Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

As we progress into the next decade, schools and in particular teachers play a vital role in ensuring that information technology helps us realize our national goals and aspirations by producing learners with analytical minds and a technology-literate and critical thinking workforce.

If Smart Schools can successfully take us into the Information Age, then teachers need to be ready to teach with technology and multimedia. Teachers' readiness to teach in Smart Schools is the most important factor for it's successful implementation.

This final chapter discusses the results and findings of the study under the following sub-headings:

Summary and Interpretation of the study
Implications of the results and findings
Conclusions and Recommendations
Summary and Interpretation Of The Study

This research paper attempted to determine teachers' readiness to teach in Smart Schools based on four areas of concern: teachers' knowledge of Smart Schools, their technological knowledge and skills, their opinions of integrating Information Technology into classroom teaching, and their opinions of factors that may influence their readiness to teach in Smart Schools.

The survey inquired about what teachers know of Smart Schools. It investigated the relationships of teachers' technological knowledge and skills in relation to four independent variables: gender, age, category (qualification) and teaching experience. In addition, it also sought to inquire about teachers' opinions of integrating Information Technology into classroom teaching and teachers' opinions of what factors may have influence on their readiness to teach.

The subjects consisted of 57 teachers of SMK Dato' Sedia Raja, an Electronic Resource Center (Munsiy ) project school, in Rembau, Negeri Sembilan. Sponsored jointly by the Educational Technology Division (ETD) of MOE and Telekom Malaysia Berhad it has a wired network. Being accessible to Local Area Network, Wide Area Network and the Internet, it thus has a technological background and great potentials to be a Smart School.
This survey was conducted using an adapted and revised version of Delcourt's Analysis of Scales, consisting of 11 main items in a seven page questionnaire. It sought answers to four research questions.

1. What do teachers know of Smart Schools?
2. What are the characteristics of teachers who possess technological knowledge and skills?
3. Why do teachers think that the integration of Information Technology into classroom teaching is essential in Smart Schools?
4. What factors determine teachers' readiness to teach in Smart Schools?

**Implications of the Results and Findings of:**

**a. Teachers' Knowledge of Smart Schools**

Analysis of teachers readiness to teach in Smart Schools based on their knowledge of 7 Smart School aspects show that the percentage of teachers who had knowledge of the 7 selected aspects of Smart Schools varies at different levels amongst them. For instance, 68% had excellent knowledge of the importance of the Philosophy of Education in Smart Schools while another 12.3% had no knowledge of it at all.

Subsequently, 70.1% of teachers had excellent knowledge of the generic aspects of Smart Schools while 23% had no knowledge of it.

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The results also showed that only 30% had excellent knowledge of smart assessment, while 39% had average knowledge and the remaining 30% did not know about it.

These findings indicated that although teachers were exposed to and had basic to satisfactory technological knowledge and skills, more so as it is an ERC project school, they lacked knowledge on important aspects of Smart Schools such as its assessment and the roles of teachers and students.

If SMK Dato' Sedia Raja is changing into a Smart School as planned, the whole academic staff (not selected groups or individual teachers) need to be adequately exposed and skillfully trained in technology for instructional purposes.

Since professional training and development of teachers are crucial in enabling them to successfully execute new technological innovations, technology inclined teachers' will reduce efforts to train them. This implies that training the teachers of this ERC project school may be more successful compared to training teachers from normal secondary school where the number of teachers with technological experiences are expected to be smaller.

b. Teachers' Technological Knowledge and Skills

The results and findings of teachers' technological knowledge and skills revealed the following:
1. Age does not influence or determine teachers' knowledge and skills of technology. On average, teachers young and old alike were familiar with computers and its related technologies. However it is interesting to find out that teachers in the 36-45 years age range had more technological knowledge and skills surfing the Internet than their younger colleagues. This maybe the result of the lack of encouragement for teachers to acquire technological experiences and skills while undergoing teacher training in colleges and universities.

2. Gender differences revealed that male teachers were more competent in computer knowledge and skills as well as with other technological applications such as the electronic-mail, Internet and multimedia. This finding supports the supposed gender bias in educational software which is more popular among males than females. Females were also found to be more afraid to make mistakes and thus may feel more stressed using technology.

Since the male-female teachers ratio is 60:40, this finding would mean that female teachers need to be more exposed and encouraged to use computers and other technological applications essential to enhance learning.

3. Qualification does have an impact on teachers' technological competency. Overall graduates were more competent in technological applications compared to non-graduates. This maybe due to the heavier responsibilities (mostly paperwork)
that graduates are normally entrusted with and more opportunities to attend courses and exposure to newer educational developments granted to them.

4. Teaching Experience had no significant influences on the level of differences between junior compared to senior teachers in the area of knowledge and skills in technology. An interesting finding though is that teachers who had between 11-15 years of experience were less competent compared to their seniors (those with more than 16 years of experience) and also to their juniors (those with 6-10 years of experience). As the causes of this finding cannot be ascertained in this study, it is suggested that other studies in this area be conducted in the future to seek answers to the relationships between the length of teaching experience with possible independent variables.

5. Teachers' competencies in technological experiences was unevenly distributed. Some teachers were more knowledgeable in more areas of technology than others. Technologically competent teachers, were found to be lacking the experience in using technological applications for educational practices. It is felt that training sessions in the proper application of information technology for educational purposes is very much in need.

c. **Teachers' Opinions of Integrating IT**

1. Teachers support the integration of IT and recorded that IT can help us realize Vision 2020. This shows that teachers are aware that IT is an essential component
of modern education and are certain that IT can offer our students learning benefits.

2. Teachers also realize the potentials of IT that accommodates different learning styles, provides appropriate and meaningful curriculum as well makes virtual libraries accessible to students. This positive attitude towards integration promises successful implementation of Smart Schools.

3. Teachers were confident that IT can prepare students to meet the needs of the 21st century workplaces. Teachers were certain IT can make learning more meaningful and that the smart networked classrooms enhances the exchange of information.

4. Excess applications of IT may have adverse effects on students. Teachers were certain too much exposure to technology will cause a loss of creativity, originality and personal holistic development. This implies we should strike a balance between technology and the teacher's influence in learning as too much of each causes over dependence and rigidity.

5. Teachers were uncertain whether IT can produce and prepare technologically literate students for the future job markets. This is not surprising since IT in the classroom is a phenomenon of the future. Although we cannot deny the benefits
of IT in education, we do not have the evidence to confirm our hypothesis that it's integration will no doubt bring us more gain than losses.

The overall analysis of teachers' opinions showed more support towards integration of IT and certainty of its potentials to the school, the teachers, students and finally to our society.

d. Teachers' Opinions of Their Readiness To Teach

1. Teachers who thought they were ready to teach in Smart Schools, said so as they had adequate basic knowledge of issues related to Smart Schools. Besides they were also able to work with computers. In addition, they were prepared to attend courses to upgrade themselves since they felt that they need to change their teaching techniques appropriate to the requirements of smart teaching. Based on these factors, this set of teachers maybe ready to teach in Smart Schools. However, these teachers need technology-based courses to help them gain the confidence to teach with technology.

2. Teachers who said they were not ready may have done so since they were uncertain of the requirements of Smart Schools. They were also not confident that their knowledge will be sufficient for the needs of Smart Schools. They felt that they need more opportunities to be exposed to the Smart School issues before they can be ready to teach in it.
Conclusions and Recommendations

The following conclusions were drawn from the survey results and findings:

1. Teachers had adequate basic generic knowledge of certain aspects of Smart Schools which includes the role of the philosophy of education and the smart curriculum. However, they lack knowledge of the smart assessment and the roles of teachers and students in Smart Schools.

2. A majority of the teachers had basic computer skills, while a small percentage had internet and multimedia skills. Their knowledge and skills in technology varies according to gender, males were more competent compared to female teachers.

3. IT integration in the classroom is highly supported for its potential benefits of helping teachers to teach effectively as well as to enhance learning.

4. Competent teachers showed their readiness to teach with technology. Others were found to lack confidence and unsure of their capabilities.

Generally, teachers' readiness to teach is one of the major factors that will determine successful implementation of Smart Schools. Besides, information technology literate teachers, total commitment from all related parties is essential. This is necessary as the task of implementing Smart Schools is extensive and complex. The Ministry of Education (MOE), State Education Department
Officers, school administrators, parents, teachers, the corporate sector, and students need to work side by side to ensure effective implementation at all levels.

Besides commitment, we may also need changes to existing educational policies, procedures and practices or may even require formulating new policies and regulations. Areas or issues that are of vital importance may include, teaching-learning processes; curriculum, assessment and most important, the roles of teachers.

To function effectively Smart Schools will require appropriately skilled staff, especially information literate teachers, adequately well-designed support facilities and relevant technology. In an information rich society, Malaysians need to have a competitive edge to perform well in a global market.

The following recommendations are drawn from the survey results:

1. The Ministry of Education (MOE) and State Education Departments conduct on-going seminars, talks, courses, and workshops on the Smart Schools at all primary, secondary and tertiary levels to disseminate accurate information on issues related to Smart School.

2. MOE make public the Smart School Conceptual Blueprint especially to teachers and educators to ensure clear understanding and effective implementation of Smart Schools.
3. Provide loans for teachers to buy personal computers unconditionally and identify reliable computer and multimedia vendors who can supply quality goods with reliable after sales service.

4. From time to time the MOE and State Education Office or school can sponsor or subsidize practicing teachers who attend courses at public training centers to improve their level of professionalism.

5. Encourage paperless school management and have effective enforcement of its implementation in learning institutions to indirectly encourage more use of technology in education.

6. Select and appoint competent educational technologists to help train Smart School teachers and educators at all levels on a continuing basis.

7. Introduce and conduct interactive on-line workshops, seminars and appropriate courses on educational information technology relevant to Smart School teachers.

8. Encourage teachers to upgrade their technological knowledge and skills progressively throughout their teaching career.