Chapter 3

Methodology

3.0 Method of Investigation

The study is to identify the level of awareness and competency on various information and communication technology in secondary schools. This includes the application software, Internet and emailing application usage, and also the availability of computers and infrastructure for the teachers and management of schools.

The survey method using questionnaire is the most appropriate method to collect data from teachers from various secondary schools without taking much of their time and the teachers would be able to express more freely about the availability of facilities, of their competency and also needs or problems faced whilst the using the technology. The teachers were not required to write their name or any other identification on the forms.

This study involves a survey (Appendix A) of eight secondary schools with in the Petaling Jaya area. For the purpose of the study, the sample chosen is the normal public secondary schools. The geographical area of Pertaling Jaya has 57 secondary schools with an average population of 1400 students and 85 teachers from various fields. The sample chosen is 14% of the whole district of Petaling Jaya (Ministry of Education, 2003). The sample was chosen randomly from the 57 secondary schools. (Appendix B)

Secondary school as defined for this study is a school including any form level of first form through form five. In some cases these schools include form six. Schools that

include form six were requested to restrict their survey responses through form five. This criteria is consistent with the designation of the general term of secondary school.

3.1 Questionnaire

The survey instrument was questionnaire specifically develop for the purpose of the study. Two set of questionnaires were designed to identify the equipment availability; the extent of technology used in the schools; the awareness at the management level and competency, awareness and expectations of the teachers. The questionnaires were tested on two secondary schools in Rawang to identify any possible pitfalls during the filling of forms by the teachers and management. The pretest was successful with little changes needed on the terminologies terms used in the questionnaires. The questions were bilingual, in English and Bahasa Malaysia but the terminologies for computing were left in English as the teachers and the management of the schools during pretest feel more comfortable with the terms in English. Two sets of questions were used to collect information (Appendix C).

The questions posed to the respondents can be categorized into three basic areas, the availability of computer and internet facilities, awareness and interest, competency and the usage of the information and communication technology in teaching and administration.

For the area of Computer Facilities in Schools the questions asked are as follows:

a. What are the total number and type of computers in the school for teachers, library, management and administration purpose?

b. The availability of computers at home

c. Are there adequate peripherals for effective computer use?

d. Does the school have a network or access to national communication facility?

e. Does the school have a home page?

f. Does the school have a computer club?

g. Does the school have adequate budget?

To determine the awareness of information communication technology the following questions were used in the forms.

a. Aware of the important of ICT implementation in schools.

b. Interest in information and communication technology.

c. Opinion on the benefit of ICT implementation in schools

d. To go head with the implementation of ICT in schools.

d. Does the Teachers and Parent Association provide financial support?

For the area of IT literacy among teachers, management and administration staffs in schools.

IT literacy encompasses :-

a. Ability to use a word processor, spreadsheet and database management system.

b. Ability to use electronic mail

c. Ability to access information using electronic resources

d. Have teachers attended any courses on computing

e. Would teachers or staff be interested in attending any courses on computing?

f. Does the school have training programs for the teachers?

For the area of using information communication technology, the following questions were used in the survey forms:

a. Do the teachers use internet resources for teaching purpose?

b. Are the students given any basic training on how to use computer?

c. Does the school use any students Database Management System?

d. How frequently is the home page updated?

e. Does the public interact with the teachers by e-mails?

f. Does the public interact with the school authority by e-mails?

f. What is the estimated time of internet or email usage by teachers?

A short note was place on top of each questionnaire indicating the purpose of the questionnaire, so that the teachers and also the management would understand that the information given will not in any way effect the schools or themselves. Other than that a contact number was placed on top of the right hand side of the first page of the questionnaire for any further enquiry.

3.2 *Data Collection*

The survey questionnaires were completed and ready for distribution in the middle of October 2002. A total of 15 secondary schools in the Petaling Jaya area were identified, the principals of these schools were asked, about participating in the survey via telephone. Out of these 15 secondary schools, only eight were willing to participate. Second follow-up calls were made to the eight schools to brief them about the survey forms and the method of delivery and collection of the completed survey forms.

All the eight schools were mailed thirty five survey forms to be filled by the teachers and one survey form to be filled up by the resource teacher or the principal. Together with the forms was a covering letter as an introduction to the study, a letter from the supervisor from the university and a self address Pos Express envelope. Pos Express was used for mailing forms to and from the schools, as it is easy and simplifies the process of returning the survey forms. Mailing was done on 28th of October, 2002.

All eight schools responded to the survey. Five responded in one week's time and the other 3 responded by the second week. A total of one hundred and eighty nine (189) teachers responded to the survey. This is 4.6% of the total number of secondary school teachers in the whole district of Petaling Jaya. An average of 23 teachers responded from each of the eight schools, since the survey was conducted on teachers teaching form 3 and 5 in the schools. The survey was limited to teachers teaching these three forms, because normally these teachers are senior since these three form are examination classes. The assumption made here is that the senior teachers, knowing the situation of

the school, would respond more accurately and freely to improve the validity and accuracy of data.

3.2.1 Data recording and tabulation for section I "Identify the awareness, equipment available, and technology used by school management"

For questions with "yes" or "no" responses, the numeral "1" was assigned to "yes" responses and the numeral "0" is assigned to "no" responses when entering data on the worksheet. This response identification method was used for questions a, b, f, h-j, l-n of the principal's survey form. For questions that requested the respondents to choose numbers from given scale, the actual numbers of the scale were recorded on the worksheet. This method of data recording was used as part of question c-e and g of the principal survey form. For the question k which required response to choose unit of time, the responses (daily, weekly, monthly, and yearly) is identified by the respective numerals 1,2,3 and 4.

After all the data were recorded, totals were listed for all "yes" responses as a combined total of all the schools, for each "yes or no" question. Calculations were made to represent these totals as percentage of "yes" responses for each of these "yes or no" survey questions as a grand total of the respondents. Total for each type of response to time questions were listed for all schools combined. For questions that requested numbers to be chosen from the form, totals were calculated for each choice given in the form. For survey question left unanswered by a respondent, a blank space was left in the respective cell on the worksheet to indicate "no response".

Scatter graphs and bar graphs were created to display the data collection for the numbers of computers in the schools, library, in the office for administration purpose (questions c-e) and the email usage by the school staff. (question g). This graphical representation reveals the most common range for total number of computers in schools as well as grand total of combined survey respondents.

A bar graph was designed to depict the percentage of school management awareness on the information communication technology to any plan for future (questions a-b). Bar graphs were designed to depict the percentage availability of network system and usage of electronic mail by the staff. Bar graphs were designed to depict the percentage of yes's and no's for all the other question to determine the availability of resources in term of trained staff, communication channel, budget and support from the public.

3.2.2 Data recording and tabulation for section II " competency, awareness and Information technology usage by the teachers"

Answers to questions a-k were recorded on spreadsheet as the numerals "0" or "1" for "no" or "yes" responses as discussed for the principal survey form. All "yes" responses were totaled for the combined teachers from all eight schools. Calculations were made to determine the percentage of "yes" responses for each survey question for the combined responses. Percentages were determined based on only those teachers responding to the questions.

Answers to question l was coded with "1","2","3" and "4" to reflect the respondents' choice to "Word processor", "Spreadsheet", "Database/DBMS" and "internet& email" respectively and similar coding was used for question m to reflect the respondents' choice to "hardware", "software", expertise", "finance" in sequence. Respondents were requested to choose two, from the choice given. Bar graphs are plotted for both of the questions above (question l and m) to check the trend of the teacher's knowledge and of the problems faced in implementation of information communication technology in schools.

3.3 Organising the survey responses

As the responses were received, each group of survey forms were filed according to the school name and the survey form from the principals were filed together in one folder. All the survey forms were returned within two week's time. The individual school's confidentiality was maintained throughout the study. No school names or teacher's names were requested on the forms.

A spreadsheet was used to create the data recording worksheets for all the responses. Two separate worksheets were created, one for the teachers' response and the other for the principal's response. The data were entered on each of the worksheets in a linear form from the first school to the last school without any separation by school or any other element. This recording method organised the survey results of all of the eight schools in the study as a subtotal of whole urban area of Petaling Jaya. Therefore, trends and outlying points for the whole the urban area of Petaling Jaya could be identified.

Graphs and collection of worksheets with total percentages provided a means for cross-reference between the respondents' competency, management awareness on information communication technology, number of computers and other information communication facilities and also the level of usage of this technology in schools. Conclusions were drawn about the ability of schools to acquire technology and usage of the technology into the school program based upon the cross-reference of data in the two sections, the teachers and management.

A narrative of analysis and conclusion relative to availability of technology and usage of information communication technology within the secondary schools follows in the next chapters. These conclusions provide the basis for recommendations of study and highlight study implications.