

## Teachers' Concerns of Laptop Ownership from the Malaysia Laptop Initiative

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### Abstract

Information and Communication Technology (ICT) is no alien in the classroom – it has long been a part of the educational system. One of the ICT gadget that has been very popularly used in the educational system since the past decade is the mobile computer, namely laptop. Since the emergence of laptops, many countries around the globe have started to embark the laptop initiative program in schools. It is believed that laptops can improve the teaching-learning process. In response to the increased use of ICT for educational purposes, the Malaysian government rolled out a laptop endowment program for school teachers in 2003. This initiative was carried out to support the teaching and learning of Science and Mathematics in English (better known by its Malay acronym PPSMI) program. Teachers who are teaching both subject areas were granted laptops as a means to enhance their classroom instruction. On the basis that the Malaysian teachers were still new to laptops, this preliminary study attempts to explore the teachers' concerns when owning the mobile technology. The results indicate that teachers are concerned mainly with three issues: unfavorable physical attributes of laptops, technical support and security problems.

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### Introduction

Information and Communication Technology (ICT) applications are rapidly being developed and massively used by people. Now, the ICT is revolutionizing almost every field all around the world, including the educational system. Recognized as a vehicle to elevate the education system to a supreme level, there are overwhelming moves in initiating ICT supported teaching-learning in many countries. The integration of ICT in education is a goal of an extensive array of ICT initiatives worldwide. Numerous technology integrations are advocated by government agencies all over the world to get people engaged with ICT. Ever since the emergence of mobile computing, ICT has become more popular – sprouting in many schools for the past decade. The incorporation of mobile computing, namely laptops, in education is one of the primary concerns for educators all over the world.

The United Kingdom and the United States are among the pioneering countries that embarked on the laptop initiative program. As such, a laptop immersion program named Laptops for Teachers (LFT) initiative was executed in Spring 2002 (Cunningham et al, 2004). As an approach to promote wider use of ICT in schools, the LFT initiative provide these laptops to teachers and head teachers – the focus group of which the DfES aimed to increase their access to computers as well as to gain a greater understanding on the place of ICT in the curriculum. At the same time, a handful of schools in the United States were also embracing the laptop program. The Maine Learning Technology Initiative (MLTI) established by Maine Department of Education and Apple Computer, Inc. (Silvernail & Lane, 2004), Laptop Immersion Program established by Harvest Park Middle School (Gulek & Demirtas, 2005), and Fullerton School District Laptop Program (Warschauer & Grimes, 2005) to name a few, are the participating bodies.

### The Emergence of Laptops in Malaysian Schools

In Malaysia, the incorporation of ICT in schools dated as far back as the early 1970s, when the Malaysian government introduced a matrix of initiatives to facilitate wider adoption of ICT in every field including education (Ministry of Education, 2005). This initiative is the government's crucial agenda to raise standards in schools and promote teachers' and students' access, skills and knowledge to new technologies. The emergence of laptop initiative in Malaysian schools started in 2003, when the Ministry of Education decided that Mathematics and Science will be taught in English in all fully aided Government schools (Noraini Idris et al, 2006). On the basis of Malaysia as an export economy and technology driven country, and much of science-based courses in the tertiary level relies heavily on English reference

materials, the government find it is imperative for the young generations to be proficient and competent in English.

Named the teaching and learning of Science and Mathematics in English (better known by its Malay acronym PPSMI), this initiative requires teachers to master ICT skills in operating the facilities provided by the Ministry of Education during instructional delivery (Noraini Idris et al, 2006). This was when the laptops initially came into the education system. As part of the program, laptops were deployed to every Science and Mathematics teachers as an initiative to facilitate and enrich the teaching of both subject areas in English (Noraini Idris et al, 2006; Choong, 2004; Pillay & Thomas, 2004; Microsoft's Partnership in Learning, 2007). They were also equipped with self-instructional learning materials inclusive of grammar books, dictionaries and CD-ROM as a means for teachers to develop their own instructional toolkit that fits the 21<sup>st</sup> century teaching-learning as well as own resources for continuous professional development (Choong, 2004; Pillay & Thomas, 2004). The inclusion of CD-ROM in the self-help package, as reported by Pillay and Thomas (2004), is the government's alternative way of ensuring teachers use the latest technology since they were equipped with laptops.

### **Laptops in Classrooms**

Advocates and observers perceived ICT as a unique tool in supplementing and transforming conventional classroom content and skills. As such, the use of ICT has reduced the dependency on textbooks and had become the fountain of knowledge which is accessible anytime just by the click of a button (Teichner, 2005). Computers were the first ICT gadget used in schools in the context of introducing ICT in teaching-learning. As numerous ICT research and development progressed, the technology is getting smaller and virtual (Ally, 2005). Advances in science and technology have introduced laptop – a portable ICT gadget that can facilitate teaching and learning just by flapping it open.

To gain a more meaningful teaching-learning experience, teachers use courseware to enhance classroom instruction. Courseware have become critical materials to convey lesson (Yusrita Mohd. Yusoff et al, 2005). According to Yusrita Mohd Yusoff et al. (2005), courseware are usually made to supplement and complement traditional textbook in addition to providing teaching-learning aids for teachers and students alike. Apart from that, the teachers are also endowed with LCD projectors and broadband Internet access (Microsoft's Partnership in Learning, 2007) to be used together with their laptop to facilitate teaching-learning process.

Evaluation by Cunningham et al (2003) found that pupils' responses are better when the laptop was used, and teachers were better able to act in a facilitative role. This implies that there was a shift in the teachers' role in the classroom, where they not only teach, but become facilitators as well. Teachers who are in the business of education are now perceived to be 'facilitators of learning' rather than didactic founts of all knowledge (O'Sullivan et al, 1990). These findings are in congruence with a recent study by Zhao (2007). Zhao (2007) noted that, in the process of incorporating technology into curriculum, teachers who traditionally used to play the role as a dispenser of information have now shifted to one of a facilitator.

Another study by Rutledge et al (2007) supports the role of the teacher as a facilitator as a means that a teacher's job is "teaching the process" and not middle-managing the details of the learning. Named the 'New Mexico Laptop Learning Initiative' (NMLLI), the evaluation indicated an increased intensity of student participation in classroom because of the laptop initiative and adds to a learning environment that allows student learning to become ubiquitous and flexible. Specifically, the study found that the initiative help teachers focus on the process of guiding their students in learning how to learn, which allows students to immerse themselves in the act of learning. In a nutshell, teachers benefit from the technology integration including facilitating collaborative classroom and supporting constructivist roles as a guide, facilitator and learner (Becker & Ravitz, 1999).

### **Concerns of Laptop Ownership**

Since laptop is a new tool in school, and it is perceived as a tool that changed one's role in classroom, it has raised new concerns among its recipients. Efav et al (2004) carried out a quasi-experimental study to seek information on the integration of laptops in the United States Military Academy at West Point. Their study asked for the students to comment of what they disliked about using laptops in class. It was found

that the students were unlikely to use the laptops because they "did not like carrying it back and forth to class, mainly because they felt it was heavy and cumbersome" (p. 15).

A study by Yan and Zhao (2006) also found that teachers' concerns are among the factors that affected their use of computers. Their study found teachers' concern in terms of three major areas. Teachers' concerns include whether laptop integration: (i) is time consuming and make the use of existing teaching aid more difficult, (ii) may result difficulty in class management, and (iii) makes more reliance on other people. Apart from the aforementioned studies, Donovan, Hartley and Strudler (2007) carried out a study on teachers' concerns during the initial implementation of laptop in the middle school settings. Their findings suggested that teachers' doubted how the introduction of laptop may have an impact on them. Furthermore, they had to plan on how they can best use the laptop during classroom instruction so that it can be tailored to the students' needs.

### **Purpose and Objective of the Study**

Available literatures have noted that the laptop ownership has raised anxieties and concerns among teachers. This present study, therefore, addressed the overarching question: What do teachers care, or worried about most when using laptops?

This study aims to assess the concerns of Science and Mathematics teachers who were provided laptop as part of the PPSMI program, when using the mobile computer.

### **Method**

This study is a purely quantitative study. For the purpose of data collection, a survey method using a set of questionnaire was employed.

### **Instrument**

The questionnaire was developed by the researchers, and was validated by a group of experts. It contains nine items pertaining to teachers' concerns. The teachers' concerns were measured in five categorization (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree). In order to facilitate the respondents in completing the survey, the questionnaire was administered in both English and Malay languages. The English items were translated by a panel of language experts who were bilingual, and the consistency of items in both languages was maintained through a double back translation technique.

### **Participants**

The study involved 37 teachers who were currently teaching Science and Mathematics, and involved in the PPSMI program at two selected secondary schools in the state of Johor. Prior to the administration of the instrument, the researchers had obtained approval from the Educational Planning and Research Division, Ministry of Education and the Johor State Education Department to conduct the study.

### **Data Analysis Procedure**

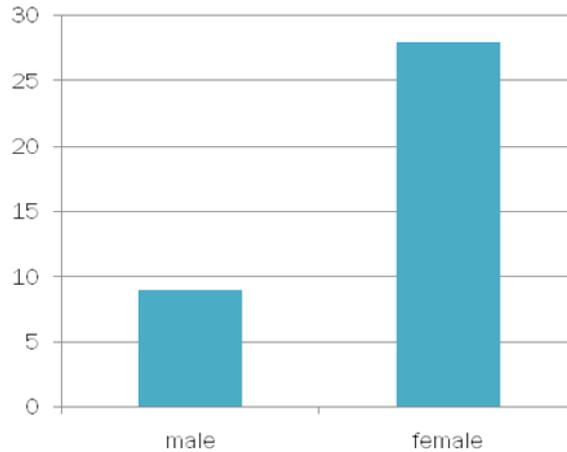
The collected data were analyzed using the Statistical Package for Social Science (SPSS) software for descriptive statistics. This study utilized the descriptive research design, where an inductive reasoning is employed from a sample to infer to a population (Ary et al, 2006).

### **Results**

This section presents the findings of the study. The findings are presented in two sections, namely (i) demographic information of the teachers, and (ii) teachers' concerns of laptop ownership.

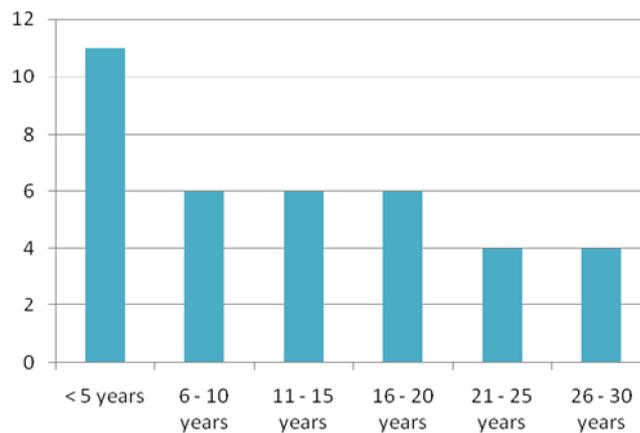
#### **Teachers' Demographic Information**

There were a total of 37 teachers who had participated in the survey. The sample consists of nine (24.3%) male teachers and 28 (75.7%) female teachers (Figure 1).



**Figure 1** Breakdown of participants according to gender

Teachers' teaching experience varied from less than a year to more than 25 years (Figure 2). A total of 11 (29.7%) teachers have less than 5 years of teaching experience, 6 (16.2%) teachers with teaching experience between 6 and 10 years, 6 (16.2%) teachers with 11 to 15 years of teaching experience, 6 (16.2%) teachers have teaching experience between 16 to 20 years, 4 (10.8%) teachers with 21 to 25 years of teaching experience and 4 (10.8%) of them have teaching experience between 26 to 30 years.



**Figure 2** Teachers' teaching experience

### Teachers' Concerns of Laptop Ownership

This section deals with the findings obtained from the teachers' concerns of laptop ownership survey. In order to facilitate the presentation and discussions of the results, the percentage of respondents' agreement level will be represented in the form of their stated preferences from five choices with the respective scoring, as;

5 - SA (Strongly Agree)

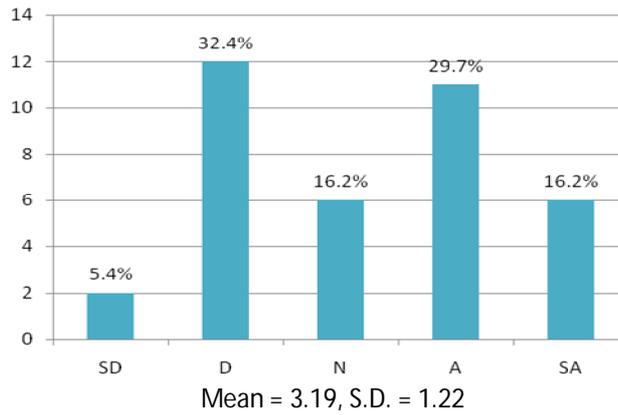
4 - A (Agree)

3 - N (Neutral)

2 - D (Disagree)

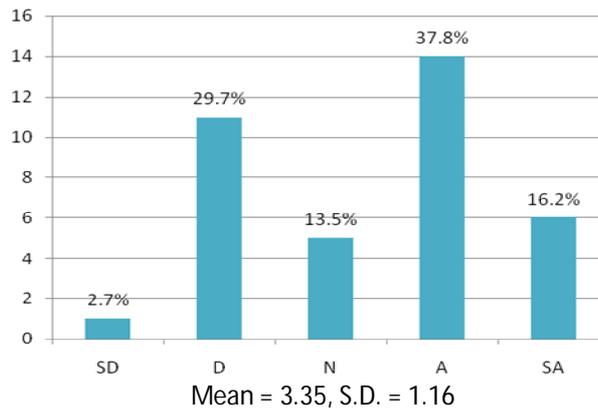
1 - SD (Strongly Disagree)

Figure 3 shows the percentages, mean and standard deviation of the item "I do not like carrying the laptop around because it is heavy". This item has a mean of 3.19 and a standard deviation of 1.22. There were approximately a third of the teachers (32.4%) who disagreed with this statement. However, there was also a fraction of the teachers (16.2%) who indicated that they strongly agreed and almost a third of them (29.7%) who agreed with this.



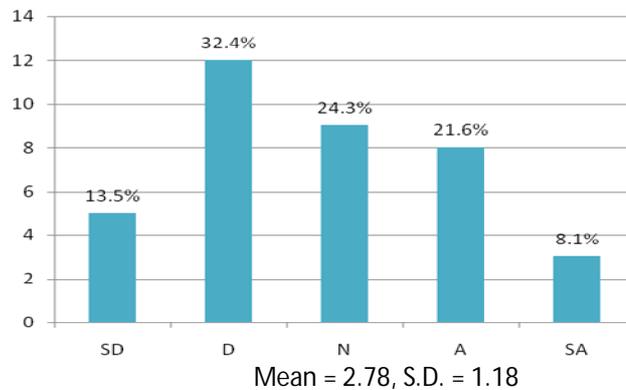
**Figure 3** Percentages, mean and standard deviation for item "I do not like Carry the laptop around because it is heavy".

The following item is "I need more technical help in handling the laptop". This item has a mean of 3.35, and a standard deviation of 1.16. The percentage of teachers who agreed with this statement was the highest. As seen from Figure 4, it is shown that more than one third (37.8%) of teachers agreed that they need more technical assistance in handling the laptop.



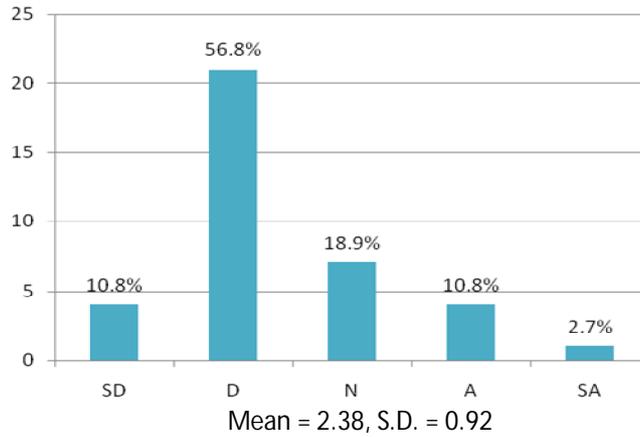
**Figure 4** Percentages, mean and standard deviation for item "I need more technical help in handling the laptop"

Figure 5 represents the percentages, mean and standard deviation of the item "The functions of a laptop are very complex to understand". This item has a mean of 2.78 and standard deviation of 1.18 respectively. For this item, the percentage of teachers who disagreed with it was the highest (32.4%).



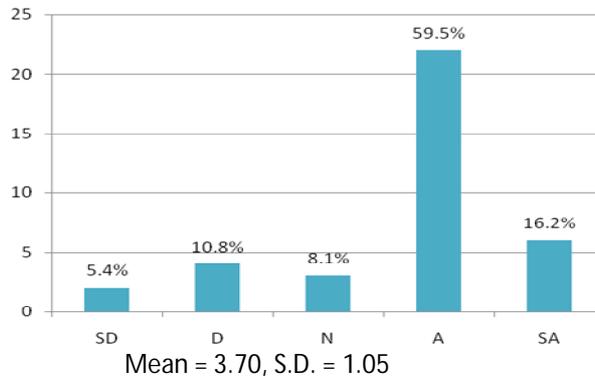
**Figure 5** Percentages, mean and standard deviation for item "The functions of a laptop are very complex to understand".

Figure 6 shows the percentages, mean and standard deviation on the item “I can fix the problem with the laptop whenever it malfunctions”. This item has a mean of 2.38 and standard deviation of 0.92. As seen from Figure 6, the percentage of teachers who disagreed with this statement was the highest (56.8%). However, there were a small percentage of teachers who agreed (10.8%) and strongly agreed (2.7%) they can fix the problem with the laptop whenever it malfunctions.



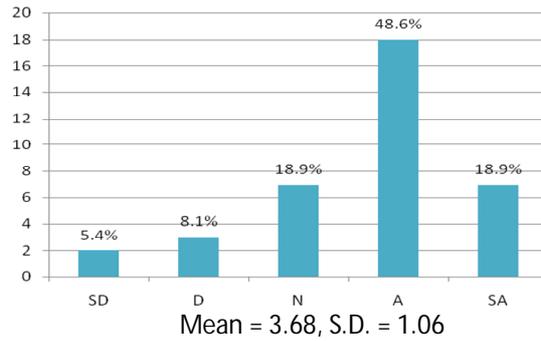
**Figure 6** Percentages, mean and standard deviation for item “I can fix the problem with the laptop whenever it malfunctions”.

For the item “I fear that my laptop will be infected with virus” (Figure 7), the mean of this item was 3.70 with a standard deviation of 1.05 respectively. For this item, a majority of the teachers agreed (59.5%) and strongly agreed (16.2%) that they fear of the virus threat on their laptops. The number of teachers who indicated that they strongly disagree with this statement scored the lowest percentage (5.4%).



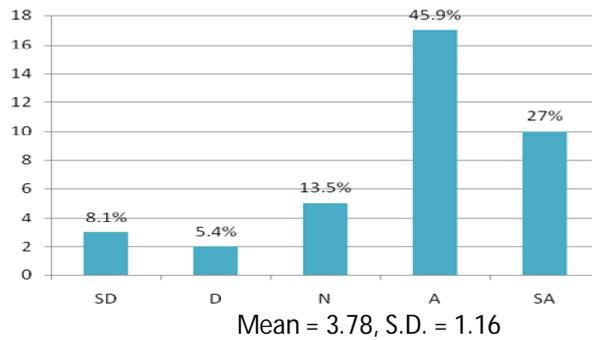
**Figure 7** Percentages, mean and standard deviation for item “I fear that my laptop will be infected with virus”

Figure 8 displays the percentages, mean and standard deviation of the item “I worry that my laptop will be stolen one day”. This item has a mean of 3.68 and a standard deviation of 1.06. The information in Figure 8 indicates that the percentage of teachers who agreed with this statement was the highest (48.6%).



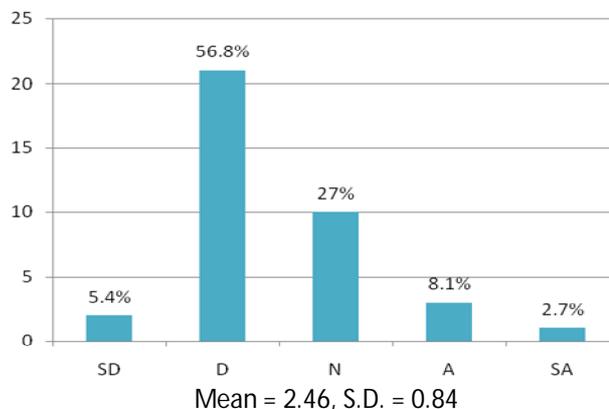
**Figure 8** Percentages, mean and standard deviation for item “I worry that my laptop will be stolen one day”

The percentages, mean and standard deviation of the item “I am aware that I will be compounded upon the loss of the laptop” is shown in Figure 9. This item has a mean of 3.78 and a standard deviation of 1.16. The percentage of teachers who agreed with this statement was the highest (45.9%), followed by the percentage of teachers who agreed (27%). However, there were also a small number of teachers (8.1%) who indicated that they strongly disagreed with this statement.



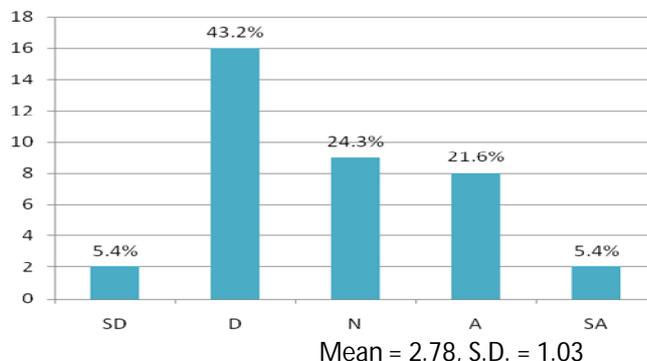
**Figure 9** Percentages, mean and standard deviation for item “I am aware that I will be compounded upon the loss of the laptop”

Figure 10 displays the percentages, mean and standard deviation of the item “I prefer not to use laptop because it hangs all the time”. This item has a mean of 2.46 and standard deviation of 0.84. The highest percentage was from the teachers who disagreed with this statement (56.8%), while the percentage of teachers who were neutral on their stand scored the second highest (27%).



**Figure 10** Percentages, mean and standard deviation for item “I prefer not to use the laptop because it hangs all the time”

The percentages, mean and standard deviation for the item “I worry that my laptop will malfunction when I use it as a teaching tool in class” are presented in Figure 11. This item has a mean of 2.78 and a standard deviation of 1.03. For this item, the percentage of teachers who disagreed with it was the highest (43.2%). However, the percentage of teachers who strongly agreed and strongly disagreed with the statement was equally balanced (5.4%).



**Figure 11** Percentages, mean and standard deviation for item “I worry that my laptop will malfunction when I use it as a teaching tool in class”

From the overall survey, four items were above the overall mean of 3.12. The statement “I am aware that I will be compounded upon the loss of the laptop” had the highest mean score of 3.78 (S.D.=1.16), followed by the item “I fear that my laptop will be infected with virus” with a mean score of 3.7 (S.D.=1.05). The item “I worry that my laptop will be stolen one day” had the third highest mean (M=3.68; S.D.=1.06) while the fourth item that scored above the overall mean was “I do not like carrying the laptop around because it is heavy” (M=3.19; S.D.=1.22). The statement “I need more technical help in handling the laptop” scored the lowest among all the items (M=2.35; S.D.=1.16).

### Discussion

This study had indentified three of the teachers’ major concerns of laptop ownership. First, the results suggest that unfavourable physical attributes of laptops is one of the major concerns. Although the laptop is portable, this attribute has indeed raised the teachers’ concern. This is because, teachers claimed that the laptop is heavy to be carried around. This findings is in congruence with the study carried out by Efaw et al. (2004) that found students dislike carrying laptops back and forth to class. They reported that laptops were found to be cumbersome because of its bulky feature. In terms of the complexity of the laptop functions, a small number of them claimed that they were difficult to understand. This implies that teachers were not quite familiar with the functions of laptops. Thus, they need to spend more time to learn how to use their laptops.

Another major concern revealed in this study is on technical issues. Teachers pointed out that they need more technical support when handling the laptop. This may be due to their inability to fix the laptop when it malfunctioned. In schools, technical support should be easily available as this may facilitate the teaching-learning progress. Schools that have embarked the laptop initiative should provide technical assistance as this may also help the teachers to discharge their duties swiftly. As a result, teachers will have a positive experience with laptops and this may lead them to use the laptops more often.

The findings also suggest that teachers are concerned about their laptop’s security. Among all the security problems, virus threats has the highest concern. Many of them feared that their laptop would be infected with virus. This is because teachers use laptop to store data and information (Fairfax County Public School Office of Programme Evaluation, 2003), and create teaching resources per se (Silvernail & Lane, 2004; Cowie & Jones, 2005). Virus threats on laptops may cause data losses and this can disrupt the teaching-learning process. Other security issues emerged from this study includes the loss of laptop as they were aware that they would be compounded upon the loss of such possession.

## Conclusion

This study has examined the concerns of teachers with regards to their laptop ownership. Since teachers are the frontrunners of the laptop initiative in schools, it is imperative to identify their concerns in relation to the laptop endowment program. Overall, several concerns have been identified such as unfavorable physical attributes of the laptop, technical issues and security problems. Such concerns should be addressed quickly so that the professional development of teachers can be further enhanced. Support from the Ministry, State, District and School level is needed to help the teachers reduce their concerns of laptop ownership.

It is suggested for research studies that are more exploratory in nature to be carried out in the near future to garner and understand teachers' concerns on laptop ownership. This way, it may help in providing a much clearer, broader and deeper understanding on the nature of teachers' job with the implementation of laptops in their tasks. Furthermore, a clear understanding of the teachers' concerns may also aid the education practitioners to chart and plan their strategies on how to manage the issues.

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