

THE SIGNIFICANCE OF NETWORK MANAGEMENT SYSTEM IN SCHOOL LABS

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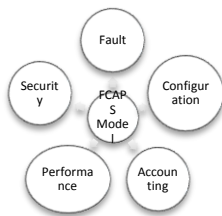
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Graphical abstract



Abstract

This preliminary study is intended to identify the significance of network management system (NMS) in the school computer lab. It was found that most of ICT teachers are not familiar with network management system; majority has yet to attend course pertaining to network management system. In this study, 15 ICT teachers from 15 different schools in Selangor were given a questionnaire that focuses on Demographic Data and the School Computer Lab information. This study discovered that there is no standard Network Management System placed in school computer lab in Selangor. Issues such as server failure, malfunction internetworking devices and slow network access prompts the new user friendly NMS, intended specifically for school ICT teachers.

Keywords: Network Management, school computer lab, ICT, FCAPS Model

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1.0 INTRODUCTION

The Malaysian Government has launched several initiatives to promote the adoption and diffusion of ICT in education. According to The Malaysian Education Blueprint 2013-2025 [1], The Ministry of Education has spent more than RM6 billion for Information Communication Technology (ICT) purposes, and most of the funds were allocated for the construction and development of the computer labs. However, the uses of ICT in schools have not yet reached the satisfactory level. One of the major problems faced by the ministry; computer labs are not properly managed. Therefore, the developments of network management system to manage the computers in the labs are being seriously considered.

Network Management is a service that employs tools, applications and devices to assist user in monitoring and maintaining networks[2]. According to Pavlou[3], Network management is very important nowadays in communication networks, with today's network speeds and complexities, network management task such as monitoring all services and

equipment and subsequently directing the necessary alerts to the relevant person is highly required.

There are five areas in Network Management model, also called OSI FCAPS model; Fault, Configuration, Accounting, Performance, and Security [4]. Figure 1 shows the areas in FCAPS model that should be implemented in Network Management System for school computer labs.

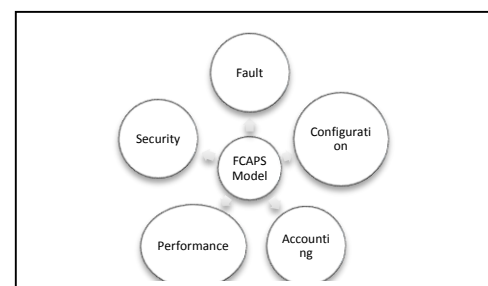


Figure 1 FCAPS model

2.0 BACKGROUND STUDY

Managing network in the school computer lab is the most challenging aspects since most teachers do not have upright ICT skills [5], [6], [7], [8] and lack of proficiency in the adoption of new technology[9], however they have positive attitude towards ICT adoption [10].

Previous report by UNESCO [11] stated that teachers need to be trained on ICT related skills to handle technical problems. A technical assistant is also needed to provide guidance and assist the teachers. With devices connected to the network is getting high in numbers, a suitable NMS is highly sought.

Baule [12] suggested that in order for teachers to use technology effectively, "the technology must be easy to use; it must be engaging and flexible; and it must provide results". Hence proper study must be conducted to ensure that the network management system which to be developed is easy to use and user-friendly.

3.0 RESEARCH OBJECTIVES

This is an exploratory study conducted to investigate the usage of Internet and user experience using Network Management System among ICT Teachers. The output of this study will be used as a guideline to develop a new model for Network Management System for school computer labs.

4.0 METHODOLOGY

4.1 Study Design

The researcher had conducted an interview with En. ZahriRamlan, Senior Assistant Director, ICT and Computing Unit, Selangor Education Department in order to identify the existing problems related to Network Management in computer labs. Next, a questionnaire was designed and distributed to ICT teachers to obtain information on issues pertaining to school computer labs.

4.2 Participants

The participants were ICT Teachers from 15 different schools in Selangor. The questionnaire was distributed to the respondents during a meeting at Selangor Education Department. The researcher was present to ensure the respondents understand the questions.

4.3 Instruments

An open ended question and close ended questions was used for the questionnaire and it consists of 4 sections. This article focuses only on two sections which are the demographic data and school lab information.

5.0 RESULT

The data results were analyzed using SPSS 20 to estimate the frequency (%) while standard descriptive statistical methods were used for variables.

The demographic data of the respondents are presented in Table 1 which showed most of the respondents have more than 10 years experiences (66.7%) followed by 5 to 10 years experiences (33.3%) using the Internet.

Table 1 Distribution of ICT Teachers Demographics' (n = 15)

| Factor | | Frequency (n) | Percentage (%) |
|----------------------------------|--------------------|-----------------------|----------------|
| Number of Participants: n (%) | | 15 | 100 |
| Gender | Male | 6 | 40 |
| | Female | 9 | 60 |
| Age distribution: n | | 26 – 43 (mean = 33.6) | |
| Experience using Internet: n (%) | 5 – 10 years | 5 | 33.3 |
| | More than 10 years | 10 | 66.7 |

Figure 2 shows the places where teachers usually surf the Internet, 100% from 15 respondents surf the internet at their home, 14 from 15 respondents (93.3%), surf the internet at their workplace and 73.3% surf internet from any places with Free Wi-Fi and 53.3% surf internet at anywhere using their own Internet Broadband.

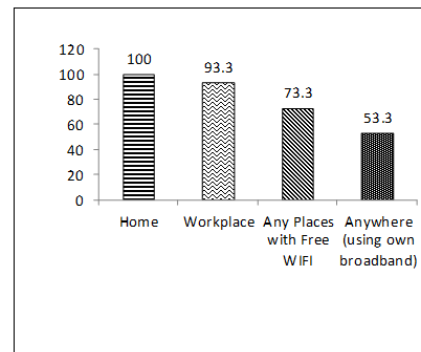


Figure 2 Percentage (%) of internet surfing

Based on the survey that has been conducted, most ICT teachers never attended specialized training for network management. Figure 3 shows 80% of the ICT lecturers never attended any training regarding Network Management, only 20% of the respondents have attended Network Management Training.

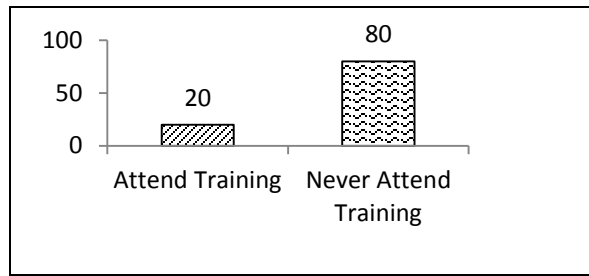


Figure 3 Percentage (%) of network management training

All respondents agree that attending Network Management Training to manage the School Computer Lab is important (100%) as shown in Figure 4. Continuous training must be provided to the ICT teachers to enhance their ICT knowledge over time [13].

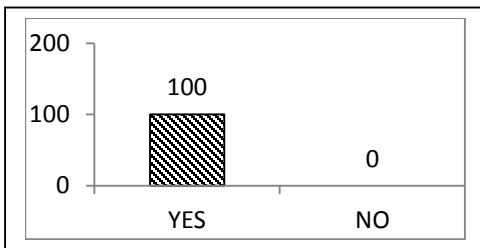


Figure 4 Percentage (%) of attending network management training is important

Table 2 shows the information of computer labs in school. 10 schools have two computer labs (66.7%), 4 schools with one computer lab (26.7%) and only one school with three labs (6.7%). All schools are running Windows as the Operating System in the computer labs. Of those 15, only three schools implementing Network Management System with no standard Network management System used.

Table 2 also shows that 12 schools (80%) have assigned ICT Teachers to manage the school computer lab, while 3 schools (20%) had Technician to manage the school computer lab.

It was also determined that several problems occur in school computer labs; 1) broken computer 2) server failure 3) malfunction internetworking devices 4) slow network access.

Table 2 Information of school computer labs (n = 15)

| | Elements | Frequency (n) | Percentage (%) |
|---|--------------|---------------|----------------|
| Number of computer lab(s): n (%) | 1 lab | 4 | 26.7 |
| | 2 labs | 10 | 66.7 |
| | 3 labs | 1 | 6.7 |
| Operating System | Windows | 15 | 100 |
| | Linux | 3 | 20 |
| Availability of Network Management system | YES | 3 | 20 |
| | NO | 12 | 80 |
| Person in charge | ICT Teachers | 15 | 80 |
| | Technician | 3 | 20 |

6.0 DISCUSSION

This study showed that all ICT teachers are familiar with Internet. Figure 2 shows all respondent able to use the Internet at home. Thus, it can be concluded that all respondents have Home network. Survey also shows that majority of ICT teachers did not attend any training on Network Management although it is their responsibility to manage the computer lab. The lack of training definitely affects the level of proficiency of ICT teachers in dealing with network technology.

On another note, all respondents agree that it is important to attend the network management training. Some schools manage to provide technician to handle the lab which is round 20% of the total. School with both ICT teacher and technician manage the computer lab much better.

Most school computer lab using Windows as their platform. This is expected since Microsoft is currently the most well-known operating system provider. Easy access to Microsoft related services and products lead to Windows being the main platform. With all these information in mind, the researcher must take into consideration for development of new network management system.

7.0 CONCLUSION

Findings from this study reveal that there is no standard Network Management System used in school computer lab. With a few expertise to manage the network, the needs to develop a user friendly Network Management System is of the utmost importance.

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