

CHAPTER 3

RESEARCH METHODOLOGY

This chapter will discuss the research instruments, namely the questionnaires, interviews and observation used to collect the information, and the methods used to validate the findings of the research project.

1 Investigation instruments and subjects

The information about computer-assisted education at Pinelands High School has to be seen in context so information about the school as a part of the town were gained by interviews and observation.

For the purposes of this research project, staff who had *taught* at the school for more than one year were consulted. At the time of the investigation, August/September 1996, a number of staff were on leave. Substitute staff were not included in the survey. The total teaching staff surveyed was 40, including two members of the computer department who are not officially teachers but who teach Computer Literacy in addition to their administrative duties. In the survey the total number of staff involved in teaching the subject Computer Literacy numbered seven.

1.1 Questionnaires

1.1.1 Purpose of the questionnaires

Objective data, able to be corroborated by facts and figures and statistically illustrated, was required on the infrastructure to support computer-assisted education and the integration of computer-assisted education at Pinelands High School. These questionnaires had the purpose of collecting information on those topics at Pinelands High School in August/September 1996.

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Two questionnaires were given to the staff. The first questionnaire was given to all the staff members surveyed, Appendix A. The second questionnaire was given to those staff members who used the computer in teaching, Appendix B.

1.1.1.1 First questionnaire given to all teaching staff surveyed

The questionnaire given to *all* staff members in the survey was accompanied by the letter shown below.

Figure 3. 1 Letter accompanying the first questionnaire for all teaching staff

**THE INTEGRATION OF COMPUTERS AT
PINELANDS HIGH SCHOOL: A CASE STUDY**

Hi

This questionnaire is part of an investigation into the efficient use of the computer at PHS and will, I hope, make life easier for all of us once the results have been evaluated. All of the questions relate to PHS and not time spent at another school.

I realise it will take some time out of your already busy day, but in the long term I think it will help all of us to be better teachers and communicators.

May I fetch the results tomorrow. Please drop the results in my pigeon hole.

*Thanks in advance
Pam Miller*

The questionnaire for all teaching staff covered personal details, their infrastructure for computer use and their use of the computer. A copy of the letter and questionnaire are attached in the Appendix A. The topics asked are listed and the information gleaned can be divided into the fields shown below:

Table 3. 1 Topics covered in the first questionnaire given to all teaching staff

TOPIC	TYPE OF INFORMATION
Years of teaching	Personal details
Years of teaching at Pinelands High School	Personal details
Subjects taught	Personal details
Use of the computer at home	Personal details, Integration
Other computer training	Personal details, Support infrastructure
Computer ownership	Personal details, Support infrastructure
Financial assistance to purchase computer	Support infrastructure
In-house/in-service computer training	Support infrastructure
Financial assistance for computer training	Support infrastructure
Decision-making	Support infrastructure
Technical advice	Support infrastructure
Involvement with team teaching	Support infrastructure, Integration
Use of group work	Support infrastructure, Integration
Subject department software	Support infrastructure, Integration
Access to computer applications	Support infrastructure, Integration
Use of the computer at school	Integration
Use of the computer in teaching	Integration

1.1.1.2 Second questionnaire given to the 19 staff members who use the computer in teaching

The second letter and questionnaire was given to those teachers who indicated that they had used the computer in teaching in 1996. Both the letter and questionnaire can be found in Appendix B. The questionnaire below was given to 19 staff members who had used the computer in teaching in 1996. They were also given enough of the questionnaire for each of the subjects they teach, altogether nine subjects. There were a total of 29 subject-classes-and-teachers.

The aim of the second questionnaire was to note the computer-related infrastructure of these staff members and see how they had integrated computer-assisted education.

Table 3. 2 Second questionnaire given to the 19 teachers who use the computer in teaching and the frequencies of the 29 subject-classes-and-teachers

QUESTION	Yes	No	f Yes / A	f No / B
1. Have you used any computer package(s) in the teaching of a lesson at PHS? If NO, no more questions. Thanks!	Yes	No	29	0
2. Have you shared information (printed or verbal) about a computer-related lesson with ...				
a) teachers in your department?	Yes	No	24	3
b) other adults in the school?	Yes	No	14	10
c) teachers not from PHS?	Yes	No	19	8
3. Have you published anything about (a) computer-related lesson(s)? If YES, please specify titles of publications.	Yes	No	3	26
4. Have you mentored any person in a computer-related lesson this year?	Yes	No	6	23
5. Were you mentored by anyone in a computer-related lesson this year?	Yes	No	8	21
6. In general, in your computer classes, ...				
a) do the students work in (A) pairs/groups or (B) on their own?	(A)	(B)	16	11
b) would you prefer the students to work in (A) pairs/groups or (B) on their own?	(A)	(B)	12	14
c) do you act as a (A) facilitator or (B) focus?	(A)	(B)	29	0
7. What computer applications have you used in teaching during the last year? (Please list)				
8. Which of the applications which you use in teaching do you have access to at home? Please indicate on the list above.				
9. In general, in your computer classes, is the material of the work syllabus related?	Yes	No	25	3
10. In general, in your computer classes, do the students use the package(s) below for ... (select a maximum of 3)				
a) the purpose of learning a specific skill e.g. typing.	Yes	No	7	
b) the specific purpose of learning the package.	Yes	No	13	
c) retaining information e.g. drill-and-practice.	Yes	No	8	
d) processing information by typing/drawing e.g. word processing, graphics or tables.	Yes	No	14	
e) communicating with someone e.g. e-mail.	Yes	No	9	
f) finding information and possibly drawing conclusions e.g. Orbits, PCGlobe.	Yes	No	14	
g) creating new knowledge e.g. multimedia presentations, web pages or multimedia documents.	Yes	No	2	
h) (your own wording)	Yes	No	6	

Table 3. 3 Topics covered in the second questionnaire given to the 19 teachers who use the computer in teaching

TOPIC	TYPE OF INFORMATION
1. Have you used any computer package(s) in the teaching of a lesson at PHS? If NO, no more questions. Thanks!	Integration
2. Have you shared information (printed or verbal) about a computer-related lesson with ...	
a) teachers in your department?	Support infrastructure
b) other adults in the school?	Support infrastructure
c) teachers not from PHS?	Support infrastructure
3. Have you published anything about (a) computer-related lesson(s)? If YES, please specify titles of publications.	Support infrastructure
4. Have you mentored any person in a computer-related lesson this year?	Support infrastructure
5. Were you mentored by anyone in a computer-related lesson this year?	Support infrastructure
6. In general, in your computer classes, ...	
a) do the students work in (A) pairs/groups or (B) on their own?	Integration
b) would you prefer the students to work in (A) pairs/groups or (B) on their own?	Integration
c) do you act as a (A) facilitator or (B) focus?	Integration
7. What computer applications have you used in teaching during the last year? (Please list)	
8. Which of the applications which you use in teaching do you have access to at home? Please indicate on the list above.	
9. In general, in your computer classes, is the material of the work syllabus related?	Integration
10. In general, in your computer classes, do the students use the package(s) below for ... (select a maximum of 3)	
a) the purpose of learning a specific skill e.g. typing.	Integration
b) the specific purpose of learning the package.	Integration
c) retaining information e.g. drill-and-practice.	Integration
d) processing information by typing/drawing e.g. word processing, graphics or tables.	Integration
e) communicating with someone e.g. e-mail.	Integration
f) finding information and possibly drawing conclusions e.g. Orbits, PCGlobe.	Integration
g) creating new knowledge e.g. multimedia presentations, web pages or multimedia documents.	Integration
h) (your own wording)	Integration

1.1.2 Design of the questionnaires

In designing the questionnaires the purpose was to obtain the required information with as little stress to the teachers as possible. The author was aware that at the time of the data collection there was discussion of cutting staff numbers and that there could have been a negative attitude towards any extra work. Therefore the questionnaires had to be simple, relevant and quick to complete. The questions had to be clear so that all the respondents could answer in the same way and results standardised. As some teachers would wish to complete the questionnaires at home, the questions had to be designed so that there was little need for interaction with the researcher.

Length was not considered in drawing up the questionnaires, rather covering the required topics. One respondent did not complete the first questionnaire and handed it in incomplete. It was given to her for completion but never returned to the author. Therefore one can assume that the first questionnaire was too long for one member of staff.

The type of questions in the questionnaires were mainly of the closed type. There was only one open question, question 10 in the second questionnaire for teachers who used the computer in teaching, Table 3.2.

A flaw in the first questionnaires was that the teachers did not know what the different applications were although examples of most were given. Where there seemed to be incorrect answers, Shannon Paul, head of computers, was consulted and then the staff members themselves, where necessary for clarification.

1.1.3 Method of distribution and collection of the questionnaires

An introductory letter, Figure 3.1, the first questionnaire and a token reward in the form of a roll of sweets were put in 41 teachers' pigeon holes. The staff were not verbally asked by the author or anyone in authority to complete the questionnaire. The author was on leave and not present to prompt the staff to complete the questionnaires. The letter and questionnaire were printed on brightly coloured paper in order not to get lost in the teachers' plethora of exam and other papers.

Two days after the initial distribution of the first questionnaire the author collected the completed forms. The teachers' names were on their questionnaires and so the author was able to verify who had the missing questionnaires. The persons who had not completed their questionnaires were given another token reward but no printed reminder. Two days later the author had all the completed questionnaires bar one, 40 out of a possible 41, a 97.56% response rate.

The second letter and questionnaire, Table 3.2, also printed on brightly coloured paper, were given to those teachers who had indicated in the first questionnaire, that they used the computer in teaching. It was given to 23 teachers and 19 answers were returned, an 82.6% response rate. Each of these 23 teachers was given enough questionnaire sheets for each of the subjects taught. The summary of the response to the questionnaire is seen in Table 3.4.

Table 3. 4 Summary of distributed and returned questionnaires

QUESTIONNAIRES	DISTRIBUTED	RETURNED	RESPONSE RATE
First questionnaire to all 41 teachers in the survey	41	40	97.56%
Second questionnaire to 23 teachers who use the computer in teaching	23	19	82.6%

From the teachers' response to the questionnaires it can be seen that they have a positive response to computers and computer-assisted education at Pinelands High School. Perhaps the reason for the full cooperation of the staff is that this is the first time a comprehensive report is being done on the computer department at Pinelands High School, or the questionnaires were a novelty.

1.2 Interviews

The purpose of each of the interviews was to obtain specific information about computer-assisted education at Pinelands High School or about the town of Pinelands. All of the people interviewed are referenced in the text and listed in the

Reference List. Most of the interviews started with unstructured questions which allowed the author to let the interview go in the direction appropriate for the subject.

Interviews were also held with the head of computers at the school, specifically to corroborate information in the questionnaires. Strange responses were confirmed with the head of computers and then, if necessary, with the teacher concerned. These interviews assisted in triangulating the data.

1.3 Observation

The author has taught at the school for six years in the capacity of school librarian, Computer Literacy and History teacher and has had an opportunity over those six years to observe the computer department and its growth in the field of computer-assisted education. Information gleaned from the questionnaires could be corroborated by years of unobtrusive observation. Over the years any chance of the subjects changing their behaviour when being observed (McMillan, 1993, p. 257) was nullified by familiarity with the researcher. The observations assisted in triangulating the data.

2 Triangulation of data

2.1 Triangulation based on corroborating questionnaires, interviews and observation

In order to triangulate the data, *interviews* based on the data from the two *questionnaires* and *observations*, were held with the head of computers. In addition, a number of the sections in the questionnaires supported each other.

A summary of the Findings was given to the following people to read with regard to content and interpretation, so that the information could be further triangulated:

- Brian Ingpen - Principal
- Dave Arguile - Senior deputy principal and new principal from January 1997
- Shannon Paul - Head of computers

As a further measure to check the interpretation of computer-assisted education at Pinelands High School, a draft copy of the manuscript was given to:

- John Gilmour - Deputy principal

2.2 Confirmation of data and interpretation

In specific cases the following were confirmed:

- Data about the decision-making policies of the school and the unexpected results of the first questionnaire were shown to the principal. He noted the wording of the questions and suggested reasons. In hindsight perhaps the question of 'Have you had any input into the ... long term plans of the school as a whole?' should have read 'Have you had any opportunity for input into ... long term plans of the school as a whole?' (Ingpen, 1996) as the staff do have opportunities for input into school management decision-making policies.
- The senior deputy principal read the chapter on Findings as did the principal.
- Information about funding was shown to and discussed with the head of computers.
- Information about donations from the Pinelands High School Continuing Education Programme for adults and its community computer classes were checked by its head.
- Information about the schools' student statistics were confirmed by the school statistician.

3 Summary

Questionnaires were given to the teaching staff at Pinelands High School in order to obtain information of a quantitative nature about computer-assisted education at Pinelands High School. The purpose, design, method of distribution and return of the questionnaires were discussed. Data obtained by interviews and observations were used to support data obtained from the questionnaires.

The information was triangulated by data from questionnaires from the 40 teaching staff, questionnaires from the 19 teachers who used the computer in teaching, and

corroborated and supplemented by interviews and observation. Further checking of interpretation was achieved by having a draft copy of the manuscript checked by the chief stakeholders.

4 Conclusion

The information in Chapter 4, Findings about computer-assisted education at Pinelands High School, was obtained by the methods described in this chapter.