsi kesedaran terhadap buli siber dan juga persepsi motivasi terhadap bahan pengajaran. Kajian ini telah menunjukkan bahawa dengan mengadaptasi prinsip personalisasi ke dalam

persekitaran pembelajaran multimedia telah memberikan impak yang positif dalam meningkatkan pengetahuan dan persepsi kesedaran terhadap buli siber dan juga persepsi motivasi terhadap bahan pengajaran di kalangan remaja. Selain itu, pembangunan aplikasi multimedia di dalam kajian ini juga telah menyumbang di dalam menambahkan bilangan aplikasi berasaskan komputer untuk mendedahkan para remaja kepada isu buli siber, di mana ianya masih kurang dibangunkan terutamanya untuk konteks remaja di Malaysia.

THE EFFECTS OF PERSONALIZED MULTIMEDIA APP ON KNOWLEDGE, PERCEIVED AWARENESS AND PERCEIVED MOTIVATION OF CYBER-BULLYING AMONG ADOLESCENTS

ABSTRACT

The purpose of this study is to design, develop and investigate the effects of multimedia app on the knowledge and perceived awareness of cyber-bullying and as well as on the perceived motivation towards the learning material among adolescents. The study incorporates the use of quasi-experimental design with factorial 2x2. The independent variable for this study comprises two treatment modes, namely, Personalized Multimedia App (PMA) and Non-Personalized Multimedia App (NPMA). The dependant variables for this study are knowledge, perceived awareness towards cyber-bullying and also perceived motivation towards the learning material. Moderator variables in this study are the gender and schooling level of the adolescents. A total of 240 students from four secondary schools participated in this study and they were divided into two groups. The first group of students received PMA presentation treatment mode while the second group received NPMA presentation treatment mode. The data collected in this study was analysed by using descriptive and inferential statistics, namely the ANOVA test. The results of this study demonstrate that the performance of adolescents who used the PMA presentation mode surpassed the performance of the adolescents who used NPMA significantly in knowledge and perceived awareness towards cyber-bullying and also perceived motivation towards the learning material. This study has shown that the adaptation of the Personalization Principle in the multimedia learning environment

has yielded a positive impact in increasing the knowledge and perceived awareness towards cyber-bullying as well as perceived motivation towards the learning material among adolescents. Besides that, the development of the multimedia app in this study has contributed to an increase in the number of computer-based applications intended to expose adolescents to the issue of cyber-bullying, which is still under-developed, particularly in the context of adolescents in Malaysia.

CHAPTER 1

INTRODUCTION

1.1 Overview

The issue of bullying has long been a topic of discussion amongst educationists, academicians and researchers. Smith and Thompson (1991) defined bullying as a set of conduct that is done intentionally and causes physical and psychological harm to the receiver. Bullying is an aggressive behaviour that is repeatedly carried out towards others individually or as a group. Bullying is not limited merely to physical conduct like beating, kicking, pinching or pushing someone; it also exists in other forms such as speech, by calling someone names, cruel jokes, threatening or slandering (Olweus, 1993). Bully victims may experience depression, low self-esteem, health problems, poor grades, and suicidal thoughts (Olweus, 2010).

As technology evolves, bullying has also evolved to include electronically based forms of aggression. Now, there is a new channel through which someone is bullied, and that is through the Internet and other telecommunication devices like cell phones. This form of bullying is known as cyber-bullying. Kowalski and Limber (2007) defined cyber-bullying as bullying via e-mail, instant messaging, in a chat room, on a website, or via a text message sent to a cell phone.

Like traditional bullying, cyber-bullying victims are also exposed to the negative consequences of this phenomenon. They might isolate themselves especially from school activities, become stressed as well as ill and possibly contemplate suicide (Willard, 2007).

Rapid growth in interactive multimedia technology has left its mark on teaching and learning. A more effective process of presenting information as a result of using various media such as text, audio, video, graphics and animation is an advantage in the teaching and learning process. In addition, elements in multimedia also support multi-sensory as they stimulate various human senses. Multimedia also facilitates interactivity and allows the user to control the navigation and duration of the media is in use (Vaughn, 1993).

In multimedia learning, visual and auditory information are used as a method of presenting a lesson. Learners will then use this information to form knowledge. Mayer (2001) suggested that people learn better from words and pictures than from words alone. The meaning of „word", in this context encompasses written and spoken texts, while „picture" includes static graphic images, animation and video.

The findings from Alfonseca and de Lara"s (2000) study shows that the integration of multimedia elements is extremely beneficial as multimedia elements are based on a variety of media such as text, graphics, audio and video Because of that, these multimedia elements serve as stimulants for students to continue their learning and to improve their understanding of a particular topic (Alfonseca and de Lara, 2000).

1.2 Background of the Study

As the exposure to media has increased over the past decade, adolescents' utilization of computers, mobile phones, stereos and televisions to gain access to various mediums has also increased. As a result of the amount of time adolescents spend using these devices, their total media exposure is high (Lenhart and Madden, 2007).

According to Kutty and Sreeramareddy (2014), online activities with the highest rates of use among adolescents are social networking (85.5% of adolescents), followed by personal email (78.5%), academic/work related surfing (67.2%), general information search (63.9%), Youtube and Movie website (54.2%), downloading (54.2%), and online gaming (19.4%). Unfortunately, not all individuals are able to take advantage of what the Internet has to offer. For some adolescents, the cyber-world can be a place where they are exposed to violence, aggression, mistreatment, and harassment, which is now commonly known as cyber-bullying (Hinduja and Patchin, 2008).

Generally, based on research carried out between the 2006 and 2012 by Patchin and Hinduja (2012), the highest number of victims of cyber-bullying in those six years was adolescents. The problem of cyber-bullying has become more widespread, not only because of the ease with which an adolescent is able to access the Internet, but also because the Internet makes it easier for a person to interact with another person without revealing her or his true identity, or in other words, anonymity (Patchin and Hinduja, 2006). In addition to that, the lack of face-to-face interaction compared to real social interaction also encourages repeated instances of cyber-bullying. The imbalance of power between bullies and victims becomes even more unbalanced on the Internet compared to normal bullying because in the same instance, a victim of bullying can be bullied by millions of his friends at the same time (Slonje and Smith, 2008).

In Malaysia, a survey conducted in 2013 with the co-operation of three agencies, namely DiGi Telecommunications Sdn Bhd (DiGi), CyberSecurity Malaysia and the Ministry of Education on 9651 secondary and primary school students in Malaysia found that half of the students had allocated at least 8 hours or more in a week to

browse the Internet, and 16% of students spent 28 hours or more of their time on the Internet. About 27% of the respondents admitted that they had been bullied while conducting online activities. Of this figure, 13% said that they had been bullied using words or sentences deemed too impolite to be heard or read and that the platform most frequently used for bullying is Facebook, which accounts for 32% of the overall feedback from respondents (*CyberSAFE in Schools 2013 Survey*, 2013).

The types of bullying behaviour exhibited and detected include bullying others on the Internet, threatening others on the Internet, posing as others on the Internet, looking at others‟ SMS text messages or information without permission, hacking into others‟ information online, posting untrue information about others and doing something that is considered humorous but in actual fact, hurts others‟ feelings (*CyberSAFE in Schools 2013 Survey*, 2013).

Another survey by the Global Youth Online Behaviour Survey in 2012 has placed Malaysia in 17th place out of 25 countries with the highest number of cyber-bullying incidents. The survey also found that knowledge and awareness about cyber-bullying was also below average (Figure 1.1). Besides that, it was found that parents in Malaysia lacked in taking the initiative to protect their children from the threat of cyber-bullying. Furthermore, it was found that Malaysia also lacked of educational programmes and formal school policies regarding cyber-bullying compared to the other countries that participated in this study (*Microsoft Global Youth Online Behavior Survey*, 2012).

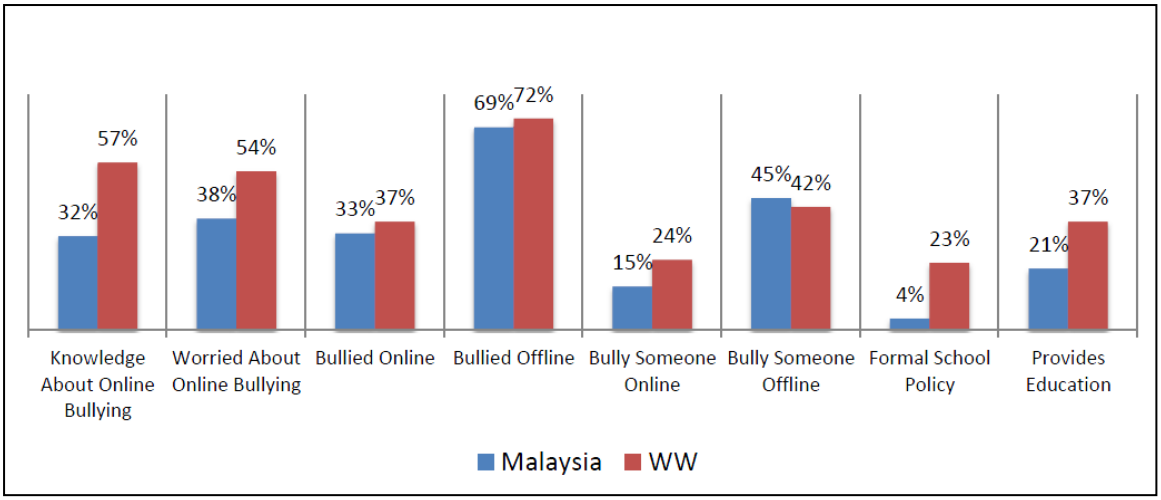

Figure 1.1 Online Bullying Metrics: Malaysia vs. Worldwide Average

Cyber-bullying reaches a wider audience and it has more social impact on its victims compared to traditional bullying. Short and long-term effects on victims of cyber-bullying are almost the same as the effects on those in normal or physical bullying cases (Patchin and Hinduja, 2006). Short-term effects could range from emotional disturbance, low self-esteem, anxiety, depression, and isolating oneself from the social world, while in the long-term; it could possibly give rise to effects such as depression, humiliation and in some cases, the decision to commit suicide. Victims of cyber-bullying could also experience anger, sadness, disappointment, academic problems and an increase in the possibility of involving themselves in drug addiction and alcohol abuse (Hinduja and Patchin, 2007).

There are various findings that are not consistent regarding gender differences and cyber-bullying. Results of the study by Li (2005) and Smith, et. al (2006) found that the majority of adolescents who became victims of cyber-bullying were girls. Li (2006) found that boys were more likely to bully in the cyber world compared to girls. Nevertheless, Li (2006) found no significant differences between males and females who became victims of cyber-bullying in the study that he conducted. In another

study of Smith, et al. (2008), it was found that more girls were victims of cyber-bullying. On the contrary, Huang and Chou (2010), in a study involving Taiwanese adolescents, found that more boys became bullies and bullied in the cyber world. The involvement of adolescents, whether as victims or cyber bullies, irrespective of whether they were girls or boys, showed that they lacked knowledge and awareness on this issue. Inconsistencies in the research findings above motivated the researcher to study in more detail on gender differences involved in cyber-bullying in the context of adolescents in Malaysia. Therefore, gender is the moderator variable in this study.

Until today, there have been few studies researching on the relationship between cyber-bullying and age or schooling level. Among the researchers who have studied this aspect are Ybarra and Mitchel (2004). In a study of adolescents aged 10 to 17 years, they found that cyber-bullying steadily increases across the high school years. This meant that the higher the schooling level of an adolescent, the more inclined he or she is to indulge in cyber-bullying. In contrast, Beale and Hall (2007) found that cyber-bullying increases in the elementary years, peaks during the middle school years, and declines in the high school years.

The lack in the research findings above motivated the researcher to study in further detail on the relationship between cyber-bullying and schooling level (lower secondary and upper secondary) and in the context of adolescents in Malaysia. Therefore, schooling level is another moderator variable in this study.

Based on the widespread and seriousness of the effects of cyber-bullying, a mechanism should be put in place to give more in-depth exposure in order to make adolescents more aware of its dangers as well as the measures to curb this problem. As adolescents are drawn to the latest gadgets and technology (Sangani, 2010), the

use of Multimedia App on tablets can be seen as an effective medium to spread knowledge, exposure and awareness amongst adolescents about cyber-bullying.

The rapidly advancing mobile technology in the last few years has enabled the learning process to be improved and students are more motivated to learn (Cheung, Yuen, Li, Tsang and Wong, 2012). Compared to personal computers and laptops, tablets and smart phones have a smaller screen surface and they are also more portable (Schlageter, 2006). The popularity of tablets as well as its suitability in supporting the learning process amongst adolescents has encouraged researchers to develop Multimedia App to be used on this device. Furthermore, the nature of cyber-bullying which causes it to happen regardless of time and place enabled these app to be of use to adolescents as a reference and when cyber-bullying occurs; adolescents have access to these app at any time and any place.

Even though there are several computer and multimedia technologies that have been developed specifically to provide knowledge and awareness on the topic of cyber-bullying, there are still several flaws, especially from the aspects of content and presentation of the applications. This underlines the need for the development of a Multimedia App that is more comprehensive, engaging and appropriate within the context of adolescents in Malaysia.

Several features of the Multimedia App set it apart from the typical Multimedia Application. One is that Multimedia App runs on smart phones and other mobile devices while Multimedia Application runs on desktops or other computer devices. In addition to that, Multimedia App typically requires only a small touch screen, a small keyboard, limited battery and limited bandwidth compared to Multimedia Application which depends on a larger screen, full keyboard and

unlimited power. Moreover, once a Multimedia App has been downloaded, the user does not require Internet access to utilize it. Therefore, the user does not have to wait on loading information over the Internet connection. Another feature of the Multimedia App that makes it ideal for this research is that, if the developer has any information or feature that require updating, it can be updated without inconveniencing the user who is utilizing the app. This situation motivated the researcher to develop a Multimedia App in Malay Language to provide knowledge and awareness about cyber-bullying specifically for adolescents in this country.

This Multimedia App was developed with two different modes, namely, the Personalized Multimedia App (PMA) and the Non-personalized Multimedia App (NMPA); because the main focus of the researcher was to delve deeper into the effects of personalization on adolescents‟ knowledge and perceived awareness towards cyber-bullying as well as motivation towards the learning material.

Personalization Principle emphasises that learning materials should be written in conversational style that addresses the learner directly as "you" instead of in a formal style that is in the "objective third person." The formal style is apparent in expression like "*Click Enter to learn more about this topic*". Personalization would directly address the learner using a phrase like "*If you would like to know more about this topic please click Enter*." Personalization is thought to act by stimulating a social response in learners that leads to an increase generative processing (Moreno and Mayer, 2004).

According to Moreno and Mayer (2004), deeper learning that occurs in learners when words are spoken in a conversational style is known as the personalization effect. The Personalization Principle states that the personalization effect occurs as a result of

using a personalization instructional method (Moreno and Mayer, 2004). A personalization instructional method is a form of instructional method based on the Personalization Principle that has been used to successfully enhance learning (Moreno and Mayer, 2004).

1.3 Preliminary Investigation

The researcher has conducted a Preliminary Investigation (PI) to validate the research problem. Unstructured interview technique has been chosen to investigate the current level of knowledge and awareness of cyber-bullying among adolescents and the prevention programs that have been implemented in schools. Unstructured interview can be defined as the interviews in which neither the question nor the answer categories are predetermined (Minichiello et. al, 1990). This technique was developed in the disciplines of anthropology and sociology as a method to elicit people‟s social realities (Wildemuth, 2009). Instead, they rely on social interaction between the researcher and the informant.

During the PI, the researcher interviewed a cyber-bullying expert, three parents and five secondary school students to gain in-depth understanding regarding this issue.

1.3.1 Interviews with content expert

The researcher interviewed a senior lecturer from a public university who is also an expert in cyber-bullying. According to this content expert, knowledge and awareness about cyber-bullying amongst adolescents in this country is still at a low level. His opinion is in tandem with the results of the Microsoft Global Youth Online Behaviour Survey which found that knowledge and awareness about cyber-bullying was below average in Malaysia (*Microsoft Global Youth Online Behavior Survey*, 2012).

With more than five years of experience in studying this phenomenon, the expert stated that cyber-bullying had become more serious recently and a global threat that must be addressed. Cyber-bullying does not only happen abroad, it is also escalating in Malaysia. Furthermore, according to this expert, the group that is most vulnerable to this threat is adolescents.

The expert added that most adolescents have not been exposed to what cyber-bullying actually means, for example, the acts of cyber-bullying and its dangers. They are also clueless on how to deal with and eradicate it. This expert also opined that adolescents would normally not report it to their parents, school or the relevant authorities if they are being bullied online or if they know of a friend who is being bullied. They are more inclined to keep it to themselves or to only tell their closest friends.

1.3.2 Interviews with secondary school students

The researcher had the opportunity to carry out an unstructured interview with five secondary school students to validate the research problem. The participants comprise of three girls and two boys aged between 13 and 16 years. Four have Internet access at home while one accesses the Internet at cyber cafes. All five participants own a Facebook account, at least one email account and cell phones. Two of them also own Twitter accounts. All participants are familiar with SMS and MMS services. One is also an active blogger.

These five adolescents revealed that almost all of their classmates have Facebook and email accounts and several have their own web blogs. All of them agreed that the applications most frequently used to communicate with their friends are the Facebook social networking website, followed by the SMS and emails. These students have also

been found to have used the chatting application on Facebook to chat with their friends. They also read and follow their friends‟ web blogs.

Despite admitting that the communication technology that they use is extremely beneficial in communicating with friends and teachers, all five students did not deny that there are unhealthy elements within the virtual world. These adolescents also revealed that social networking sites such as Facebook and Twitter have been wrongly used to spread slander and inaccurate information, to criticise friends, gossip and argue.

When asked about cyber-bullying, all five students admitted that they were not certain of what is meant by “cyber-bullying” exactly or its characteristics. Three students have not gained exposure to cyber-bullying before this, neither through their parents, teachers, readings nor the mass media. Two students stated that while they had heard of cyber-bullying, they did not fully understand this issue. They neither consider cyber-bullying to be very serious nor did they think that it could seriously endanger adolescents.

After being given an explanation about the definition and characteristics of cyber-bullying, all of the students admitted that they had been involved with this phenomenon, or at least know of friends that cyber bullied or have been cyber bullied. One boy who had bullied admitted that he has, on several occasions, criticised a classmate on the Facebook. Using the flaming method, the boy has the intention of making fun of that friend. Nevertheless, he did not think that his actions were acts of cyber-bullying. A girl admitted that she had circulated emails that revealed the secrets of someone who had been a close friend to her schoolmates. This happened because she wanted to get back at being bullied by that friend whereby that friend had spread

gossip about her on the Facebook. This accident could be associated with outing and trickery method of cyber-bullying. Other than the actions stated above, the three adolescents revealed that they had heard and known of friends who had been cyber bullied through acts like slandering, spreading untrue stories, and hacking accounts.

When asked about the actions they had taken after they had been bullied or the actions they would take if they were bullied in the future, four students said that if the incidents are not serious, they would not complain to their parents or teachers. They would instead feel more at ease sharing the experience with their peers. Three of the adolescents revealed that their parents rarely monitored their online activities, for example, finding out which websites they were browsing and the contents of what had been posted on the Facebook. Only two of the five students admitted occasional monitoring by parents but one of them had removed the mother from the "Friends" list on Facebook to keep the parents from finding out about their online activities and also out of concern that the parents would not allow further Internet access.

1.3.3 Interviews with parents

At this PI phase, the researcher held an interview session with two mothers and a father. They were parents of secondary school students from a school in Perlis. When the matter of cyber-bullying was introduced, all three did not appear to fully grasp the concept whereby two of the parents revealed that they had never had any exposure to it before this. The other parent had heard about cyber-bullying but had not been too concerned about it before the interview.

Two of the three respondents admitted that they rarely monitor their children"s online activities due to work commitments and time constraints. They were uncertain if their

children had ever been cyber bullied. One of the parents said that even with constant monitoring on online activities, there had never been any discussions with the children concerning safety and privacy as well as bullying in the virtual world.

After being given an explanation about the definition and characteristics of cyber-bullying behaviour, all three parents agreed that their children might probably have been or will be involved with this phenomenon if they were not monitored. All the parents were of the opinion that the problem of cyber-bullying is a serious problem that could distract their children‟s attention from learning as well as having negative consequences on their children‟s psychological growth.

As a result of the PI, it may be concluded that cyber-bullying is clearly present in our society of late especially amongst adolescents. Nevertheless, the understanding and awareness of the adolescents regarding this issue is still at a very low level. The effort to increase understanding and awareness should be extended to all levels of society especially amongst adolescents and several methods as well as efforts should be taken. Other than creating awareness through seminars, talks and the mass media, awareness can also be heightened through the use of appropriate technology and tools. With today‟s technology, a Multimedia App on tablet would be an appropriate medium to instil knowledge and awareness amongst adolescents concerning the ever-growing menace of cyber-bullying.

1.4 Problem Statement

Knowledge and awareness of cyber-bullying is still looked upon lightly by the society (Nadia and Wan Ahmad Jaafar, 2012). What the public are not aware of is the threat of cyber-bullying that can be compared to an illness that will destroy the society

especially, adolescents. A national survey in 2013 also showed that adolescents‟ awareness of cyber-bullying were still low (*CyberSAFE in Schools 2013 Survey*, 2013).

In a survey by Microsoft in 2012, it was found that Malaysia is in the17th place out of 25 countries with the highest incidents of cyber-bullying and knowledge as well as awareness about cyber-bullying was also below average. The study also found that parents in Malaysia lacked in taking the initiative to protect their children from the threat of cyber-bullying. In addition, Malaysia also lacked of educational programmes and formal school policies regarding cyber-bullying compared to the other countries in Global Youth Online Behaviour Survey (2012).

Even though laws such as the Computer Crimes Act 1997 and the Communications and Multimedia Act 1998 have been enacted in Malaysia, knowledge and awareness of the public with regards to cyber-bullying remain low. There are many in the society who do not know or do not consider cyber-bullying to be a serious matter. This is evident as very few cases have been reported to the authorities (Topçu, Erdur-Baker and Capa-Aydin, 2008).

Given that cyber-bullying has become more serious lately, steps should be taken to ensure that this threat is curtailed (Willard, 2007). Some schools currently use small group discussions, large school assemblies, or lecture workshops to address the problem of cyber-bullying with students and these methods are often ineffective (Beale and Hall, 2007; Diamanduros et. al, 2008; Keith and Martin, 2005). Other than the conventional methods and the involvement of parents, schools and the society in curtailing this problem, other initiatives that could be taken include developing a

Multimedia App on tablets that would be able to assist adolescents in increasing their knowledge and awareness on cyber-bullying.

Development of an interactive Multimedia App that comes with attractive graphics, audio and animation have great potential in attracting the interest of adolescents in gaining a deeper understanding of this issue. Moreover, advanced Internet technology and the existence of gadgets like tablets and smart phones make it easier for adolescents from all walks of life to access these applications (Upadhyay, Jesudass, and Chitale, 2014).

In developing the Multimedia App for the purpose of this research, it was of utmost importance for the researcher to understand and apply the philosophy underlined by CTML so that the app that is developed is more effective and helpful in increasing learning outcome. CTML encompasses several aspects of the science of learning and instruction (Mayer, 2001). Focusing on real learning situations, Mayer conducted several in-depth studies involving the testing of learning theories. From CTML, Mayer (2009) has identified, studied, and explained numerous effects and design principles to improve learning outcomes with multimedia instructional materials. One of the principles suggested by Mayer (2009) is Personalization Principle.

The Personalization Principle states that learning materials should be written in conversational style that addresses the learner directly as "you" instead of in a traditional, formal style that is in the so-called "objective third person." The traditional style is most obvious in phrases like "one would now do this." Personalization would directly address the learner using the phrasing like "you would now do this." Personalization is thought to act by stimulating a social response in learners that leads to an increase generative processing.

When developing a multimedia app, it is of utmost importance that the developer includes elements of social cues, for example, a conversational style of narration in the app. This is because social cues will aid learners in activation of social response, and subsequently increases active cognitive processing. When this is increased, the quality of learning outcome will also be increased. This means that when adolescents are exposed to Multimedia App with this personalization principle application, their knowledge and perceived awareness pertaining to cyber-bullying will be increased. Furthermore, perceived motivation towards this learning material will also be increased.

In this research, it is expected that feelings of social presence would be ingrained with personalization and these feelings of presence would result in active cognitive processing and then improve learning. Following this, adolescents‟ knowledge and awareness of cyber-bullying and the motivation towards the learning material would increase.

Apart from studying the increase in knowledge and awareness of cyber-bullying, it is also important for a researcher to study the level of perceived motivation of learners towards the learning material. This is because motivation is one of the factors that also enhance cognitive processing. Motivation actually affects what and how information is processed because motivated learners are more likely to pay attention and try to understand the material instead of simply going through the motions of learning in a superficial manner (Kanfer and Ackerman, 1989). Therefore, perceived motivation is included as one of the dependent variables in this research.

Understanding the relationship between gender and schooling level with personalization is also an important aspect of the investigation. This is because the

results of this study will provide a clearer picture of which group is more suitable to be exposed to personalized or non-personalized learning material.

1.5 Purpose of the Study

The purpose of the present study is to examine the effects of personalized multimedia app on knowledge and perceived awareness of cyber-bullying among adolescents. The independent variable is the mode of presentation with two treatments conditions, namely (i) Personalized Multimedia App (PMA) and (ii) Non-Personalized Multimedia App (NPMA). The dependant variables for this study are (i) knowledge, (ii) perceived awareness and (iii) perceived motivation to learn towards the learning material. The knowledge and perceived awareness is measured via the instrument developed by the researcher of this study. Learners‟ gender and schooling level are used as moderating variables in this study.

The study is divided into two parts as below:

i. The first part is to design and develop a Multimedia App that delivers the lesson through two treatment conditions. The design and development of the treatment conditions are discussed in detail in Chapter 4.

ii. The second part is to study the effects of the two treatment conditions (independent variables) among adolescents with different schooling level and gender (moderator variables) on their knowledge, perceived awareness and perceived motivation towards the learning material (dependant variable).

1.6 Research Objectives

The objectives of the study are as follows:

i. To investigate the effect of two different presentations mode (PMA and NPMA) by conducting experimental study with adolescents which access their knowledge before and after the exploration of the multimedia app.

ii. To investigate the effect of two different presentations mode (PMA and NPMA) by conducting experimental study with adolescents which access their perceived awareness before and after the exploration of the multimedia app.

iii. To study the motivational appeal of the Multimedia App which accesses the adolescents‟ perceived motivation to learn towards the learning material after the exploration of the two different presentations mode (PMA and NPMA).

1.7 Research Questions

The study is designed to address three major questions:

A. What is the effect of Personalized Multimedia App (PMA) and non-Personalized Multimedia App (NPMA) in adolescents‟ knowledge towards cyber-bullying? The subsidiary questions for Research Question A are:

   1) Is there any significant difference in adolescents‟ knowledge of cyber-bullying between PMA and NPMA?

   2) Is there any significant difference in adolescents‟ knowledge of cyber-bullying between male in both presentation modes (PMA and NPMA)?

3) Is there any significant difference in adolescents‟ knowledge of cyber-bullying between female in both presentation modes (PMA and NPMA)?
4) Is there any significant difference in adolescents‟ knowledge of cyber-bullying between male and female in PMA?
5) Is there any significant difference in adolescents‟ knowledge of cyber-bullying between male and female in NPMA?
6) Is there any significant difference in adolescents‟ knowledge of cyber-bullying between lower secondary students in both presentation modes (PMA and NPMA)?
7) Is there any significant difference in adolescents‟ knowledge of cyber-bullying between upper secondary students in both presentation modes (PMA and NPMA)?
8) Is there any significant difference in adolescents‟ knowledge of cyber–bullying between lower and upper secondary students in PMA?
9) Is there any significant difference in adolescents‟ knowledge of cyber–bullying between lower and upper secondary students in NPMA?

B. What is the effect of Personalized Multimedia App (PMA) and non-Personalized Multimedia App (NPMA) in adolescents‟ perceived awareness towards cyber-bullying? The subsidiary questions for Research Question B are:
10) Is there any significant difference in adolescents‟ perceived awareness of cyber-bullying between PMA and NPMA?
11) Is there any significant difference in adolescents‟ perceived awareness of cyber-bullying between male in both presentation modes (PMA and NPMA)?

12) Is there any significant difference in adolescents‟ perceived awareness of cyber-bullying between female in both presentation modes (PMA and NPMA)?
13) Is there any significant difference in adolescents‟ perceived awareness of cyber-bullying between male and female in PMA?
14) Is there any significant difference in adolescents‟ perceived awareness of cyber-bullying between male and female in NPMA?
15) Is there any significant difference in adolescents‟ perceived awareness of cyber-bullying between lower secondary students in both presentation modes (PMA and NPMA)?
16) Is there any significant difference in adolescents‟ perceived awareness of cyber-bullying between upper secondary students in both presentation modes (PMA and NPMA)?
17) Is there any significant difference in adolescents‟ perceived awareness of cyber–bullying between lower and upper secondary students in PMA?
18) Is there any significant difference in adolescents‟ perceived awareness of cyber–bullying between lower and upper secondary students in NPMA?

C. What is the effect of Personalized Multimedia App (PMA) and Non-Personalized Multimedia App (NPMA) in adolescents‟ perceived motivation towards the learning material? The subsidiary questions for Research Question C are:
19) Is there any significant difference in adolescents‟ perceived motivation towards the learning material between PMA and NPMA?
20) Is there any significant difference in adolescents‟ perceived motivation towards the learning material between male in both presentation modes (PMA and NPMA)?

21) Is there any significant difference in adolescents‟ perceived motivation towards the learning material between female in both presentation modes (PMA and NPMA)?

22) Is there any significant difference in adolescents‟ perceived motivation towards the learning material between male and female in PMA?

23) Is there any significant difference in adolescents‟ perceived motivation towards the learning material between male and female in NPMA?

24) Is there any significant difference in adolescents‟ perceived motivation towards the learning material between lower secondary students in both presentation modes (PMA and NPMA)?

25) Is there any significant difference in adolescents‟ perceived motivation towards the learning material between upper secondary students in both presentation modes (PMA and NPMA)?

26) Is there any significant difference in adolescents‟ perceived motivation towards the learning material between lower and upper secondary students in PMA?

27) Is there any significant difference in adolescents‟ perceived motivation towards the learning material between lower and upper secondary students in NPMA?

1.8 Research Hypotheses

The hypotheses for this study are formulated as null hypotheses. In this research the researcher will reject the null hypothesis when the *p*-value turns out to be less than the significance level, which is 0.05. The null hypotheses that correspond to the above three major research questions are:

A. The effect of Personalized Multimedia App (PMA) and Non-Personalized Multimedia App (NPMA) in adolescents‟ knowledge towards cyber-bullying. The subsidiary null hypotheses are:

$H_{O.A.1}$ There is no significant difference in adolescents‟ knowledge of cyber-bullying between PMA and NPMA.

$H_{O.A.2}$ There is no significant difference in adolescents‟ knowledge of cyber-bullying among male in both presentation modes (PMA and NPMA).

$H_{O.A.3}$ There is no significant difference in adolescents‟ knowledge of cyber-bullying among female in both presentation modes (PMA and NPMA).

$H_{O.A.4}$ There is no significant difference in adolescents‟ knowledge of cyber-bullying among male and female in PMA.

$H_{O.A.5}$ There is no significant difference in adolescents‟ knowledge of cyber-bullying among male and female in NPMA.

$H_{O.A.6}$ There is no significant difference in adolescents‟ knowledge of cyber-bullying among lower secondary student in both presentation modes (PMA and NPMA).

$H_{O.A.7}$ There is no significant difference in adolescents‟ knowledge of cyber-bullying among upper secondary student in both presentation modes (PMA and NPMA).

$H_{O.A.8}$ There is no significant difference in adolescents‟ knowledge of cyber-bullying among lower and upper secondary students in PMA.

$H_{O.A.9}$ There is no significant difference in adolescents‟ knowledge of cyber-bullying among lower and upper secondary students in NPMA.

B. The effect of Personalized Multimedia App (PMA) and Non-Personalized Multimedia App (NPMA) in adolescents‟ perceived awareness towards cyber-bullying. The subsidiary null hypotheses are:

$H_{O.B.10}$ There is no significant difference in adolescents‟ perceived awareness of cyber-bullying between PMA and NPMA.

$H_{O.B.11}$ There is no significant difference in adolescents‟ perceived awareness of cyber-bullying among male in both presentation modes (PMA and NPMA).

$H_{O.B.12}$ There is no significant difference in adolescents‟ perceived awareness of cyber-bullying among female in both presentation modes (PMA and NPMA).

$H_{O.B.13}$ There is no significant difference in adolescents‟ perceived awareness of cyber-bullying among male and female in PMA.

$H_{O.B.14}$ There is no significant difference in adolescents‟ perceived awareness of cyber-bullying among male and female in NPMA.

$H_{O.B.15}$ There is no significant difference in adolescents‟ perceived awareness of cyber-bullying among lower secondary student in both presentations mode (PMA and NPMA).

$H_{O.B.16}$ There is no significant difference in adolescents‟ perceived awareness of cyber-bullying among upper secondary student in both presentation modes (PMA and NPMA).

$H_{O.B.17}$ There is no significant difference in adolescents‟ perceived awareness of cyber-bullying among lower and upper secondary students in PMA.

$H_{O.B.18}$ There is no significant difference in adolescents‟ perceived awareness of cyber-bullying among lower and upper secondary students in NPMA.

C. The effect of Personalized Multimedia App (PMA) and non-Personalized Multimedia App (NPMA) in adolescents‟ perceived motivation towards the learning material. The subsidiary questions are:

$H_{O.C.19}$ There is no significant difference in adolescents‟ perceived motivation towards the learning material between PMA and NPMA

$H_{O.C.20}$ There is no significant difference in adolescents‟ perceived motivation towards the learning material among male both presentation modes (PMA and NPMA).

$H_{O.C.21}$ There is no significant difference in adolescents‟ perceived motivation towards the learning material among female in both presentation modes (PMA and NPMA).

$H_{O.C.22}$ There is no significant difference in adolescents‟ perceived motivation towards the learning material among male and female in PMA.