CHAPTER TWO

RESEARCH PROCEDURES

PART A: DATA COLLECTION STRATEGIES

2:1: Methodological Overview

A total of 176 subjects were recruited in this study and were asked to complete a questionnaire and to register all inwards and outwards telecommunications interactions on a diary form. Material from 41 subjects was not analysed because of data incompleteness. Hence the sample for this study comprised 135 subjects from rural and remote locations. In addition, 56 rural and remote people participated in semi-structured interviews and five *participative conferences* were facilitated with groups comprising rural and remote people.

This chapter describes research instruments and data gathering procedures used in this research. Instruments included a 50 item self administered questionnaire, a self administered telecommunications diary sheet (coupled with a supplementary information sheet), and an interview planning and monitoring grid which provided a preparation and interview check-list for semi-structured in-depth interviews. Survey and telephone interview subjects were mainly recruited via radio interviews during which rural and remote people were invited to phone an 008 number. Two rural and remote (ethnographic) site studies were completed, a field work exercise was undertaken, and a participative conference was conducted with each of four groups .

Some face-to-face, telephone and radio interviews were conducted during *site studies* whilst others were with self selected respondents who had completed the survey. All interviews were recorded and transcribed although in a few instances poor acoustic quality made verbatim transcription difficult. In most cases, interviews were conducted on a one to one basis but on some occasions two or more subjects participated. Instances involving more than one subject included face-to-face meetings, telephone hook-ups and VHF and HF radio conferences.

Two site studies and an additional field work exercise were completed. The first site study was conducted through the Dubbo School of Distance Education and the second through the Hay Distance Education Centre. In the case of the Dubbo School of Distance Education, the extent to which pre-school teachers use telecommunications technology to liaise with home supervisors, and further, the extent to which telecommunications were used for conducting informal training activities with home tutors was investigated. At the Hay Distance Education Centre, the research locus concerned determining to what extent (if any)

VHF technology was used by parents of distance education students for adult to adult interaction and informal learning and information exchange. The field work exercise involved travelling in four semi-trailer trucks where drivers used an array of telecommunications technologies for mobile (on the road) informal and incidental learning. Semi-trailer trucks criss-cross rural and remote Australia on a daily basis and their interactions are also frequently heard by rural and remote residents.

The participative conferences were conducted with specific groups in order to *triangulate* research progress and findings. Two groups consisted solely of males, one involved females only and two engaged senior female and male high school students.

This chapter also outlines data management and processing procedures. The methodological genre of this research emphasised a grounded methodology where quantitative and qualitative data are used interactively as needed and where either approach is used to triangulate or reinforce data derived from the other. Qualitative data reduction was continuous as interviews and field notes were transcribed and some data were discarded if they were found to be irrelevant. All notes and transcriptions were amalgamated and a qualitative computer program called NUD•IST (Non Numerical Unstructured Data, Indexing Systematising and Theorising) was employed to aid subsequent analysis and interpretation.

2:2: The Methodological Order

Almost invariably, social research which employs both quantitative and qualitative techniques is presented from the standpoint of the qualitative data being supplementary and supportive to the quantitative data (see for instance Dowsett, 1986; Noble, Rajendra and Hansen, 1991). In other words, when social scientists adopt this dual mode research approach, they often seize upon selective portions of what people have said during interviews in order to generate verbatim confirmation of their statistical treatments.

This is not surprising if only because the gathering of quantitative data often precedes the seeking of qualitative data. Moreover, with computers, it is a relatively speedy matter to organise survey data into a statistical data-base and computer programs have enormously quickened and simplified the 'torturing' of statistics so that acceptable canons of internal validity and reliability are 'confessed.' By contrast, collecting, transcribing, organising, interpreting and analysing qualitative data is a far more time consuming process. Hence, for reasons of time expediency, when both approaches are used, quantitative data, more often than not, are treated and presented *before* the qualitative data.

But as Hansen (1983) and Miles and Huberman (1984) have respectively noted, it is gradually becoming rare for methodologists to be dogmatic or even solidly wedded to just

one epistemological form. Often instead, a sense of practical context-embedded flexibility prevails with the researcher seeking thorough but simple data gathering and treatment procedures which address the problem at hand and which maximise opportunities for understanding. In short, methodological flexibility affording maximum understanding is desirable.

In this study some quantitative data gathering did precede qualitative data collection. But intentionally, because of financial and time constraints, quantitative and qualitative data were mainly gathered and processed concurrently. That is to say that the researcher did not wait until all survey results had been returned and analysed before commencing semi-structured interviews. Hence, interviews and site studies were not influenced by previously determined quantitative results although the survey and telecommunications diary responses of individual subjects to be interviewed were perused as a predicate to interview preparation. Thus, qualitative data gathering was a discrete element of the overall data gathering exercise.

Data from completed survey forms and completed telephone diary forms were entered into separate statistical data bases as they became available. And as soon as possible after this quantitative data had been entered, interviews were conducted and transcribed. In other words, quantitative and qualitative data gathering activities were largely concurrent with the researcher moving freely between modes.

This approach had a simple but important benefit. As survey and telephone diary sheets arrived and were entered into the relevant data bases, they also became a platform for planning any subsequent interview with selected subjects. Moreover, as respondents raised *fresh* issues during the course of interviews, these were noted for canvassing during subsequent interviews. Thus the investigative procedure was fluid, the analysis continuous, and the learning cumulative.

Aside from fluid and parallel data gathering procedures having time management benefits, there is also the epistemological advantage of being able to *seize* a researchable moment. For example, when I was about to interview Alana at Dubbo about the use of the telephone for liaising with the home based supervisors of remote and isolated distance education children, the prepared interview schemata was quickly dismissed in favour of exploring an altogether new arena which Alana exposed during the chit chat that occurred before the interview had even begun! In this vein, Miles and Huberman (1984, p.15) observe that qualitative data are "more likely to lead to serendipitous findings and to new theoretical integrations."

They further note that "qualitative data analysis is a continuous, iterative enterprise. Issues of data reduction, of display and of conclusion drawing/verification come into figure successively as analysis episodes follow each other" (p.23). It should be noted that in this study, qualitative data collected *informed* the researcher about later data collection foci and this strategy was consistent with the approach advocated by Miles and Huberman. Further, qualitative data analysis was a continual process and in this study intentionally predicated, as far as possible, the defining of parameters for subsequent statistical data analysis. In short, it was intended that where possible, qualitative trends discovered in this research would be further explored through the statistical analysis of quantitative data.

But the point must also be made that the process of using one form of data as a source of confirmation for another form was bi-directional. In other words, there was *interactivity* between the qualitative and quantitative data. Hence, qualitative data were used, where appropriate, to reinforce quantitative data as well as vice versa. The practical judgement was also made that the best data would be obtained via this practical approach and practicality was also, of necessity, an important consideration for subject recruitment strategies.

2:3: Desired Qualitative Outcomes

Given the paucity of available data about rural and remote telecommunications in Australia, obtaining descriptive qualitative data about rural and remote uses of telecommunications was, from the outset, a desired outcome of this research. Quite simply, because the literature search demonstrated that there is little (if any) descriptive data about day to day uses of telecommunications by rural and remote users, it was decided from the outset to try to obtain such data. Further details are given later in this chapter.

Bearing in mind this global intention, the interviews, the site studies, the field work exercise and the reference group meetings did have design specificity. A basic telephone and/or face-to-face interview schedule was initially devised and investigative areas, approaches and questions were proactively discussed with colleagues.

Subsequently, a Telephone Interview Grid (see Appendix A) was designed and trialed. The Interview Grid was in ended to serve as a prompt to interview questions which arose from completed survey and/ or telephone diary forms and to serve as a memory prompt to key interview topics and associated questions. Topics flagged included interviewee's uses of telecommunication technologies, details about geographical location, perceptions of their own status and that of others within their community, networking patterns, opinion leadership, information sources and diffusion.

Obtaining specific qualitative data which would demonstrate the importance of telecommunications for distance education teachers and home supervisors was a desired research outcome (see p.30, Table 1:3, Question 3). The Dubbo School of Distance Education site study was conducted to generate qualitative data which would demonstrate to what extent (if any) pre-school teachers used telecommunications technology in liaising with home supervisors and to what extent (if any) telecommunications were used by teachers for conducting informal training activities with home tutors at the behest of either party. At the Hay Distance Education Centre, research centred on determining to what extent (if any) VHF technology was used by parents of distance education students for adult to adult interaction and informal learning and information exchange.

From the fieldwork exercise of travelling in a number of semi-trailer trucks, it was intended that observational data be obtained about the technologies and processes used for exchanging information by telecommunications (refer p.30, Table 1:3, Question 2).

2:4: Desired Quantitative Outcomes

Methodologists operating from the stance of extreme logical positivism would argue that each question or item included in any instrument/s used for survey data gathering should manifestly reflect a previously articulated hypothesis against which specifically desired research outcomes can be measured (Moser and Kalton, 1971). Clearly, given the nature of this investigation, such radical positivism would be far too extreme. However, it is relevant to provide a brief overview of the two quantitative research instruments used (i.e. the questionnaire and the telecommunications diary), and to indicate their purposes.

First, the intention was to gain detailed demographic data from each subject. Previous telecommunications research in Australia (Moyal, 1989a; Moyal, 1992; Noble, 1989a; Noble et al., 1993; Noble, Rajendra and Hansen, 1991) have not included detailed demographic profiles of their various research populations. It was intended from the beginning to avoid this perceived shortcoming and accordingly the questionnaire surveyed demographics.

Second, as described in Chapter One (see pp.28-29), it had been decided from the outset to obtain detailed data in pursuit of Noble's broad study into rural and remote telecommunications. Thus data were to be gathered about distances to the nearest town, the size of land holdings, modes of farm production, transportation used, etc.

Third, the intention also was to conduct what amounted to a *technology audit* with special reference to how technologies are used in rural and remote settings for information exchange and informal adult learning.

The 50 item questionnaire thus investigated demography, geography, family, farm productivity, communications technologies used, costs, reliance upon and perceptions of their usefulness. In tandem with this, the telecommunications diary sought details about all telecommunications interactions in which subjects engaged over two separate days – viz. – one week day and one weekend day.

2:5: The Challenge of Sampling Rural and Remote Australia

Studies differ considerably in the ways in which they recruit their sample populations and this study typifies that. Gaining access to rural and remote people in a huge continent such as Australia is never going to be easy and 'capturing' a representative sample is always going to be problematic. The AUSTEL report on Rural and Remote Telecommunications (Davey, 1992) aptly heightens understanding of the enormity of the challenge:

> *According to the Australian Bureau of Statistics (ABS) classifications, approximately 90% of the Australian land mass can be classified as "rural and remote." Within this area, population per square kilometre ranges from 0.3 to 5 for rural areas – approximately 17% of total population – and from 0 to 0.3 for remote areas – approximately 3% of population* (p.15).

Clearly, when time and financial resources are limited, it is no simple matter to reliably sample the most distant and distributed 20% of all those dwelling in the outback of Australia. Markedly different approaches to sampling are required From the outset, because of economic and time constraints and because of the widely dispersed nature of Australia's rural and remote population, pragmatism was an important consideration. Recruitment procedures were adopted which were considered likely to quickly and economically generate a willing research sample of rural and remote respondents. It was also believed that willing subjects would be more involved and would therefore enable richer data to be collected. Moreover, especially because of the time and budget restraints, it was not considered feasible to try to achieve a tightly generated random sample. Hence, subjects in this study were either self-selected or were referred to the study by other volunteers. Furthermore, as far as possible, all family members who lived at home and who were aged thirteen and over were recruited.

Some researchers of rural and remote communities deliberately avoid whole family recruitment for questionnaires (eg. Black and Reeves, pers. comm., 1994). They argue that respondent collaboration and information duplication are avoided by pre-specifying which respondent is to be targeted within each household to be sampled. But in this study it was decided that because the two distributed research instruments required respondents to log their own telecommunications behaviours and attitudes, collaboration between household members was unlikely to be a confounding factor. It was also thought that if collaboration between household members was going to occur, it would do so irrespective of whether one

between household members was going to occur, it would do so irrespective of whether one household representative or two were targeted as questionnaire respondents. Moreover, careful questionnaire design can minimise information repetition. For example, information which is common to an entire household (like the amount of money spent on the last household telephone bill), need only be sought once rather than be presented as duplicated and potentially confounding information by all members of the household. In other instances, data commonality need not distort analysis. For example, if all subjects from the one family provide data about post codes and travelling distance to the nearest town, this will not affect the outcome of data analysis. Indeed, for this study it was believed that research instruments completed by all eligible family members would not only highlight differences and similarities within families, but also, would provide data which had been confirmed as accurate by other family members .

In this study, three strategies were employed to recruit a sample of rural and remote dwellers. The majority of the sample were recruited following a series of radio interviews during which they were invited to telephone a Free Call telephone number; some were recruited through the aegis of a residential University College; and still others were engaged as a result of making contact during site studies. Finally, some few subjects were engaged serendipitously or as a result of previously selected subjects informing members of their networks about the study. The Table below (Table 2:1) summarises sampling sources and returns.

TABLE 2:1: Sample Sources, Distribution Numbers of and Return Rates of Questionnaire and Telecommunications Diary Forms

Recruitment Base	Inquiries	Distributed	Surveys Completed
Post ABC Radio Interviews	127	485	128 (26.39%)*
Via Austin College Students	43	160	25 (15.63%)†
Networks, Individuals & Sites	N/A	23	23
		Σ N = 668	Σ N = 176 (26.35%)§

NOTE
* = percentage of survey forms returned after distribution following ABC Radio Interviews;
† = percentage of survey forms returned after distribution to family members of Austin College residents;
§ = percentage of survey forms returned from all distribution avenues.

2:5:1: Recruitment through Publicity, Radio Interviews and a Free call Telephone Number:

Publicising the research and simply inviting rural and remote dwellers to become participants was seen as the best way of obtaining a sample. Accordingly, a press release was prepared for distribution by the Information Office, UNE, Armidale, who distributed this to 140 media outlets as well as electronically through normal media networks.

In a little over a week the project was picked up as a general interest item by the Australian Broadcasting Corporation Regional Radio Network and this ensured that a large

number of rural and remote regions were able to learn about the study [1]. (See map supplied by the ABC in Appendix B for a more details of NSW coverage.) Rural listeners were told about the project and were invited to make immediate telephone contact "then and there" via a 008 telephone line.

In addition, because it was impossible to attend the phone all of the time, an ansaphone was installed. The pre-recorded ansaphone message said:

> *"I don't like talking on these things any more than you do but the ansaphone's really very important for our rural telecommunications project. You know how these things work – so just go for it straight after the beep and I'll call you as soon as I can."*

Noble, Rajendra and Hanser (1991) had previously found that while callers were still hostile to ansaphones, they were more likely to leave a message if the recorded message was humorous. In fact, six people who did leave a message commented that they liked the recorded prompt and an estimated equivalent number commented about the message when they were subsequently contacted.

Over a two week period 127 phone inquiries were received and 485 postal survey forms, diary sheets and interview invitation forms were distributed for callers and their associates to complete. Subsequently 128 survey forms were returned which represents a high 26% response rate (Moser and Kalton, 1971). Of those returning forms 61 (48%) indicated a willingness to participate in a subsequent telephone interview if required. However only a small number (n=8) of these volunteers were interviewed due to limitations of time and finance.

Unequivocally therefore, the broadcasted radio invitations to potential respondents was the most important subject recruitment activity undertaken. Ironically, this methodological discovery reinforces Schramm's message that all media are campaign media and that radio is pre-eminent amongst them (Schramm, 1977, pp.258-259). It also demonstrated that ABC radio penetrates extensively into rural and remote areas and that many listeners at the time were interested in communications technologies.

2:5:2: Recruitment of Austin College Students

Many University of New England (Armidale) students live in one of the university's nine residential colleges during part, or all, of their time at university. Austin College is one of the residential colleges located on the Armidale Campus and a high proportion of Austin

[1] Eight interviews were completed over the ABC Radio Network. The first of these was via the Country Hour Program which was broadcast statewide in NSW and this was then repeated statewide over the National program. Two interviews were aired in South Australia (one statewide) and one each was broadcast by stations on the Victorian/NSW border and the Queensland/NSW border. Three covered the balance of regional NSW except for the North west region which, despite being the *home* region for the UNE, did not pick up the story.

College residents came from either rural or remote locations. Given this, it was decided to recruit additional subjects through Austin College. All rural and remote first year students were identified from the College student data base and those students were sent a short note seeking their help. Students were asked if they would volunteer to become subjects and/or to distribute research materials to other members of their family. Approximately 120 letters were distributed to individual students. This prompted 43 students to distribute 160 survey forms with 25 (or 16%) of those subsequently being completed and returned.

2:5:3: Additional Recruiting through Networks, Individuals and Site Studies

Three other sample gathering procedures occurred. One of these involved subjects 'already recruited' taking responsibility for recruiting more subjects from their various networks. And the fact that this occurred at all is an elementary illustration that information dissemination operates within remote Australia through networks.

Amongst the concluding paragraphs in the introductory letter sent to all subjects was a request that they tell others about the research and to invite them to participate:

> *Because of the recession we cannot afford to conduct this investigation in any other way than as we have described to you, so we need you to tell others about the study. Do invite your network of relatives, friends and contacts to participate. Ask them to call us on the FREEPHONE number 008 809-501 so we can include them.*

All of the South Australian sample (n=11) came about in this way through the efforts of one female subject. Dorothy Dix (pseudonym used here for reasons which will shortly become obvious) took it upon herself to phone me in order to furnish me with names and addresses of many people from her community. I was therefore able to post out 39 further questionnaires and diary forms so that virtually all adult members of that tiny remote community could be included in the sample.

As had been the procedure from the outset, I had personalised each posted survey form with a short hand-written note. The ones posted to Dorothy Dix's nominees uniformly said:

> *Thanks for helping us out with this research via Dorothy Dix. Glad you were able to let her pass on your name to us so we could send you these survey forms.*
>
> *Jens.*

Thus while questionnaire forms posted to those nominated by Dorothy Dix yielded completed returns from an additional 11 subjects, they also gave rise to a small number of irate phone calls, and, in two other instances, respondents scribbled a terse note to me when they returned their untouched questionnaire. These negative responses came from members

of Dorothy Dix's community whose first contact with this research project had been their receipt of the survey forms through the post.

Regrettably, Dorothy Dix had not informed everyone that she was furnishing me with their names and postal address!

With less grandiose intentions, some four or five other women, mainly from the far western outback areas of NSW, made contact via the 008 number and mentioned that a neighbour had told them about the research.

Finally, because *site studies* were conducted via two NSW Distance Education (School) Centres, it was decided to ask teachers involved in the study to invite the parents of their students to join the sample. In addition, four remote subjects were recruited serendipitously whilst completing the site studies. These four, together with remote parents accounted for 23 members of the overall sample where the final number of subjects recruited was N=176.

2:6: Pilot Study

It was decided to conduct a pilot study in order to test and refine survey research instruments and interview procedures. The pilot study involved trialing the survey form and completing a number of informal discussions (rather than full interviews) with visitors to the 1992 AgQuip Farm Fair in Gunnedah, NSW. AgQuip is an annual event that is seen as *the* showcase rural farm fair and exposition in the state of New South Wales and it attracts upwards of 100, 000 people during its three days of operation. The UNE, being a rural University, was an exhibitor at AgQuip in 1992. Hence it was an easy matter to gain approval to set up a mini-stand within the overall UNE exhibition.

Three motives prompted this exercise. First, the questionnaire had been designed in draft form and it was important to *trial* it as a research instrument. Second, a series of interview themes had been identified and it was felt that it would be useful to test the validity of these by conducting informal discussions with females and males attending AgQuip. Third, it was felt that by simply participating in the expo, hitherto undiscovered avenues for exploration might be discovered.

It was decided (for administrative expediency) to conduct a *split-half parallel trial* of the survey – i.e. the survey could be readily divided into two discrete portions, so alternate respondents were asked to complete alternate sections of the survey. Thus, those who completed the first portion of the questionnaire (Section A only) were asked to provide demographic and family details and to volunteer information about their land use and farming operations. However those completing the second portion (Section B only), were asked to respond to survey items which explored telecommunications behaviours. Some

people volunteered to complete both Sections A and B. It was not considered necessary to trial the telephone diary forms at AgQuip because the telecommunications diary form was based on successful work earlier completed by Noble, Rajendra and Hansen (1991).

A total of 44 subjects completed single Sections of the draft survey forms at AgQuip which netted 22 completed questionnaires. An additional 8 people completed the entire instrument (i.e. Sections A and B). A crude tally of which gender had completed which section was kept (on the butchers' paper that covered the trestle table the UNE had provided). Under the circumstances, however, trial survey distribution was primarily achieved by simply giving out Section A or Section B (or Sections A and B) to whoever displayed an interest in the study. It was not, therefore, an exercise involving meticulous distribution precision leading to an equal sampling of each gender.

Concern that the survey might take too long to complete and that respondents would be hesitant in supplying information about income levels and about the costs of their phone bills proved unfounded. These reassuring discoveries alone made the pilot exercise worthwhile. There was no evidence of hesitation in providing details about financial matters and respondents generally took around eight minutes to complete one section of the survey or around 15 minutes to complete both. Speaking to people about their feelings after they had completed a section or all of the survey was also useful. Respondents confirmed that all questionnaire items were clearly understood. It also became apparent that the survey item concerning perceptions about the usefulness of the telephone in performing a series of communications functions challenged people to think carefully and reflectively.

People at AgQuip were not so much *interviewed* as informally *chatted with.* All contacts were face-to-face as it was not possible to *trial* telephone interviews at AgQuip. During conversations, women emphasised the importance of the telephone for them as women. Men independently reinforced women's views by noting that the telephone was important for their wives. They also pointed out that the phone was important on the farm for safety and also for ensuring that items of equipment could be speedily ordered when needed. Few of the many informants had really thought of the telephone as an instrument for learning but virtually all agreed that information exchange was a primary function of the telephone. The majority were positive about the phone although many were critical of Telecom phone charges.

But most importantly, and in a manner which was consistent with the intentionally open manner in which this research was conducted, the AgQuip exercise led to the important discovery of a focus which had been omitted from each of the questionnaire design, the telecommunications diary form and the interview schedule. Through discussions with people from the land who visited the UNE pavilion at AgQuip 1992, it became clear that

UHF and CB radio are vital on the farm. In fact, neither technology had even been considered in the draft survey and interview design, and, as was discovered time and time again throughout this study, CB radio, and UHF radio especially, are vital pieces of communication technology in rural and remote Australia.

Following the AgQuip pilot study, the questionnaire and telecommunications diary forms were revised and printed.[1] (These forms, together with an associated form seeking approval to conduct an interview are included in the appendices as Appendices C, D and E)

2:7: The Telecommunications Survey

As indicated earlier, the Telecommunications Survey comprised a (50 item) self administered structured questionnaire. Specific matters canvassed in this postal survey included:

- demographic questions which traversed gender, age, transport used, country of origin and the socio-economic variables of education, income and occupation;
- locality questions which sought information about size of property, residency periods, and distance from nearest town;
- familial questions including items about marital status (if any), number and location of offspring and whether or not there were grandchildren;
- employment questions which ascertained modes of farming production and/or employment;
- telecommunications questions to audit technologies used, usage patterns, telephone costs and levels of reliance upon various technologies;
- effectiveness questions aimed at gauging opinions about the effectiveness of the phone for various informal learning functions.

2:8: The Telecommunications Diary

The telecommunications dairy was also a structured self administered instrument. An information sheet which provided guidance on how to complete the diary form was attached to the telecommunications diary form (see Appendix E). The information sheet also contained questions which asked respondents for information about how long they had owned and used various forms of telecommunications technology. It also asked subjects to indicate what form of telephone calls were needed to maintain contact with family (i.e. Local and/or STD and/or ISTD).

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[1] With the exception of the Telecommunications Diary Forms, all forms for this research were created on a program called Forms Designer which was developed by the Communications Research Institute of Australia & Techway. It is a dreadfully slow program but remains a very useful application for devising and completing complex survey forms.

The information sheet instructed subjects to log details of each telecommunications interaction (call) made for two separate days – one weekday and one weekend day. This approach had previously been adopted by Noble et al. with a high return rate of telephone diaries from subjects and thus it was decided to replicate their strategy (Noble, Rajendra and Hansen, 1991). In addition to registering the number of calls made and received for each day by the subject, the log described a number of details pertaining to each individual call. These included information about the type of technology used, the location of the subject at the time of the call, whether the call was made or received by the subject, the time of day at which the call occurred, the length of the call, the motive for the call, the relationship of the subject to the other call party, the response when the call was connected and how the subject felt after the completion of the call. The type of call was also specified: whether it was a local, STD or ISTD call. Subjects were also encouraged to make comments about each call.

2:9: Gathering Qualitative Data by using Semi-Structured Interviews

2:9:1: Introduction and Overview

Qualitative data for this study were gathered by completing a number of in-depth semi-structured interviews (n=44). Schramm, (1973, p.116) makes the distinction between *direct* (i.e. face-to-face) and *indirect* (i.e. interposed) communications. Some interviews (n= 29; 64.1%) were *direct*. The remaining semi-structured interviews (n=15, 34.9%) were *indirect* and were conducted either by telephone (n=13, 80.6% of indirect interviews) or by radio (n=2, 19.4% of indirect interviews). Some interviews (direct and indirect) were completed on a one to one basis (n=30, 68.2%) while the remainder involved groups of subjects (n=12, 31.8%). Some interviews (direct) were conducted during site studies while others (also direct) followed serendipitous meetings. Table 2:2 below provides an overview of interview circumstances and also registers attendant sample sizes achieved.

TABLE 2:2: Summary of Numbers of Subjects involved in Indirect and Direct Interviews

	Interposed				Direct		
	Telephone		Radio		Face-to-face		
	1:1	1>1	HF	VHF	1:1	1>1	Σ
Informal Telephone	127◊						127
Formal Telephone	8						8
Site Studies		16 (5)	6 (1)	17 (1)	15	2(1)	56
Serendipitous					7	2(1)	9
Reference Groups						112(5)	112*
Total Participants	135	16	6	17	22	116	**322**

NOTE
* = Approximate Figure only;
◊ = Informal discussion only.
Figures in parentheses show number of meetings -viz- 5 Multi Point Telephone Linkups & 5 Reference Groups.

2:9:2: Overarching Planning and Interviewing Principles

Because the semi-structured interview was used for qualitative data gathering in this study, it is important at the outset to detail overarching interview planning principles and procedures. Dowsett, reflecting upon his face-to-face experiences with the semi-structured interview noted that they involve a "one to one situation largely, in which the interviewer has a series of topics or issues which they wish to discuss with the interviewees."(1986, p.50) And as with the use of any tool, there are strategies and techniques which give rise to best practice.

Hence, merely addressing a series of selected topics or issues is insufficient. Having first gained access, developing rapport with the interviewee assumes paramount importance and this is particularly so when the interview is being conducted telephonically. Indeed, where face-to-face interaction is absent, it is even more important that, as far as possible, alternative means occur of *humanising* the interview process. In fact, the interviewer must develop rapport for any semi-structured research interview to be successful. Rapport, enabling the interviewee to feel comfortable with the shared process of inquiry, is therefore a necessary pre-condition for the interviewer being able to effectively draw upon, and build upon, the interviewee's reservoir of experiences.

In a sense, this process can be likened to good adult education procedures (Knowles, 1979; Knowles, 1980) After all, it is the interviewee's reservoir of experiences that is the primary substance of qualitative analysis. These experiences provide what Geertz (1973, cited in Herndon and Kreps, 1993, p.30) and Miles and Huberman (1984) respectively describe as *thick* description and *thick* data. Quite deliberately therefore, a policy was adopted of encouraging a certain amount of 'chit chat' during all interviews and this was so for *telephonic* interviews in particular. (The term *telephonic* is used in a generic sense within this study to denote the use of either telephone or radio as a medium.) Hence, in pursuit of this rich *thick* qualitative data, informal talk, where it could be naturally facilitated rather than artificially contrived, frequently predicated interviews and very often punctuated the interview process.

Clearly however, the interviewer, even during chit chat, is both an active listener and an inquiring participant. Trying hard to actively listen to what an interviewee had to say (whilst also allowing some autonomy for the interviewee to move on to fresh interview elements and/or to revisit ones already traversed) was a consciously adopted research tenet in this study. Furthermore, this practice was seen as a silent contributor to the process of maximising rapport. As Dowsett observes, it is important to:

> *Let them follow their own noses for a while, although when you decide to pull them back is certainly your business as the interviewer. But there's a capacity in the technique to let people have some control over the way they're presenting themselves. Of course, that means they could be putting*

> *on a show. Then you need your skills to be able to make sure that's not occurring.* (Dowsett, 1986, p.54)

Given this possibility, it might be reasoned that the interviewer should assume a fairly rigorous stance such as that expressed in a recent study by Squires, Meacham, and Sinclair (1993, p.107) They argue that nothing should be taken for granted and researchers should seek to verify everything that informants may say. However, as Baker correctly notes, there is much more to qualitative data than mere facts alone:

> *Clearly the use of qualitative methods provides for more than the extraction of facts from a wealth of extraneous detail. The surrounding detail, which constitutes a description of the context in which things are said and done, provides a means for checking one's hearing or reading of a particular item or event or statement, against other possible hearings or readings.* (Baker, 1986, p.7)

Baker is advocating that while researchers are actually *sleuthing* the thick qualitative data in the first place, they should try to view, interpret and double check the context of the interviewee's responses with respect to the larger picture. In short, the qualitative researcher needs to be aware of, and sensitive to, the broad milieu in which interview interactions occur. The interviewer should also be alert to the many variables which may mitigate against obtaining reliable (verifiable) information. Gender, age, social class and even residential status have been identified by Dowsett (1986) as potentially confounding variables to successful interviewing. Clearly, maintaining alertness and achieving sensitivity for any interview is no easy – and this is especially true when interviews are conducted telephonically. For this reason, interview preparation, i.e. planning the interview in some detail beforehand, was seen as especially important.

At the outset therefore, a series of likely interview themes were identified and were discussed with colleagues and peers. Specific questions which probed these themes were devised concurrently and were also discussed. The resultant document was, in many respects, tantamount to a highly structured *script* with the wording of the interviewer's dialogue and of the clusters of questions being fully specified. It must be emphasised, however, that this script was not used at any stage during this study for conducting interviews. Rather, the detailed script was devised solely as a platform for discussion about the relevance of the overall interview thrust with peers.

As a result of these discussions with peers, a number of themes were either revised or deleted from the intended semi-structured interview agenda. For instance, it was decided not to explore (other than incidentally if an interviewee raised the matter) the issue of multiple telecommunications carriers. It was also decided that while the DACOM taxonomy (Description & Classification of Meetings) proposed by Pye et al. (cited in Short,Williams, and Christie, 1976) could provide a useful framework for exploring telephonic functions in a

structured questionnaire, it would not be particularly useful in a semi-structured interview situation. Instead Jarvis' analysis of the social context of adult learning (as discussed in the previous chapter) was used as a conceptual framework for generally addressing themes of informal and incidental adult learning (Jarvis, 1987).

Moreover, conducting interviews based on a highly structured interview schedule was neither the approach I felt would be best to use for this research and nor was it an approach with which I felt very comfortable. Again, Dowsett (1986, p.53) concisely reflects my preferred stance:

> *To me, semi-structured interviewing is quite extraordinary – the interactions are incredibly rich and the data indicate that you can produce extraordinary evidence about life that you don't get in structured interviews or questionnaire methodology — no matter how open ended and qualitative you think your questionnaires are attempting to be. It's not the only qualitative research technique that will produce rich information about social relationships but it does give you access to social relationships in a profound way.*

Initial interview subjects for telephone interviews were selected in the order in which they had volunteered themselves. Preparation for these first telephone interviews involved examining the completed questionnaire and diary forms of prospective interviewees. Matters which needed further clarification or which might usefully be discussed were thus identified and were used to introduce the interview. This deliberate opening strategy was adopted because it was reasoned that discussing the survey and diary data involved a shared conversation about information which was common to both the interviewer and the interviewee and would initiate the development of rapport.

Questionnaire and diary forms were also examined prior to telephone interviews in order to determine the overall thematic thrust to be followed in preparing the interview. Where the completed questionnaire data revealed, for instance, that a subject was a prolific user of numerous telecommunication technologies, the interview focus became suitably planned to amplify and explore this. Planning for each interview, therefore, involved noting relevant details about the subject and then itemising a series of subheadings together with key conceptual statements. The intention was that these should serve as triggers for the interviewer during the ensuing telephone conversation.

After the first four interviews had been completed, it was decided that this semi-structured approach to planning and preparing for interviews was working satisfactorily and accordingly, a simple *pro forma* Interview Grid (Appendix A) was devised. As briefly indicated earlier in this chapter, this *pro forma* was primarily intended to serve as a memory prompt to help the interviewer address key research foci during the interview. By using a grid format in tandem with relevant preparation notes, the interview remained iterative although the order of topic coverage could be varied from interview to interview. Further, it

was possible to see at a glance if any topic had been omitted. Foci prompted in the *pro forma* Interview Grid included:

- technologies used by interview subjects;
- the nature of their locale, their community and their perceptions of their own status (and the status of others) within their locale and/or community;
- network membership details;
- the identification of opinion leaders;
- incidents of telecommunications assisted informal learning;
- the nature of information exchange and information diffusion patterns.

Besides providing for a flexible approach to telephone interviewing, the *pro forma* gave rise to the development of an unexpectedly handy methodological aid. This came about because very early in the interviews, I had begun to plot the flow of interviews by drawing arrows between grids as an issue was covered and the conversation flowed onto another focus. Initially, this was done simply to keep 'tabs' on which interview topic had most recently been addressed – becoming immersed in active listening can be quite distracting! It soon became apparent that if the arrows interconnecting grids were numbered sequentially as they were drawn, a record of the sequencing of topics covered and revisited became plotted.

While this incidental information about sequencing was not subjected to rigorous analysis at any stage during this study, the resultant line clusterings were frequently viewed, both during and after interviews, in order to gain an instant *visual snapshot* of the interview overview and its emphases. This was possible because a heavier concentration of arrows converged on that grid where a topic was revisited during an interview, either at the behest of the interviewer or the interviewee. Alternatively, where a topic had generated attention for a longer period of time, the volume of notes in the corresponding grid usually served as a crude indicator of that fact. Equally, it became possible to see at a glance which themes had not been covered in-depth and when this discovery occurred during an interview, the matter was redressed by altering the course of the discussions. Alternatively, where the interview was being reviewed *post hoc*, planning for subsequent interviews could take account of this snapshot review.

The key point here is that this technique served an 'on the spot usefulness' during the research. But while there is probably potential for this procedure to provide a useful source of additional data for future interview analysis, further exploration must be deferred because it clearly lies beyond the realms of this current exercise.

The approach to conducting interviews with the aid of the *pro forma* Interview Grid and the accompanying individual nterview notes was maintained until the site studies at Dubbo and Hay were commenced at which point, because of shifting foci, the *pro forma* was discarded. However, each interview conducted throughout the remainder of the study continued to use individually planned Interview Grids which were prepared, as appropriate, before each interview occurred. It is fitting to note that such modification of a research instrument is consistent with advice offered to qualitative researchers by Miles and Huberman:

> *People and sites in field studies can be observed more than once. Not everything is riding on the single interview or observation. So front-end instrumentation can be revised – in fact should be revised. You learn how to ask a question in the site's terms, and to look with new eyes at something that began to jump out during the first visit. Instrumentation can be modified steadily to explore new leads, address a revised research question, or interview a new class of informant.* (1984, p.46)

2:9:3: Indirect (Telephonic) Interviews

2:9:3 (i): Informal Telephone Interviews: Prior to formal interviews commencing, many potential subjects (n=127) initiated informal telephone conversations of varying length when making contact via the 008 telephone line. While these conversations did not constitute formal interviews, it must be noted that they yielded much useful (incidental) information about the role of telecommunications in the bush whilst also providing many valuable insights into life in rural Australia and the outback generally.

In virtually all instances, qualitative data (information) derived from these informal conversations were neither recorded electronically nor written down in detail. This was so because the chief concern at the time of the call was to ensure that address details were noted accurately so that requested questionnaires and diary forms could be dispatched to the correct person/s and location/s. It was discovered much later however, that in a few cases, interactions with callers had been unwittingly recorded on the ansaphone machine. Apparently, if the receiver of a call physically interrupted a message that was already being recorded by the ansaphone, the recording mechanism continued operating and the ensuing conversation was taped. For ethical (and legal) reasons, these recorded interactions were not transcribed.

Almost inevitably, 008 callers, keen to obtain information about the rural and remote research project, became readily engaged in sharing quite detailed information about their circumstances. They discussed, for instance, the important role of CB and UHF radio for communications between homestead and paddock, between plane and ground to four wheel drive vehicles and/or farm bikes during mustering. They highlighted the usefulness of radio for time management and for arranging incidental courier services between neighbours from

adjoining stations by heralding and monitoring the whereabouts of the rural mail delivery service. They also ventured their views about the high costs of telephoning family and frequently mentioned how vital they thought telecommunications were in the bush for medical emergencies and for communications during times of natural disasters such as bushfires and floods.

The importance of the incidental information which 008 callers collectively provided at the outset of the research must not be underestimated. Their information incidentally and discretely provided a rich initial platform of understanding which, in hindsight, enriched subsequent interviews.

2:9:3 (ii): One to One Telephone Interviews: The eight subjects interviewed on a one to one basis by telephone were self-selected and had provided prior written consent to be contacted by the researcher when they returned their completed questionnaire and telephone diary forms. They had also given written consent for the interview to be taped. (See Interview Permission Form – Appendix F) A simple recording attachment (suction microphone) was connected to my telephone for telephonic interviews. This microphone was able to be connected either to a portable dictaphone or to a transcription machine which then served as a tape recorder. Subjects were asked at the outset if they could spare the time to participate in an interview and when this had been confirmed it was suggested that they may wish to make themselves comfortable. The weather, and especially the presence or absence of rain, was almost always discussed at the outset.

The following interview excerpt typifies the form of opening discourse which tended to occur:

Jens: Hi Alice – it's Jens Hansen from the University of New England.

Alice: How are you?

Jens: Good, good. It's very hot up here. What's it like in your area?

Alice: Very muggy and stormy - raining - off and on.

Jens: Yeah – we got 59 mm. of rain the other night which was really great – it filled the tanks up for the first time in ages.

Alice: (chuckles) Yes.

Jens: Is now a convenient time to talk to you in terms of this rural telecommunications study?

Alice: Yes. Yes.

Jens: Do you need to set yourself up in terms of a chair or something like that?

Alice: I've already done that.

All subjects were reminded that the interview was being taped and that the recorded conversation would be fully transcribed with details remaining confidential to myself although my Ph.D supervisors would have brief access to some of the transcribed data. In line with Ausubel's theory that an advanced organiser heightens learner comprehension of a situation, a brief overview of areas to be discussed was normally given (Ausubel, 1963)

After dealing with matters identified from the examination of completed survey and telecommunications forms, the interview, not uncommonly, probed for information about the kind of location the subject lived in and the type of farming operation they worked at. It was found that this led easily and comfortably into a more detailed discussion about the respondent's subjective perceptions of their status, and that of others within their local community. The following excerpt, from a one to one telephone interview, with Betty demonstrates this:

Jens: Yes ... How far away is the nearest neighbour?

Betty: Oh about eight miles. Because we're on a river here, we tend to be a bit closer together because we use the river for our domestic supply. A long way east and west for neighbours but north and south only about eight miles. So we're a bit sort of congested on the river you'd say.

Jens: OK. Now let me ask you – are you a local?

Betty: Yes.

Jens: What's a local?

Betty: Hooh! Good question. A local to me ... is someone who's been in the district for probably at least a generation – 15 years I call a generation. We would consider someone who'd only been in this area ten years a 'Johnny-come-lately.'

There were two important reasons for canvassing the matter of status early in the conversation. First, it was found that the matter of subjective perceptions of status was something with which each respondent was immediately familiar. Therefore, intentionally discussing familiar but non threatening terrain such as this very early in the telephonic interview, became a deliberately adopted strategy for further promoting rapport.

Second, and even more importantly, because a principal focus of this study concerns the matter of discovering who learns what from whom, exploring the matter of residential status as it effects networking was seen to be important – i.e. because it was reasoned that residential *status* was an important variable which might ultimately shape patterns of intra and inter group telecommunications within rural and remote communities, this was explored early in the interview. Indeed, this theme was constantly revisited and linked to other data and therefore it was important to introduce the matter early in the telephonic interviews.

Where respondents ventured unsubstantiated opinions, critical incidents were sought (i.e. usually the subject was asked to cite one or more examples to illustrate her generalised claim). This strategy was consistent with the thrust of the critical incident technique described by Query and Kreps (1993, p.64). But as the following episode with Colleen illustrates, the procedure sometimes became predictable:

> *Jens: (asking about information diffusion via phone calls to 'locals'.) And can you give me an example of that?*
>
> *Colleen: Ohh. (Laughter) Let me see ...*
>
> *Jens: You knew I was going to say that didn't you?*
>
> *Colleen: Yes I did. (Laughter) Uhmm. Ooh. Let me think. Dear oh dear, I can't. Uhmm ... uhmm ... The only thing I could think, would be the possibility of a strange car going past us and I don't know it.*
>
> *Jens: A sort of neighbourhood watch?*
>
> *Colleen: Yeah. That sort of thing.*

Summarising an informant's responses can inadvertently ascribe unintended meaning to what has been said. But equally careful and deliberate paraphrasing and/or summarising of an informant's information and/or opinions can be a useful verification procedure. This verification procedure was seen as especially important for telephonic interviews. Given the absence of visual cues, deliberate paraphrasing and summarising by the interviewer provided an opportunity for interviewees to reflect upon the matter (or matters) which had been traversed. Lundin and Russell, (1984) and Thompson (1989) have each noted the importance of paraphrasing and summarising during teleconferences. The procedure is exemplified here:

> *Jens: You say you've lived there for, first of all, 18 years and then the last 12 years.*
>
> *Diane: Yes. See we used to regard ourselves as the bush. But Wollongong's caught up with us one way and Sydney's caught up with us the other.*
>
> *Jens: You're caught betwixt and between. So really what you're saying to me is that cities have encroached. Is that right?*

Finally, it is important to highlight that telephonic interview subjects (one-to-one and groups) were invited to ask questions of me (as the interviewer) before any conversation concluded. Dowsett (1986, p.50) noted that this is, "... one of the most valuable questions to ask because very often it gave the interviewee a chance to launch forth into the very thing you were trying to track down ... and hadn't got anywhere near." Inviting informants to pose their own question/s may trigger the proffering of fresh and perhaps unexpected information which extends the bounds of the interview and the research. For example,

although I had not pursued the usefulness of telecommunications for emergency situations, Adam was very keen to discuss that matter:

> *Jens: OK. Look that's been really helpful. Is there anything you want to ask me?*
>
> *Adam: Oh that's good. Yeah. And one other thing ... uhm ... that you didn't ask me about, that I thought might be interesting ... uhm ... I tend to think the phone is very important, as you may well already have put down in your survey or whatever ... its very important in times of an emergency. More so than anywhere else ... living in an isolated area of the country because if say, you fall down, or whatever, or a snake bite or whatever, if you can't get quick assistance – and there's nothing much quicker than a phone call ...*

2:9:3 (iii): Group Telephonic Interviews: Seven group interviews (involving 39 subjects) were completed telephonically during site studies. All were introduced and chaired by teachers from the Dubbo School of Distance Education except for one which was chaired by the Executive Teacher of the Hay Distance Education Centre. The Hay group interview was not tape recorded. All group telephonic interviews (or teleconferences) occurred only after teachers concerned had completed their own teleconference sessions with students and/or parents.

Five of the seven group telephonic interviews were conducted using multiple point telephone hook-ups (telephone conferencing); one engaged HF radio and one was completed over VHF radio. The telephone and HF group telephonic interviews were prearranged but the VHF group telephonic interview was serendipitous occurring at the invitation of the Hay DEC executive teacher. Thus, aside from the VHF interview, group telephonic interviews were also pre-planned using the interview grid system described earlier and usually began with informal chit chat facilitated by the distance education teacher concerned. The interview extract below illustrates this:

> *Alana: Hi Evelyn. How are you? Good thankyou. I've got someone different on this week. I've actually got Francis. I think you met Francis at our last workshop.*
>
> *Evelyn: Yes ...*
>
> *Alana: She's usually in our later teleconference but the other people she's on with are all away ... and everyone else is away in your group today.*
>
> *Evelyn: Oh right ...*
> *Alana: It must be the rain.*
>
> *Evelyn: It must be.*
>
> *Alana: Frightened them all off. How are you Francis?*
>
> *Francis: Good Alana.*
>
> *Alana: You've survived the birthday?*

(Francis' response inaudible.)

Alana: (laughter) ... It's alright. We had one ... virtually the same yesterday. We had doughnuts and chips for afternoon tea and oooohhh ... big mistake!

With the exception of the informal VHF group telephonic interview, group numbers were small (2-5 subjects) and therefore responses were sought from respondents in turn with group members being invited to build upon comments made by earlier speakers.[1] This excerpt from a telephone conference with women living in the remote west of New South Wales illustrates the process:

Jens: OK. Gwen, is your shopping list (of telecommunications technologies) any different to Sue's?

Gwen: No. We've just got the phone and the UHF too.

Jens: Right. No facsimile machine or anything like that ... or a modem?

Gwen: No, nothing like that.

Jens: OK. Heather, is yours the same?

Heather: We've got an answering machine and we've also got VHF which we don't often use – but it's there if we need it.

Jens: The VHF is supplied by whom? The School?

Heather: No the Flying Doctor Service.

Jens: Does anyone else have VHF?

The time scheduled for all but one of the group telephonic interviews became condensed which meant that my intended interview agenda also became abridged. Time constraints occurred because the interviews were 'tacked' onto the conclusion of teachers' scheduled teleconference. Moreover, extending interviews beyond the scheduled studio times was impossible because of heavy bookings by other teachers who wished to use the teleconference (HF radio and telephone conference bridge) technologies – i.e. extending these research interviews would have encroached upon their studio bookings.

It was noticeable, however that the single interview which was unconstrained by time generated richer data. On his occasion the planned interview agenda was fully traversed and because the group discussion was unimpeded by time, the commentary was very full and useful. This extended time interview occurred when one of the teachers booked the teleconference studio for a double session. Fortunately also, the subsequent studio session was not used due to the teacher concerned cancelling her booking. Thus, it

[1] Given the larger number of participants for the VHF conference, (n=17) such a directed procedure was not possible .

was not only possible to begin the interview slightly earlier than usual, but also, to extend the discourse into the vacated time slot.

2:9:4: Direct One to One and Direct Group Interviews

Whether or not indirect interviews and direct interviews produced varying styles of interactions has not been seriously considered here because the central concern, that of obtaining information from informants about the role of rural and remote telecommunications with respect to informal and incidental adult learning, remained constant. Direct interviews were undertaken partially because of subject availability and partially because of economic considerations. Completing lengthy telephonic interviews was too expensive. Furthermore, the repeated unavailability of many subjects by telephone meant that delays in data gathering were being experienced. Directly interviewing other available subjects overcame such delays.

The direct in-depth interviews were mainly completed on a one to one basis (n=22). The majority of all direct interviews were conducted during the site studies (n=17) and these are discussed in the next section of this chapter. Other face-to-face encounters (n=9) were serendipitous [1] with four providing data that could be buttressed to site studies. Only two interviews engaged more than one informant at a time (viz. – two interviews with two subjects participating). Five *Participative Conferences with Discussion Groups* involving approximately 112 people were facilitated and these too are discussed later in this chapter.

2:9:5: Similarities and Differences between Direct and Indirect Interviews

The earlier description of telephonic interviews appropriately detailed overarching principles and procedures which were adopted for planning, preparing and conducting in-depth interviews in the face-to-face mode. Fully planning and preparing each interview beforehand remained an important pre-condition to satisfactory face-to-face interviews. Developing rapport was still equally important for achieving successful and meaningful face-to-face encounters. Seeking evidence in the form of critical incidents continued to be a part of the interview process.

But whereas telephonic interviews relied upon the perception of aural cues, face-to-face interviews generated visual signals as well. Sometimes, therefore, the interviewer was able to read anxiety in an interviewee's body language. For example, one male subject sat very tensely. He was cross legged and cross armed for the first 15 minutes or so of the

[1] The serendipitous interviews really were mainly 'happen chance' but it has to be said that some came about as a result of my inquiring into specific research related matters and through the course of these inquiries, meeting individuals who became interviewees. For example, I came across and later interviewed two subjects whilst investigating the penetration (sales) rate of mobile phones. Similarly, three separate people became subjects after I had been introduced to them by other people who knew of the research project. Thus the term serendipitous is apt because I had not counted on these interviews occurring.

interview. Only when he was asked about his roles on various committees, did he visibly relax. Another interviewee, a female, was very mindful of the time and had said so at the outset. Clock watching cues were therefore heeded.

On other occasions, it was possible to acknowledge body language during the interview. For example, when Sue, a distance education teacher, was talking about the importance (for her) of discussing the weather during the inevitable preliminary telephone chit chat that preceded any serious phone conversation she had with a home supervisor, she had been challenged about whether or not her talk about the weather had become something of a standardised and possibly meaningless ritual. The interview continued as follows:

> *Sue: Yeah ... no I think it's, yeah, quite genuine ... for me. And I think I'm quite genuine with parents too. I really am concerned about what's happening where they are.*
>
> *Jens: Look it's impossible because we're recording this on tape to see your body language, but it is genuine. You are attending – 100% right now so I have no doubts about that what so ever.*

As with the telephonic interviews, all direct interviews were recorded and later transcribed for analysis. All direct one to one interviews were recorded using a mini cassette dictaphone but group interviews and participative conferences with reference groups were recorded with the aid of a very flat and unobtrusive but highly sensitive multi-directional microphone. No apparent differences were noted between the two recording systems in the acoustic quality of recorded discourse. Neither recording system appeared to be distracting to subjects.

2:10: Site Studies

2:10:1: A Note about Terminology

The case study method can be described as a research method in which data collected for analysis depict either a segment of, or the whole of, the interacting social processes and interrelationships that occur within the cultural boundaries of the unit or units being studied. The unit studied may consist of an individual or a group or may involve an institution or even a community. The researcher attempts to investigate within the total configurations of factors and in that sense the study is holistic or *Gestaltist* (Wiseman and Aron, 1970, p.98).

However the word *site* study has been used here instead of *case* study even though, as Miles and Huberman note, they, "both refer to the same phenomenon: a bounded context in which one is studying events, processes and outcomes" (1984, p.28). These writers go on to observe that they prefer the word *site* because "it reminds us that a case always occurs in a specified setting; we cannot study individual cases devoid of their context in the way that a quantitative researcher often does," (Miles and Huberman, 1984, p.28). For this research the

term site study has been favoured simply because the qualitative phase of this study involved investigating two separate issues at two distinct sites. However, despite these separate investigative concerns, the principal focus of the study (i.e. the rural and remote uses of telecommunications for informal and incidental learning) continued to be addressed across both sites.

2:10:2: Selection Procedures

From the time of its original conception, qualitative research methodology was seen as a fundamental element of Noble's proposed rural and remote telecommunications study. (That is, the proposal for which Noble originally received Telecom funding in 1992 was intended to include qualitative methodology.) It had been envisaged that ideally, several extended periods would be spent within one or more remote communities. During that time, it had been intended, mainly via ethnographic means, to detail a community *map* of telecommunications interactions between community members and to derive also, a detailed description of their telecommunications behaviours. Within that rubric it was also intended to complete the Ph.D. investigation. That is, it was intended to use the same ethnographic procedures for concurrently conducting the more specific investigation into how telecommunications and other related processes are used for informal learning in remote settings. Thus, the specific research question nominated for this Ph.D. study concerned discovering who learns what from whom, and how, for what reasons and with what results.

However, following the Telecom Grants Committee decision not to fund Noble's intended rural and remote telecommunications study (see footnote four), the intended research strategy – but not the Ph.D. research questions, needed to be reviewed and modified.

In the review process, a number of fieldwork possibilities were canvassed and rejected for various reasons. One early respondent, who made contact as a result of the radio interviews, was a blind male from Taree. He talked at some length about his extensive use of UHF radio for interacting with, and learning from, other sight impaired people who resided within his rural community. But while he personally indicated enthusiasm to become involved in the study, members of his sight impaired network whom he subsequently approached, were not willing to participate. Because gaining access to this particular community was clearly going to be problematic, it was clearly going to be difficult to proceed. Therefore, that particular fieldwork prospect was dismissed.

Another possibility involved studying a group of elderly women who maintained daily contact and support for each other by telephone. However, this prospect was also

discarded when it was discovered that many within this network were urban dwellers (Wollongong and Sydney metropolitan) rather than from rural and/or remote settings.

The prospect of being introduced to community members at Broken Hill was another early option that was introduced by two young teachers. This fieldwork prospect was also not pursued because the contacts into the Broken Hill community were only just commencing a two year teaching contract there. They were, therefore, *newcomers* to Broken Hill and given their *newcomer* status, the likelihood of gaining quality access to the Broken Hill community through them appeared doubtful.

The above possibilities had arisen spontaneously during early stages of sample recruitment. As a seemingly worthwhile opportunity emerged, it was explored until it became apparent that no fieldwork potential existed. However, in the context of this study, these unsuccessful explorations proved valuable because they forced a continuous review of the *raison d' être* for conducting the fieldwork in the first place. Indeed, it was as a result of this reflective process that two important decisions were made.

The first decision was that time management of the research would be greatly improved by commencing only one fieldwork project at this point of the overall study. There was insufficient time available to guarantee the satisfactory completion of two concurrently launched fieldwork projects. During that period data base designs were being refined, quantitative data results were beginning to be entered into a computer and the huge task of transcribing interview transcripts had begun. Thus it was decided to begin with only one fieldwork project.

The second decision was to limit the fieldwork boundaries – to document and study only one or two specific aspects of rural and remote uses of telecommunications for informal adult learning and/or information exchange. In short, a decision was made that a <u>specific</u> *site* study examining <u>specific</u> phenomena was preferable to undertaking a broadly based community study.

It was decided therefore, that an ideal institution to approach would be a distance education provider. It was reasoned that distance education teachers <u>have</u> to use telecommunications whilst liaising with the home based teachers or supervisors. Further, it was speculated, teachers within the kindergarten or junior section of a distance education school – more than any other section in the school – <u>must</u> work especially closely with home supervisors in order to facilitate effective home based learning for those children who are in their partnership of charge.

Clearly, many junior-school activities conducted via distance education require close assistance from the home supervisor – usually the child's mother. Reading skills have not

been developed and typical *School of the Air* lessons, while regular, are necessarily brief and simple. Hence the greatest responsibility for facilitating the kindergarten or junior child's school activities rests with the home supervisor. Thus these children's teacher must liaise more frequently and more deliberately with the home supervisors. They simply can not deal as directly with these children as with older distance education children.

In other words, it was reasoned that these teachers needed to be effective facilitators of *adult learning* if they were to help home supervisors become effective facilitators of *junior-school learning*. Moreover, it was reasoned, the use of telecommunications would be indispensable in that process. It was therefore decided to approach the Dubbo School of Distance Education to seek approval and co-operation in mounting a site study which focused upon the use of telecommunications for those purposes.

When W. F. Whyte wrote the methodological appendix to his sociological classic about life in Cornerville, he explicitly acknowledged the important role which chance plays for qualitative researchers. Whyte's meeting with 'Doc' literally unlocked the door that gave him (Whyte) access as a participant observer to the otherwise closed social structures in Cornerville (Whyte, 1955). Since then, qualitative researchers, be they participant observers or ethnographers, have mainly acknowledged the portent of luck in gaining access. As it happens, luck, to a certain degree, triggered access to both of the site studies conducted for this research project.

2:10:3: Gaining Access and Determining Site Study Intentions

At the beginning of each calendar year, the Department of Administrative Higher and Adult Eduction Studies at the University of New England conducts a compulsory residential summer school for its Masters of Educational Administration candidates. Because I had assessed course work completed by students studying a course entitled "The Foundations and Theory of Distance Education," and because I was '*pro tem* coordinator' for that course during 1993, I was invited to attend the informal social which marked the opening of the residential school.

However, my attendance at this gathering was for the very specific purpose of finding out if there was anyone in attendance who might help me make contact with, or gain access to the Dubbo School of Distance Education. It was therefore fortuitous that the then Principal of the school, Mr Ron Phillips, was present. Following informal discussions, Ron requested that I write a brief memo to him outlining the proposed site study. (We discussed this over lunch the following day where Ron explained that he could, "see no reason why you shouldn't be able to get the nod from the Department" of School Education.) After further communication, I was invited to discuss the research in greater detail during a visit to his school in Dubbo.

About four weeks later, I visited the school. Whilst waiting for Ron in the school staffroom, I began a conversation with Alana, a school staff member. She offered me a cup of coffee and we chatted generally about the school. After a while, we discovered that we had already met each other the year before, at a distance, when Alana had been one of the external students whose work I had assessed in the "Foundations and Theory of Distance Education" course. I also discovered that Alana was the Executive Teacher of the pre-school section of the Distance Education School and that the Dubbo School of Distance Education was the only Distance Education school in New South Wales that operated a pre-school program. When this discovery was made, the proposed research agenda surfaced and it became immediately apparent that the right people from the school had been contacted and had been met in the right order From the outset, Alana helped crystallise and articulate important questions related to the site study.

The final procedural step to be completed in order to gain access into the Dubbo site was to write to the Director of Programs and Planning, Western Regional Office of the NSW Department of School Education to gain formal approval for the study to proceed. Approval was forthcoming with the Director of Planning phoning to express his support for the proposed site study. The Dubbo site study was thus commenced in February 1993. The final field visit occurred in September of that year and a de-briefing meeting occurred in April of 1994.

About three months after the Dubbo site study had been commenced, the Hay Distance Education Centre site study was triggered, again through chance. Its beginnings followed informal discussions with Warren Brown, who was the then Cluster Director of Schools for the Western Riverina School Region. In late April 1993, Brown attended, as a NSW Department of School Education Representative, a national conference on Federal and State Initiatives into Rural and Remote Telecommunications. Grant Noble and I were lunch time speakers (Hansen and Noble, 1993) and following our talk, Warren told me about the VHF radio system which had been installed by the Department of School Education at the Hay Distance Education Centre. Hay is situated in remote south western NSW and the VHF radio system had been installed so that distance education teachers at the Distance Education Centre of the Hay Public School could interactively teach remote children. I was told that teachers facilitated lessons from the VHF radio studio at the Hay school while children from each enrolled distance education family participated, as appropriate, from their homestead.

Moreover, I was told, this VHF network was operative (even if not actually operated) 24 hours per day at no cost to the remote families concerned. That snippet of information, that the system was interactive during out of school hours, prompted the second site study. It already seemed apparent from quantitative results that UHF and CB radio were important

telecommunications technologies for remote Australia and it was hoped that the Hay site study may reinforce that early finding. It was also speculated that given the highly accessible and free nature of the VHF technology, parents would use VHF to interact with each other in order to exchange information, to share opinions and to devise problem solving strategies pertinent to their children s learning. Thereafter, and partially as a consequence of the first activity, it was thought that they might use the technology for information exchange and other informal learning activities.

2:10:4: Procedures and activities used in site studies

A total of 39 subjects were formally interviewed across the two sites. Specifically, 17 subjects took part in semi-structured in-depth interviews conducted directly (i.e. face-to-face) while 22 subjects participated in semi-structured indirect interviews (telephonic interviews). In addition 17 parents participated in a VHF conference but as this was serendipitous and was not recorded, proceedings were unable to be included in the subsequent data analysis.

In Dubbo, all full and part time pre-school staff (n=6) were formally interviewed. In addition, one of the kindergarten teachers (who liaised closely with the pre-school teachers) was interviewed. The school principal was also interviewed but the administrative assistant to the pre-school unit declined to be interviewed. Meetings with pre-school staff were held before the site study was commenced and a de-briefing was held after both site studies had been completed. A brief report of findings from the site studies was prepared (Hansen, 1994) and pre-circulated prior to the debriefing meetings. Staff at each site were then invited to comment during the debriefing meetings. Several informal meetings were held with the principal and/or his deputy. The Dubbo site was visited on six occasions with most visits spanning two days.

TABLE 2:3: Summary of Numbers of Subjects involved in Research Activities at the Dubbo and Hay Site Studies

	Dubbo Site		Hay Site		
	Staff	Parents	Staff	Parents	Totals
Face-to-face	8		6	3	17
VHF				17◊	17◊
Telephone Conference		16 (5)			16
HF Radio		6			6
Total Participants	8	22	6	20	**56**

NOTE ◊ = Serendipitous Group Interview;
Figures in parentheses show number of meetings - viz- 5 Multi Point Telephone Linkups.

At Hay, four of the five Distance Education Centre teachers were interviewed. Two interview sessions were conducted separately with the school's principal and the teacher who had formerly held the position of executive teacher for the distance education unit was

also interviewed. At this site, the administrative assistant was willing to be interviewed. As with Dubbo, a preliminary meeting occurred prior to the site study commencing and a debriefing was held after the site studies had been completed with staff invited to comment on the de-briefing report. Altogether seven visits were made to Hay and again, several informal meetings occurred during these visits. Most visits to Hay were for one day only.

Initial direct (face-to-face) and indirect (telephonic) interviews conducted at each site reflected the specific research theme/s nominated for that site. Thus, at Dubbo, early data collection activities sought details about when, why and how teachers and/or home based supervisors used telecommunications for liaising with each other. At Hay, early information was gathered about when and why parents used the VHF radio system. But additionally, practically all site interviews raised those same themes which had been probed during the one-to-one telephone interviews with questionnaire respondents. Later, because of emerging or shifting foci, other themes were addressed and alternative strategies were also introduced.

For example, on the first day of the third visit to Dubbo, two staff independently noted during interviews how very useful they had found cassette tape recorders were for providing and exchanging information with home supervisors. This was especially interesting because by this visit, it was already becoming clear that staff and parents alike had substantial concerns about the apparent ineffectiveness of the various technologies used for teleconferencing. Telephone linkups were not always satisfactory and the HF radio system appeared to be seen as a bane rather than as a blessing. Poor acoustic quality seemed to be the norm rather than the exception.

Because these two staff had extolled the benefits of using cassette tape recorders, the emphasis of subsequent interviews shifted that day. Interviews become more focused on the relative effectiveness of various communication technologies. Interviews also probed techniques for using these technologies effectively so that by the end of that day, detailed information had been uncovered about how, and under what circumstances, staff used each of the communication technologies available to them.

A flexible, or situation determined approach to gathering data also occurred in Hay. Early interviews in Hay indicated that parental use of the VHF radio system during out of school hours was minimal but details about who, when, and why were generally vague. In order to try to determine what use (if any) was made of this technology during out of school hours, it was decided, with prior approval from the inter-connected VHF radio population, to set up a series of time sampling episodes where any use of the VHF radio occurring during the sampled times would be tape recorded.

Fourteen days and times (post school) were selected for the time sampling exercise. The VHF user population were not told which days and times had been selected. On each of the days selected, a pre-set automatic time switch and cassette tape recorder were primed by the Hay Distance Education Centre staff. The automatic time switch was linked to a cassette tape recorder to activate the cassette tape recorder at the pre-selected and pre-set time. The cassette tape recorder was located next to the VHF radio speaker at the Hay Distance Education Centre's VHF radio studio. Consequently, any VHF radio transmissions which occurred in the 45 minute period during which the tape recorder was operating were recorded. When the tape in the cassette ran out, the recording machine automatically switched itself off. Through this time sampling exercise, data were gathered which could be used to substantiate or repudiate the seemingly vague and imprecise observations made by interviewees.

2:11: An Additional Field Work Activity and other Incidental Data Collection

An additional field trip was undertaken in March of 1994, almost a year after the first of the two site studies had been commenced. Throughout 1993, many informants noted how important the transport industry is for the rural sector generally and for remote communities in particular. Furthermore several subjects commented, "CB's and UHF radio are used in all of the trucks that come in and out of the bush." They also pointed out that rural and remote dwellers often hear radio conversations which occur between truck drivers and that rural and remote UHF owners occasionally joined these conversations. Moreover, it had already been noted that mobile telephones appeared increasingly commonplace in semi-trailer trucks.

Accordingly, in order to verify this information first hand, it was resolved to arrange a number of truck rides. Hence one Saturday night I travelled between Griffith (NSW) and Gilgandra (NSW) on route to the UNE at Armidale with a truck driver named Roger. After arriving at Gilgandra, where Roger pulled into a truck station for a mandatory rest period and sleep, the journey continued to Coonabarabran and then onto Armidale in two other trucks.

This was a very noisy, tiring but fascinating participant observation experience. Extensive field notes were dictated at various times throughout the journey when the truck was stopped. An in-depth interview was recorded with Roger during a coffee stop at Parkes at 3:00 am in the morning! This field trip was undertaken not only in order to try to verify the substance of what informants had previously said, but was also completed in order to experience, first hand, some of the information exchange processes which informants had described. The intention was to experience and document a little of the flavour of the telecommunications processes which occurred between trucks during their travels through the Australian countryside.

Some months later, a driver from the Riverina who knew about the study, invited me to accompany him on a return trip in the semi-trailer he regularly drove between Griffith and Melbourne. This trip was completed without interview although specific notes were written up soon after the journey had been completed. This trip turned out to be useful because this contact was able to describe how it was that remote and rural homesteads often heard radio conversations between truck drivers which were replete with the coarse language and profanities. It seems, that many truck drivers participate in long and seemingly meaningless conversations whilst they are traversing the outback, and that obscenities are a common feature of their chatter. Rural and remote homesteaders take exception to this and occasionally lodge formal complaints to the police or to members of parliament. (See also Chapter Five for a fuller account of this matter.)

In a sense, completing the truck journeys described above was an opportunistic data collecting activity, that is, it had not been envisaged at the outset of this study that data of this nature would be collected in this fashion. However, there can be little doubt that useful data is often gathered as a result of researchers deciding to follow through on the unanticipated. Doing so was a deliberate and ongoing feature for the entire data collection phase of this research. Accordingly, many informal and incidental conversations were completed. For example, as a result of a chance conversation with an electrical goods shop keeper, (who had mentioned why he thought many farmers purchased fax machines) it was decided to approach a number of other electrical goods retailers in a number of other towns in order to verify the observations which had been made in the first place. Thus, qualitative data collection in this study also involved incidental interviews and/or conversations, the outcomes of which subsequently informed future data gathering activities. These data were not always recorded although often details of conversations were entered onto a dictaphone tape recorder at the earliest opportunity so that comments could later be transcribed.

2:12: Participative Conferences with Reference Groups

The importance of *the group* in social research has long been recognised if only because, in a sense, the group represents a microcosm of society. Moreover, just as *encounter groups* were in vogue during the 1970s, so the *focus group* appears to have become, if not fashionable, then certainly favoured for many the qualitative research endeavours of the 1990s. Thus, not only has the term *focus group* been added to the lexicon of contemporary qualitative methodology, but also, mining qualitative data about one or more issues from one or more focused groups has become a fairly commonplace research procedure. (See for instance Cox and Leonard (1993) who used ten focus groups to gather data from women (n=57) about the importance of telephones in the maintenance of the social fabric by women.)

Verification seeking is clearly an integral, but sometimes unstated, element of the overall process of focus group research. In fact, deliberately referring to groups in order to verify findings is, *a priori*, a sound reason for including group work in many forms of social research. Thus, during the course of this research, taking stock, or seeking to achieve triangulation at regular intervals was a deliberate procedure. This was achieved by referring to groups – to groups which are labelled as verification groups. The group process used can be labelled as a *participative conference* (Emery, 1986).

Five participative conferences were facilitated with verification groups on four separate occasions during the data gathering phase of this study. The first reference group comprised home supervisors (an all women's group at Hay) and was facilitated during a Mini-school[1] not long after the Hay site study had commenced. The second and third reference group gatherings were facilitated shortly before the data collection phase of each site study had been concluded and comprised males only (viz. – the Hay Rotary Club and the Rotary Club of Griffith). The final reference groups were facilitated (after all of the data had been gathered) with two groups of male and female senior students from Griffith High School. Attempts at gaining access to the CWA organisation in Griffith failed and therefore a second session with women only was not facilitated.

Emery notes, that a conference is "simply a temporary organisation" and moreover, is really little more than a meeting where a number of people have gathered around a common purpose (Emery, 1986, p.33). The 'common purpose' prompting these gatherings was an interest in the research that was being conducted. An invitation had been extended to observe at the Hay Mini School and to speak with the home supervisors. Similarly, an invitation had been received to speak to (and with) each of the Rotary Clubs. However, in the case of the high school reference groups, the initiative to *confer* involved sending a letter to the school principal who had been a member of the Griffith Rotary Club reference group.

On each occasion, while research trends were shared with group participants, full participation was encouraged from the outset – hence the term participative conference. With participant approval, three of the five group discussions were taped. Reference group responses from the Hay Mini School conference were not recorded due to the operator failing to switch the tape recorder properly on and the first of the conferences held with high school students was not recorded because it was felt that switching the recorder *on* would switch the free flowing frank and lively discussion *off*.

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[1] A Mini School is a residential gathering of the distance education students and their home supervisors. During a Mini-school, children participate in regular school activities on a face-to-face basis with teachers while their home supervisors participate in seminars and workshops which are run to help them to become more effective in their supervision of their children's learning. I had been invited to attend this Mini-school and used the occasion to run the first of the five participative conferences. The home supervisors thus formed the first reference group. I also conducted a number of interviews with remote home supervisors during the two days of the Mini-school.

These gatherings did more than merely substantiate research findings. New matters which arose incidentally during participative conferences were explored. (For example, the use of mobile telephones by teenagers as a mechanism for ensuring safety during overnight camps arose and was explored.) Thus while the manifest agenda for each conference was research verification, the conferences could also be seen as a form of focus group during which spontaneous opportunities for further data exploration were grasped. In all cases, however, information transmission (about research aims, procedures and findings thus far) preceded general discussion and unlike the deliberate focus group, the overarching intention was to take stock of what had been found and not the gathering of primary data.

2:13: Field Notes

In the appendix to his book *The Sociological Imagination* C. Wright Mills (1959) writes "On Intellectual Craftsmanship". Amongst other things, Mills exhorts researchers to keep a file or a journal in which they engage their 'intellectual resources' – note ideas, record their observations and 'capture fringe thoughts'. For this study, a computer was used for writing up and storing such matters.

A file, simply called *Journal Jottings* was created at the outset of the study. Notes of potential importance – major and minor – were transferred into, or created, within this file. The file was used for mapping out and/or storing ideas, for recording appropriate and/or unusual quotes and for drafting and/or logging one or more versions of sundry paragraphs (within which understandings were written that had either dawned gradually or had occurred in a flash). The file was used to record incidental matters as well as considered matters – in fact, to document whatever matters might be germane to the thesis.

Because this file was referred to often and used regularly, it was an integral working tool within the overall research methodology. However, this file was never entirely akin to the standard notebook or journal which some social scientists use – the hard-covered A4 200 leaf exercise book or diary which becomes filled with detailed field notes about *everything*. Such omnibus journals could be depicted, stereotypically, as standard stock for social scientists.

The *Journal Jottings* file developed in this study was not like that because it was never used for making notes on everything. I am not, and will probably never be, the porter of large journals within which field notes about almost everything are logged. I am however, a regular user of a dictaphone and almost always carry one with me. Thus impressions, ideas, incidental interviews, snippets from sundry journals and so on, could be, and were recorded in a matter of seconds or minutes for later transcription into the computer. If my dictaphone was elsewhere, I would jot down key words and would subsequently, at my convenience, dictate fuller notes.

And still later, when dictated notes were being transcribed, they were (generally) word processed too. Ideas were developed more fully, descriptions were fleshed out, critiques were devised and/or developed, and frequently, drafts of paragraphs for potential inclusion in the final thesis were created. Once or twice, papers for possible publication were commenced. Thus, the transcription process actually served as a platform for reflecting and writing about the research work as it unfolded. Therefore, while the technology used for collecting and dealing with field notes clearly differed markedly from Mill's earlier pen and paper approach, the actual practice of subsequently contemplating, and then reorganising material imaginatively, closely mirrored Mill's prescription for stimulating imaginative social research (Mills, 1959 p.233). Mention of these processes is made here because they were important within the overall methodological framework.

However the matter of note making was not confined to the *Journal Jottings* and neither did the methodological processes for dealing with field notes end there. Incidental notes of a mainly reflective nature were made throughout interview transcriptions and were included within the transcript text but were highlighted with the asterisk ("*") symbol. In some cases, these incidental notes triggered separate journal entries but all were analysed (together with the Journal Jottings and the actual interview transcripts) by using a qualitative data analysis computer program called NUD•IST (Richards, Richards, McGalliard, and Sharrock, 1992).

PART B: DATA MANAGEMENT PROCEDURES

2:14: Overview of Qualitative and Quantitative Data Organisation

Interviews were transcribed and entered into a computer together with incidental and reflective notes which were made during the transcription process. Transcripts, field notes and reflective comments were then analysed using the NUD•IST qualitative data analysis program.

Because two separate instruments were used for gathering quantitative data, two separate data bases were created -- i.e. one for the questionnaire results and one for the telecommunications diary results. Separate coding schedules were devised in order to denote response elements found within these two data sets. However, because the format for each data base differed[1], a computer program ('Diary Cruncher ©' – see Appendix G) was written which enabled the data bases to become amalgamated (Hansen, 1994). The 'Diary Cruncher ©' program counted the total number of responses a subject made per column element within the Telecommunications Diary database. It did this for each respondent.

[1] The questionnaire data involved one line (viz 176 lines of data spanning 186 columns) per subject while the telecommunications diary data involved a separate line of data for each telecommunications episode a subject made (viz 1174 lines of data with each line spanning 17 columns).

The summed telecommunications responses for each subject were then amalgamated with the questionnaire data which enabled composite analysis of both data sets. It was also decided that completion of both research instruments was a pre-condition for subject details being included within the data set, i.e. subjects who did not complete both research instruments were excluded from the final sample.

2:15: Data Analysis Procedures

2:15:1: Qualitative Data Analysis

Table 2:4 below provides an overview of the qualitative data analysis procedures used. Steps 1 and 2 of the table represent preliminary steps of the overall analytical process and are not necessarily computer assisted whereas steps 3-6 relied upon computer driven analysis using the NUD•IST software system for managing and organising qualitative data.

To a certain extent, as already indicated, preliminary qualitative data analysis occurred in tandem with qualitative data gathering. That is, focusing and bounding qualitative data as it was collected was an iterative affair involving replaying interviews and making preliminary analytical notes. In a sense therefore, the overlocking praxes of qualitative data collection and qualitative data analysis were akin to a double helix operation: one spiral representing ongoing data analysis in the form of "anticipatory data reduction" or a form of *pre-analysis* (Miles and Huberman, 1984, p.28) and the other spiral representing ongoing data gathering in the form of increasingly specific research foci. The more formal process of qualitative data analysis occurred only after the dual process of data collection and reduction had been concluded.

TABLE 2:4 Qualitative Analysis Steps – Processes & Procedures

Step	Data Process	Analysis Procedure Details
1st	*Assemble*	Transcribe material; save in qualitative data analysis program as "Text Files."
2nd	*Browse & Interpret*	Make notes; find and list key words & synonyms; use these to develop concept charts.
3rd	*Search*	Use Boolean operations to search Raw Files for text units based on key words & synonyms.
4th	*Index*	Assign Indexing "Node/s" (i.e. identifier label/s) to finds and store within "Nodes" Data Base.
5th	*Retrieve & Refine Indexing*	Retrieve data by Node/s as needed; save retrievals as separate "Result/s" or re-locate in "Raw Files" for refined re-processing.
6th	*Review & Interpret*	Review & Revise Indexing Nodes by exclusion, union or intersection of Nodes as needed. Interpret the data

Source: Jens J. Hansen, 1995

Once transcriptions had been completed and checked against the taped interviews, a hard copy of each interview was printed and used for making further analytical notes. In particular, key words (and their synonyms) were identified from transcription texts and these were listed on sheets of butchers paper under thematic headings. A computer driven search of transcripts and field notes was then completed in order to identify and save as a computer file, all incidental and reflective comments. These findings were also printed out and further examined in order to identify further key words and synonyms. A series of preliminary data analysis thematic charts were thus produced which detailed key words of the various concepts that were to be explored via the computer driven qualitative analysis.

Two approaches to using the NUD•IST software system were employed. For one approach, the Raw Files data base was searched for specific text units (eg. in order to extract all references to Newcomers, the terms *newcomer, blow-in and Johnny-Come-Lately* were used). This was completed, as appropriate with or without boolean operators from the searching, indexing, retrieval functions of the NUD•IST application. Resultant finds were assigned an indexing node *after* they had been found and confirmed as relevant. These resultant nodes, therefore, were a product of text searches and retrievals.

For the other approach, themes to be explored (and the known specific elements to be analysed within themes) were pre-indexed. Another way of saying this is that indexing nodes and their derivative categories were devised *before* the text searches using boolean operators were invoked. The resultant text searches and retrievals, therefore, were a product of the pre-specified indexing node/s. For example, nodes were pre-specified for gender, for residential status and for location. This meant that the data were able to be searched so that, for instance, comments made by Remote Native Females about the use of the UHF were able to be found. It also meant that it was possible to proactively generate an indexing node for categorical elements such as *functional* and *relational* call motives so that text could be appropriately coded as it was discovered.

Searching and interpreting the contents of qualitative data Raw Files was necessarily a repetitive process. As one set of results became assembled, findings concerning that phenomenon frequently triggered reflections and questions about another related or derivative concept. For example, the analysis of qualitative data about using a telephone to contact friends led to an analysis of the use of UHF radio for contacting friends. In other words, as data were analysed, findings often generated additional questions as well as providing understandings about questions which had been posed in the first place. Thus the qualitative data were continuously reviewed with re-searching, re-analysis and re-indexing occurring as necessary. Results (i.e. confirmed text finds and their assigned codification

node/s) were then saved but could if necessary, be re-entered into the original Raw Files Data Base for further specific re-searching, re-analysis and re-indexing.

Re-sorting the qualitative data was also a repetitive process. Data were initially extracted which concerned a broad concept and then resorted (or split) into *bins* of data in accordance with pre-determined criteria. Thus, for example, all qualitative data concerning telephone use for contacting friends were re-sorted by gender (i.e. split into bins of data by female and by male) and then by geographical status (i.e. further split into Remote females and Rural females; Remote males and Rural males).

As these procedures unfolded, the number of Index Nodes expanded (see Appendix H for full list of Indexing Nodes.) A conceptual framework comprising Indexing Nodes such as those used within this study is consistent with Miles and Huberman's strategy of sorting and reducing qualitative data into relevant clusters or *bins* of information so that ongoing analysis can occur (Miles and Huberman, 1984).

2:15:2: Quantitative Data Analysis

The table below (Table 2:5) summarises the underlying focus for each of three quantitative data analysis 'passes' completed during this study. All quantitative data was entered into data bases generated on a Macintosh SE 30 computer using the statistical computer software program StatView SE + Graphics (Feldman, Gagnon, Hofmann and Simpson, 1988). The early version of this statistical software application was used because experience has shown that it enables more rapid data entry than can be achieved on the later version of the program. However the three subsequent data 'mining' passes were completed using the newer and more user friendly edition of this program – viz. – StatView, Version 4.0 FPU (Haycock, Roth, Gagnon, Finzer, and Soper, 1992).

The first data *pass* assembled descriptive statistics about sample characteristics, telecommunications behaviours, etc. However, given that the questionnaire was originally designed for gathering data for Noble's broadly based rural and remote telecommunications study, not all of the information which had been gathered pertained to this thesis (eg. specific details concerning sub categories of subjects' farming operations). Thus during the first pass, only statistics useful to this thesis were mined. These included those that described demographic, geographic and socio economic status (SES) variables. Also assembled were descriptive statistics that enabled an audit of telecommunications technologies used in a rural and remote context. Finally, descriptive statistics were gathered about telecommunications behaviours.

The second 'pass' comprised a detailed analysis of the data in pursuit of statistical corroboration of qualitative findings. This was an iterative process which accompanied and

supported the qualitative data analysis process. In other words, second pass statistical analyses were completed, in stages, frequently, but not always, after the emergence of individual major qualitative findings. Again, the importance of the qualitative and quantitative data being seen as interactive and as reinforcing each other (in either direction) must be stressed.

TABLE 2:5 Summary of Quantitative Data Analysis Processing

Data Process	Analysis Procedure Details
Data Entry	Enter questionnaire and telecommunications diary results into separate data bases and amalgamate
1st Pass- Descriptive Statistics	Obtain, as appropriate, full range of descriptive statistics about subjects & their calls data (eg. demographic details, technologies used, technology behaviours, etc.).
2nd Pass- Detailed Statistical Analysis	Stemming from qualitative data findings, conduct statistical analyses to obtain corroborative quantitative results (eg. factor analysis on kin-keeping, MANOVA's on costs and location).
3rd Pass- Mining Extra Data	Stemming from original research questions, conduct further quantitative data analysis as needed and seek to discover information about 'other' phenomena (eg. DACOM responses)

Source: Jens J. Hansen, 1995

In some instances, therefore, quantitative data was analysed after specific qualitative data analysis of a phenomenon or an interpretive theme had been completed. For example, the qualitative data presented strong evidence about the importance of the telephone for remote women and also generated powerful commentary about the high cost of the telephone for remote people in particular. Therefore, supportive quantitative data were sought which confirmed the importance of the telephone for remote women and which explored how (if at all) their telephone expenses differed from rural people. In other instances however, the quantitative data pointed the way for a subsequent qualitative examination of the data. (For example, the quantitative data suggested that the volume of STD phone traffic was highest on Sundays and accordingly, relevant qualitative data were retrieved to amplify this matter. Interestingly, in this instance the qualitative data revealed that a latent consequence to the higher than usual volume of phone traffic on a Sunday was an accompanying sense of frustration when callers were frequently unable to obtain a free line.)

TABLE 2:6 Foci and Specific Variables mined during data passes

Focus	Specific Variables
Demography	Gender; age; marital status; offspring; grandchildren; ethnicity; principal language spoken.
Geography	Distance to town; time of residency in bush & elsewhere; property size; property type.
Socio Economic Status	Education completed; financial year income; usual income; usual occupation.
Telecommunications Technology Audit	Technologies used; costs of calls; reliance upon technologies
Telecommunications Behaviours	Motivation for telecommunications interactions; telephone functions (DACOM); frequency, direction & duration of telecommunications interactions; caller targets & feelings after call.

Source: Jens J. Hansen, 1995

Although time constraints limited the amount of time spent on the third and final 'pass', this was completed to see if 'other' phenomena could be unearthed from the data. The Principal Component Analysis which is reported in Chapter Four was a product of this 'pass.' (See Table 2:6 above for list of specific variables canvassed during data analysis passes.)

2:16: Concluding Comment

The methodological blends described in this chapter were intended to convey a sense of research flexibility whilst maintaining empirical rigour. To a degree, this flexibility became precipitated by financial and time constraints but it was also intentional. Noble's failure to gain continued support from Telecom certainly forced constant reappraisal of research strategies and methodological approaches. Hence, shortened, specific site studies were conducted instead of longer broad ethnographic community studies; extended telephone interviews were discontinued as too expensive and were replaced by concentrated bursts of face to face interviewing during site studies.

But the research process itself was dynamic because it intentionally involved a grounded methodology. However although more than one methodological approach was employed during this study, the qualitative approach was pivotal. The original rural and remote telecommunications study mooted by Noble to Telecom had acknowledged the qualitative mode of research as integral, but Noble did not see the qualitative approach as fundamental. Rather, Noble had envisaged that qualitative data would mainly be gathered,

assembled and analysed after the processing and analysing of quantitative data. In other words, Noble intended that the parameters for qualitative data gathering would derive from quantitative findings. In contrast to Noble's intended approach, the procedures adopted for this study sought to mesh substantiating quantitative data into qualitative results as well as the other way around.