

CHAPTER 6

CONCLUSION

The aim of this research project was to investigate the integration of computer-assisted education at Pinelands High School. This necessitated

- defining computer-assisted education;
 - examining the necessary infrastructure to support computer-assisted education;
 - developing a model for the integration of computer-assisted education;
- and then
- determining the infrastructure which supports computer-assisted education at Pinelands High School; and
 - investigating the integration of computer-assisted education at Pinelands High School based on the model of the integration of computer-assisted education.

1 Computer-assisted education

A literature search in journals, books, Internet mailing lists, newsgroups and web sites was completed. Three suitable models of the integration and a number of definitions of computer-assisted education were found. Factors concerning the required infrastructure for the integration of computer-assisted education were found in many sources which included asking the advice of practitioners in the field.

1.1 Definition of computer-assisted education

Rieber and Hooper sum up the integration of computer-assisted education when they state that educational technology, including computers, involves applying ideas from various sources to create the best learning environment possible for students (Rieber, 1995, p.155; 1997). To meet this definition of computer-assisted education

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the school has to change in many fields which include, for example, funding, timetables, curriculum, method and assessment.

1.2 Infrastructure to support computer-assisted education

The literature on the infrastructure to support computer-assisted education focused on three aspects: the staff, the school and the community. The stakeholders in education have to work together to integrate computer-assisted education with the funding, planning, training, sharing, communicating, involving and allocating of funds, skills, time, knowledge, enthusiasm and ideas. The integration can take a long time working with the different stakeholders to get consensus. The prerequisite infrastructure changes as the integration takes place.

1.3 Evolutionary Model of the integration of computer-assisted education

Three models of the integration of computer-assisted education were used in the project: the **Apple Classrooms of Tomorrow Project (ACOT)**, the **Make It Happen!** and the **CAMI Mathematics** models each had a major feature which was similar to the situation at Pinelands High School. These three models were synthesized into one **Evolutionary Model** to evaluate the integration of computer-assisted education at the school.

The **Evolutionary Model** was divided into five phases: Introduction, Entry, Intermediate, Penultimate and Creation. Each phase of the **Evolutionary Model** represents a higher type of mental activity, building on and relying on the previous phase. In this the **Evolutionary Model** of the integration of computer-assisted education is similar to Bloom's taxonomy of cognitive learning objectives of knowledge, understanding, application, analysis, synthesis and analysis.

Each of the phases of the model indicates the specific infrastructure necessary at that point which changes with the level or phase of integration. As the required infrastructure is provided the outcomes change with respect to the instructional activity, the teacher interaction and general school outcomes. The specific

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infrastructure in each phase is divided into three main fields of activity, namely technical assistance, time and training.

The required infrastructure necessitates more time and funding as one moves from phase to phase in the **Evolutionary Model**. If the required infrastructure is not provided during the integration, computer-assisted education will be halted. Instruction changes in the different phases of the **Evolutionary Model** from traditional knowledge retention to knowledge creation; the social interaction of the students changes from individual seat-based work to collaborative work; and teacher interaction changes to interdisciplinary work and team teaching.

The required infrastructure assists and facilitates the integration of computer-assisted education. Should the education authorities halt funding for new computer hardware or software or fail to maintain the computer system, thus preventing the evolutionary integration, they will halt the integration and change.

2 Computer-assisted education at Pinelands High School

Computer-assisted education has been integrated at Pinelands High School with a very wide base. All standards six and seven students have the opportunity to become confident with the word processor, a graphics package and a telecommunications package in their weekly Computer Literacy classes. Senior students have access to computer facilities to a lesser extent, depending on their choice of subjects. These applications are mainly used in the initial phases of the **Evolutionary Model**. Over half of the staff use the computer in their teaching which is a large number in terms of the limited access to computer facilities.

The computer facilities, financed mainly with school funds, are good up to a point. The school has applications able to run in a *Windows* environment but the selection, used in the initial phases of the **Evolutionary Model**, is limited. The numbers of work stations are satisfactory for use in cooperative learning environments but these are not always used as teachers prefer individual stations.

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Training of teachers in use of the computer is mainly limited to the word processor where many staff have been trained, but training in many other applications has been neglected. Teachers are able to attend evening classes at school in using the computer or be financially assisted in attending extra-mural courses. The training offered has been limited to using the application rather than using the application as a tool to enhance learning.

Teachers are able to take part in decision-making within the school and subject departments. Should there be a movement to integrate computer-assisted education within a department that would be possible and it has happened within the Geography and Environmental Science departments, and Mathematics to a large extent. The Computer Literacy department staff are also members of other subject departments and it is in these other departments that computer-assisted education has been integrated into the work. The school has been flexible in permitting and arranging for the junior classes to attend computer literacy classes and to accommodate the integration of computers in the Graphics and Mathematics classes.

The subject departments within the school are able to purchase applications for use, providing the network can accommodate them. The computer department has to budget for its own requirements and expressed satisfaction with its allocation of the total budget.

2.1 Recommendations for further integration

Should Pinelands High School wish to further integrate computer-assisted education the following are recommended:

1. Increase the funding in particular to
 - provide more computer stations;
 - provide more computer venues;
 - increase the number of applications available, in particular provide a spreadsheet and database; and
 - increase the RAM in individual computers so that they are able to use current applications.
2. Provide time to spread the vision of computer-assisted education among all staff

3. Provide training to
 - increase training in application use; and
 - use the computer as a tool to enhance learning.

In conclusion it must be noted that Pinelands High School is integrating computer-assisted education on a broad scale and has reached the second phase in the **Evolutionary Model**. The Computer Literacy subject department staff are mainly responsible for the use of computer-assisted education at the school. Further integration and its different educational outcomes can be reached by implementing the recommendations above.

3 Recommendations for further research

Research on a large scale is necessary to investigate whether the infrastructure and subsequent outcomes recommended in the different phases of the **Evolutionary Model** are valid and generalisable in order to become more effective.

4 Conclusion

This chapter concludes an investigation into how effectively Pinelands High School is integrating computer-assisted education and the required infrastructure.