Cyber Security Situational Awareness among Parents

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***Abstract*—This study attempts to measure the level of cyber security parental awareness to protect their children, by means of survey reports among 872 parents of students aged 17 and below. A quantitative data analysis was performed using SPSS statistical software and interpreted based on the distribution of positions. A mixture of general profiling of respondents and descriptive statistics were used during the analysis method. Any findings to this study would mean an increased attention to the suggested Cyber Parenting Model in order to establish the factors that affect Internet safety at home. Early exposure to parental awareness would aid in opening up knowledge about cyber security among parents.**

Keywords — Cyber security awareness, cyber security education, cyber security parenting, eSafety

I. INTRODUCTION

In Malaysia, national-level cyber safety awareness campaigns have been implemented through governmental agencies, corporate sectors and non-governmental organizations (NGOs) such as Ministry Of Women, Family And Community Development (MWFCD) Malaysian Communications And Multimedia Commission (MCMC), CyberSecurity Malaysia (CSM) and Digi Telecommunication Sdn. Bhd (Digi). This informational medium, as provided by the government, is highly important to raise awareness significantly among the target groups, especially students and parents. Through the Click Wisely program by MCMC in year 2016, more than 800 activities have been performed with an ever-widening audience of 1.7 million [1]. Having little knowledge on what their children are doing online constitutes an indication that the awareness about cyber security threats is still low among parents. This is rather seen as an apparent disadvantage through the unsympathetic eyes of children who realize that their parents may be technologically challenged [2]. When it comes to screen time, only 4 out of 10 parents know what their children are searching for on the Internet [3] [4]. In many cases, parents are unaware of their children's unwarranted access and exposure to inappropriate online sites [5], subjecting the children to the threat of cyber security.

Despite its importance and wide educational influence among children, the Internet however, allows for the emergence of unhealthy elements marked with obscene content, cyberbullying, addiction, Internet scams, and personal information leakage during the children's voyage through cyberspace. These cyber security threats are said to be increasingly complex and drastically deteriorated from time to time [5][6].

II. METHOD

A. Overall Approach

This descriptive study uses quantitative approaches adapted from Creswell's design framework. A survey was used to collect data from respondents consisting of parents throughout Malaysia. The main phases of this study has four breakdowns: the preliminary study, the pilot research for validity and reliability, the actual study/discovery and the conclusion.

TABLE I. RESEARCH DESIGN PHASE

No	Phase	Objective/Activities	Output
1	Preliminary study	To identify issues and problems	Problem statement
		Determine the purpose of the study	Research objective
		Determine the scope of the study	Scope of the research
		Review the results of relevant research from previous researchers, involving model theory, factors influencing cyber safety	A comprehensive literary study on children's Internet use at home
		Design research instruments	Study instrument is developed
2	Pilot research	Verify and finalize the research instrument	Reliable research instrument
3	Actual study / discovery	Implement an online survey	Data collection from survey

978-1-5386-7541-0/18/$31.00 ©2018 IEEE

No	Phase	Objective/Activities	Output
		Analyze collected data using SPSS	Respondent profiling and descriptive statistics results
4	Conclusion	Write final reports	Conclusion of research, future direction and final report

B. *Development of Questionnaire*

This study contains 8 basic closed questions about parental awareness on cyber security threats among children. There is a question about the presence of parents in an awareness program organized by a responsible party and the level of satisfaction about the program. Other questions, among others, are about cyber security awareness among the respondents' children, awareness to what the children are doing, exemplary use of cyberspace at home and the difficulty in controlling children's Internet use. Six questions from this same section use the Likert Scale method, where the answer scales are: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. One question in this section requires respondents to answer 1 = Yes or 2 = No, whereas another item requires the respondent to make a choice by marking the list of corresponding answers.

C. *Target Respondents, Sampling and Distribution*

A total of 384 parents make up the simple sampling for an appropriate analysis to take place, and convey the correct level of accuracy and validity for the benefit of the research (Krejcie & Morgan 1970), representing 5,074,612 parents of school-going children in Malaysia.

D. *Fieldwork*

Prior to fieldwork, a pilot study was conducted to assess the level of respondents, understanding of the questions and validate the questionnaire flow before identifying any potential technical issues pertaining to the SurveyMonkey platform. A total of 47 students participated in the pilot study.

Questionnaire forms are manually given to parents through schools, while the online survey distributed through SurveyMonkey.

III. KEY FINDINGS AND DISCUSSION

This study aims to examine the level of parental awareness about cyber security threats to children across Malaysia. From 1426 forms distributed to the respondents, only 872 forms were filled, completed and returned to researchers. The quantitative data collected, were analyzed through two steps using SPSS statistical software and interpreted based on the distribution of data positions. The two steps were general respondent profiling and descriptive statistical analysis.

A. *Awareness Programme*

From the 872 respondents tracked, only 274 (31.4%) had attended cyber security awareness programs while the remaining 598 (68.6%) had never attended such programs. Among the 274 attendees, 171 (62.4%) respondents were satisfied with the information-sharing sessions by CSM, MCMC and NGOs. A total of 86 (31.4%) respondents were reportedly less satisfied by the information shared, while 17 (6.2%) reported total dissatisfaction.

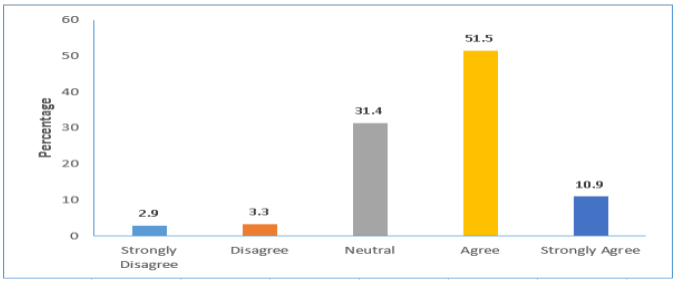

Fig. 1. Respondent satisfaction towards cyber security awareness programs

B. *Awareness on Cyber Laws*

Out of the 872 respondents surveyed, 249 said they were aware of the existence of the Computer Crime Act 1997 while 454 knew about the Communications and Multimedia Act 1998. The other 116 respondents were informed of the Digital Signature Act 1997; 205 were mindful about the Copyright Act (Amendment) 1997 while 341 (39.10%) respondents were incognizant of the existence of cyber laws in Malaysia. Communications and Multimedia Act 1998 was the cyber law parents were mostly familiar with.

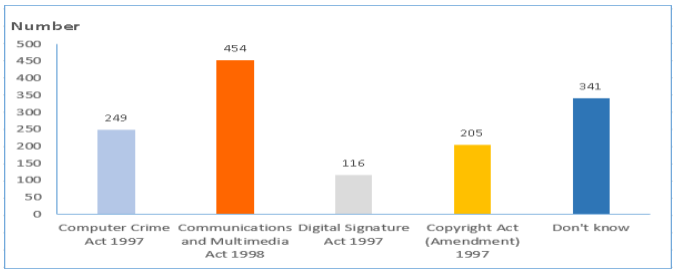

Fig. 2. Level of parental awareness on cyber laws

C. *Situational Awareness Level on Cyber Security*

TABLE II. CYBER SECURITY SITUATIONAL AWARENESS

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
I am aware of the potential of online threats	2.2	2.6	14.7	61.6	18.9
I am aware of what my child is accessing	1.8	4.8	27.8	50.3	15.3
I know that my child knows how to use the Internet the right way	1.5	9.5	34.7	45.2	9.1
I realize how difficult it is to control my child's Internet usage	1.9	6.9	24.8	45.1	21.3
I'm a role model for my children in helping them use mobile devices and the Internet positively	0.9	3.7	19.7	55.4	20.3
I exercise self-discipline when	0.7	3.6	22.7	51.6	21.4

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
using mobile devices and the Internet					

Based on Table II, 80.5% certainly reported awareness of potential online threats to their children. As well, only a few did not realize the potential of cyber threats to their children. As many as 65.6% of respondents were aware of what their child was doing in cyberspace. This might be the reason that prompted parents to monitor their children's movement in cyberspace, including using supervision services, discussing with them about cyber use and allowing them to socialize with other children on social media. Limited information, coupled with a lack of awareness might contributed to the 34.4% of respondents who knew little about cyber security challenges.

A total of 54.3% of respondents said they knew that their child is able to distinguish good content and bad when going online. Contexts of cyber-use education among children illustrate an organized variety of awareness programs such as the Click Wisely and CyberSafe programs. More important among those is the discussion on cyber-use between parents and their children at home. 66.4% of respondents agreed on how difficult it is to control their children's cyber use. However, as much as 33.6% reported no difficulty due to current technological advances such as parental control and home enforcements.

Attention was given to the 75.7% of respondents who were aware that they play an exemplary role in helping their children use mobile devices and the Internet wisely. A total of 73.0% accounted for parents who said they have always been disciplined when it comes to using mobile devices and the Internet, especially in the company of children. This positive percentage may relate to the parents awareness that they are indeed role models for their children in terms of cyber-use at home.

TABLE III. MEAN DISTRIBUTION AND STANDARD DEVIATION FOR PARENTAL AWARENESS

	Mean	Standard deviation	Awareness Level
I am aware of the potential of online threats	3.92	0.80	Medium
I am aware of what my child sees online	3.72	0.84	Medium
I know my child knows how to use the Internet the right way	3.51	0.84	Medium
I realize how difficult it is to control my child's Internet usage	3.77	0.93	Medium
I'm a role model to my children in the use of mobile devices and the Internet	3.90	0.79	Medium
I'm always disciplined in using mobile devices and the Internet	3.90	0.80	Medium

The analyzed data in Table III found that, on average, the score for awareness was at the moderate level. Also, it was found that parental awareness on potential online threats to children was the highest at 3.92, followed by parental awareness as role models for cyber-use at home with a score of 3.90.

IV. RESEARCH LIMITATION

The data, as collected by the survey, are considered limited as they only applied to parents in mainstream schools. This study gave information about some parents and not all of them; excluding parents in private, international or special education schools. Such schools should be included in future studies in order to create a more comprehensive scope rather an open one, towards developing a national module for cyber parenting in Malaysia.

V. CONCLUSION

It is strongly suggested by these findings that the level of cyber security awareness among parents is still moderate. Emphasis was laid on the lack of organization-specialized programs, limited information-sharing sessions and imbalanced awareness throughout Malaysia on cyber security. Authorities and NGOs should play a greater role in providing such awareness to parents. Several extensions of this study could offer some valuable insights into the existing knowledge on cyber security among parents in Malaysia. It is hoped that by applying the analytic scheme of this study to a sample of past research would generate some public interest in incorporating new analyses on cyber security in order to develop relevant programs for parental awareness.

ACKNOWLEDGMENT

We would like to thank Universiti Kebangsaan Malaysia for financial support through grant DCP-2017-015/4.

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