

Collaborative practices: from description to theory

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Paper presented to the Australian Association for Research in Education

Fremantle, Western Australia

2-6 December, 2001

Abstract

The methodologies which can be used to study schools range from large scale studies designed to establish the validity of school and teacher effectiveness criteria to micro-level auto/biographical accounts which present practitioner views. In this paper we present an outline of the methodology used in a longitudinal study of school change which fits somewhere between these extremes. We then go on to discuss the application of the methodology in two further studies focused on teachers' professional development and technology and educational change in schools. In the original study, cycles of case writing by teachers formed the starting point for reflective interpretation by teams of teachers in collaboration with university research colleagues. Successive phases of interpretation led to developing accounts of school change which were validated through collaborative reflection by teams of teachers within and across participating schools and the research team. The subsequent studies also used teachers' writing as a starting point for reflective interpretation and theory building. Each of the three studies represents an attempt to cross the border from describing practice to interpreting and theorising with and about practitioners and our attempts to translate locally contextualised action research into findings which might claim, however tentative, some research validity.

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Introduction

This paper reports on a research methodology which seeks to challenge the traditional divide between practitioner and academic research through a process involving collaborative reflection by teams of teachers and university researchers within and across schools. The methodology was originally developed during a longitudinal study of school restructuring and has subsequently been adapted in two further research projects, one focussed on professional development and another on technology and educational change. This paper presents a description of both the original methodology and the subsequent related research activities. Taking into account the similarities and differences between the three studies the final section of the paper will explore some of the issues and implications of the methodology as it has been applied in the different research contexts.

Before presenting the methodology it is important to outline the characteristics of the three studies. Appendix 1 presents an overview of some connections and distinctions. All three research activities occurred between 1993 and 2001, a period in education which could be characterised by shifts towards centralised accountability demands, reduced freedom to apply professional judgement and a separation of researchers in universities and practitioners in schools. Within, and in response to this context the three research projects shared intentions to conduct research which was focused on locally contextualised school change and to build research partnerships between schools and universities.

While the origins of the research projects differed, each was focused on change, teaching and learning with an explicit commitment to reflective practice and professional development. Each study can be linked to the literature on school-based professional development, collaborative inquiry, the impact of school reform on students' learning and constructive research outcomes.

Action research cycles were also a key feature of each study with writing being adopted as an integrated reflective activity. Many pieces of case writing were crafted and made public in each study. The longitudinal study adopted a case writing structure which produced explicit connections between organisation, pedagogy and learning. In this study the cases represented successive phases of testing and inquiry with explicit yet practically connected forms of data analysis and explanation while in the two subsequent studies there was not such an explicit connection between the cases and change over time. In all three studies cases led to the generation of commentaries and provided a focus for practice-based discussions. In addition to cases and commentaries the technology and educational change study also generated journals, emails, snapshots, reports and curriculum and planning documents. In all three projects university researchers produced case studies, reports and academic publications. These documents mapped practice and contributed to school by school and cross-site interpretation and theory building. In each study collaborative activities

provided opportunities for practitioner verification of interpretations and development of research propositions.

Longitudinal Study of School Restructuring

In the Longitudinal Study of School Restructuring, participating teachers worked in teams with university research colleagues in generating collaborative portrayals of policy-supported and funded school change. As much as possible, the Study established the reflexively aware and democratic relations of action research between the researchers - teacher researchers and university researchers - and the reform agencies, which were the National and State National Schools Network (NSN) offices and their staff. The Study deviated from the model of action research generated by practitioners only. Its initiation by the NSN imparted a purposive direction to the research. Not only was the Study to enable the democratic participation by teachers in the processes of school change, it had a responsibility to arrive at research findings which the NSN could include in its professional development and reform programs.

With the benefit of hindsight, the methodology which emerged during the Longitudinal Study of School Restructuring can be seen as a staged inquiry. The *action research* by teachers in schools generated *case writing* and reflection in each of the schools. Connecting the reflective insights of teachers in different schools with the purpose of proposing research findings was not a result which appeared as a capability of action research, at least in the form followed in the Longitudinal Study. For the research the problem which became the particular concern and responsibility of the university research team, correctly or not, was the absence of any means, accessible to practitioner researchers for moving beyond the situated strengths and limitations of action research. As an example of the problem, the recently published *Handbook of Action Research* contains no clear recommendations either for analysis or proposing generalisable research findings. One possible explanation is that formal research processes such as analysis risk the participatory ethic of action research. For the purpose of the Longitudinal Study however, the university research team argued the need to move beyond the practitioner-only significance of action research, while being mindful of the Study's democratic intentions.

The resolution of this problem appeared in the Study as a *collaborative analysis* strategy which complemented the reflection by teachers in schools with a form of inquiry carried out by teachers across schools and with university colleagues. What resulted is a pathway towards the proposition of research findings, which could be accorded the status of fuzzy generalisations .

Case Writing in the Longitudinal Study

Recurring cycles of action research commenced with case writing which experience has suggested is a means of documenting practice accessible to teachers and supportive of ongoing reflection on action (see Appendix 2 for a teacher's case). The reliance on case writing as a primary source of data might be taken as the 'naïve search of authenticity' of narrative forms of research. But located within an ongoing action research framework, case writing arguably can stimulate collective communicative evaluation which 'invites participants - to the extent that they can do so under the demands of practice - to set aside the exigencies of practice to reflect as openly, thoughtfully, critically and self-critically as possible on the nature and consequences of their work' .

The principal basis for analysis and understanding was the dialogical interpretation of cases made by practitioners. Thus the question of teachers' judgement about practice was a contextualising factor in all phases of the research. The direction of analysis was the reflective and reflexive connection of text with practice, not the separation from the text of a story or discourse somehow abstractly removed from practice.

Schematically, the planned action research form of the study is shown in Figure 1. Collections of teachers' case writing, prepared twice per year, initiated collaborative analysis and reflection in each school. Local insights informed local practice in the spirit of action research. The research also exposed local practice and understanding to a broader evaluation through an annual collaborative validation workshop which brought together teachers from all participating schools and the university research team. Collaborative validation as practised in the Longitudinal Study enabled school and university researchers to report local insights and then to integrate them into a framework of tentative findings. Through the collaborative validations, university and school colleagues confirmed local interpretations, leading to a mapping of similarities and differences and as a result tentative findings. These validated findings were then available for local testing.

Figure 1: Case Writing and Action Research

The layers of description and reflection in the research design enabled the move from local insight to more public and validated explanations, while retaining direct connections with practice. Records of meetings, where each school team – the teacher and university researchers – reflected on their developing collections of case writing, provided a second set of data with quite detailed argument about how classroom practices related to school organisational and curriculum features. The focus of the research, the university and teacher researchers agreed, implied four analytical concepts essential to the investigation: teaching, learning, change and structure. These concepts became the basis of the three collaborative validations over the four years of the project. The analysis was framed as a set of questions to which each team responded in the collaborative validation workshops:

What does teaching look like in your school?

What does learning look like in your school?

What does change look like in your school?

What does structure look like in your school?

The extended discussions which these questions initiated, engaged the teacher researchers in selecting examples from practice from which they were able to construct simple representations in words or maps of how change was occurring in each school. These summaries of change were then the basis of further discussion which produced an agreed conceptual framework for explaining change in the schools. For example, in the first collaborative validation workshop, the teacher researchers decided that the categories *space*, *time*, *response*, *talk*, *leadership* and *morale* were important in explaining change. The concepts were also a basis for each school team to review and plan developments in each school.

From the standpoint of 'normal' research, the reliance on case writing does leave the research open to claims that teachers have presented an incomplete, partial and overly rosy description of their practices. No attempt was made by the research teams to include an independent triangulation of the data, through for example interviews with students or parents. Not only would these tasks have been outside the resources available for the Study, they would have threatened the collaborative and practice-based description and interpretation which was the core of the research. The participating teachers agreed to inform the writing of their cases with student opinions, gained through the feedback strategies they usually employed. But the point of the research was practitioner judgement and how those practitioners deployed judgement in their school restructuring practices.

Analytical Process Proposed

During the cycles of action research in the first three years of the research project the teacher researchers had documented and reflected on the changes in their respective schools. While the collaborative validation workshops each year had resulted in comparison of experiences and interpretations by the school teams, the research process had not used the collective understanding as a basis for the production of research findings. In the final year of the research, however, the school and university researchers, with the intentions of the National Schools Network in mind, explored how the research might move beyond the contextualised explanations which the cycles of action research and collaborative validation had generated.

For example, the collective view of the research teams was that *time*, as a concept, had explanatory potential. The concept, however, did not have a single meaning. In one context, time was *time for*, referring to the opportunity, during a busy school week, for teachers to reflect on practice so as to improve it. But time was also associated with other social practices: the organisation of the timetable and the duration and patterns of students' learning. Clearly the personal and local explanations held by teachers were attached to specific practices and particular cases.

Deriving generalised findings from this kind of action-based teacher judgement required a method in which *my understanding of this incident* described in *this case* could be tested by comparison with other practitioners' cases of similar practice and the understandings they have advanced. A claim for generalisable understandings may be sustainable, however tentatively, if cases across a range of schools and classroom settings led teacher

researchers to agree on explanations of the practice, if and when the cases contained clear demonstrations of the explanations.

Figure 2 presents the analytical process which the university and teacher researchers decided to follow in the final year of the research. Each stage carried an expectation that the findings of the research would be those the teacher researchers found useful in explaining their experiences. Thus the analytical process undertaken was conceived as a recursive process from a reading of cases, through a comparison of contextualised understandings, agreement on collective explanations and then a re-interpretation of the cases to refine explanations. Clearer and more confident findings might have emerged had the university and teacher researchers been able to undertake more and more cycles. The steps of the analytical process depicted in Figure 2 enabled the teacher researchers to propose explanations for their practical experiences, by reference to their case writing. Briefly, the phases of analysis were:

Significant incidents: each school's teacher researcher team selected cases for consideration because the team regarded them as having content essential for understanding change in the school.

Sketch of practice: the team summarised each case so that the main elements of practice were emphasised.

Thread of practice/Key words: the main concepts explicit and implicit in each case were connected to present a practical explanation. The practical explanation also enabled the proposition of a set of key words by which each team connected their cases and explanations with those of the other teams.

Collaborative validation: critical incidents, sketches, threads and key words from all teams were compared for commonalities and contrasts. The combined university and teacher researcher teams then bundled the elements into what were intended to be explanatory themes.

School Case Study: critical incidents, sketches, threads and key words for each school became the framework for the writing of a case study for each school (drafted by each school's university colleague). The purpose of the case study was to present a coherent account of change/practice in each school using the bundled validated elements. The initial case study was a *descriptive case study*, constructed only from the perspective of each school. Once confirmed, each school team, using the themes from the collaborative validation phase, interrogated the descriptive case study. The result was the *interpretive case study* which contained explicit practitioner explanation. In the Interpretive case study, the university researchers noted connections between practitioner explanations and reported findings in the research literature. In the writing of both case studies, the teachers debated, modified and eventually confirmed the account of each school. Those clarifications and debates have been a further layer of data which have enriched the case studies.

Figure 2: Validity in Practitioner Research

Research Propositions: the process of writing and validating each school's case studies confirmed practitioner explanations and intuitions about the distinctive features of teaching, learning, change and structure in each school. As Walton has argued case studies come

wrapped in theories. They are cases because they embody causal processes operating in microcosm. At bottom, the logic of the case study is to demonstrate a causal relationship about how general social

forces take shape and produce results in specific settings. That demonstration, in turn, is intended to provide at least one anchor that steadies the ships of generalisations until more anchors can be fixed. Cases are always hypotheses.

The causal relationships or *research propositions* can be seen as a practitioner's explanatory statement, together with the associated interpretations and descriptions of practice contained in the school case study. The explanations in each proposition connect *backwards* through the case studies to the threads of practice, key words, sketches of practice, case writing and essentially to the classroom practices represented in the case writing. A further requirement for a research proposition is that it can be related *forwards* to current practices, so that explanations are available for observation and confirmation by colleague researchers and others interested.

Research Findings: the final act of the research was the comparison of the grounded research propositions from each school. Where research propositions from each school suggested common experiences and explanations, a bundling of all aspects of the propositions produced agreed statements constituting tentative research findings available for testing internally within each school's documentation and practices.

In those final stages of the research, where practitioners constructed findings connecting practice, description and personal explanation, the active participation by university researchers became necessary. The formal writing of the school case studies, the management of the synthesis of research propositions and critically noting where further evidence was needed became the responsibility of the university researchers, with the agreement of the school researchers. As a result, the university researchers were in a position to question how the developing research propositions compared with published research. That task initiated further inquiry for both teacher and university researchers leading to deeper evidence-based explanations which may be regarded as *theorised research findings*.

The analytical process in practice

The example of case writing in Appendix 2 can be used to demonstrate the analytical process in practice. The case records one teacher's account of a Year 5 social studies program at Beaconsfield Primary School in rural north west Tasmania.

Significant Incident

The school teacher selected the unit Viet Nam because it showed the development of student centred inquiry in the curriculum and how the students are emerging as shared owners of the curriculum.

Sketch of Practice

The case in the Appendix 2 was summarised as:

At the beginning the children were very interested in a new place, new way of living, eating, dressing etc and were working in a very co operative manner.

As the work progressed towards 'the war' we started reading the novel 'Journey of a 1000 Miles' by Ian Strachan. The children really took this on board. With other work the children had been ok with what they read/saw/were told. With this book they questioned.

The children were obviously talking about this at home as they were saying things like, 'Dad said... and Mum wanted to know...'

The students also learnt many life lessons which showed them that life for many people is unfair, frightening, very, very sad and how strong they were when so many things were against them.

They seem to have taken a sort of ownership for this unit.'

Thread of Practice/Key Words

Through the discussion of the case, the teacher researcher identified a thread of practice with important key words.

... working in a very co operative manner

With this book they questioned.

... talking about this at home.

learnt many life lessons

taken a sort of ownership of this unit

When they came to write the school case study, the teacher researchers and the university researcher regarded this unit of work on Viet Nam as representative of practice in the school. Other teachers had written similar cases which described the way in which classroom practice was reflecting the increase in inquiry, talk and discussion of issues among staff. In this case the students' confidence in asking questions is evident as they take over the learning and direction of the unit of work. In many ways this is exactly what teachers had been doing for the past 4 years – exerting ownership of the school and its direction. In the collaborative validation seminar, teacher researchers traced back these and other changes in student learning behaviour through the range of professional experiences and changing organisational structures to the central decision to change the way that teachers worked. The fact that teachers were able to publicly document and discuss this kind of classroom practice was evidence of how explicit the practices of the school had become. As a result, the research team has suggested the case of the unit on Viet Nam can support the following research proposition:

Learning in this school is advanced when students are able to construct and lead their own inquiry. Teachers may establish the framework for learning but it is the democratic behaviour of teachers and learners together which opens up the possibilities for students to inquire rigorously, critique ideas and claims and to make connections between classroom learning and their world beyond the classroom. The real measure of the leadership of the teacher in the classroom is the extent to which she enables students to lead themselves.

This research proposition is in a form where it can be related to propositions from other school research teams and also to published accounts of school reform. For example, the research proposition appears to have similar characteristics to the authentic pedagogy findings of the Center for School Restructuring at the University of Wisconsin-Madison .

While that observation is worthwhile support it does not validate the finding. The proposition may be true for these teachers in this school but the extent to which it stands as a valid and reliable finding in similar schools is a matter for further inquiry. In qualitative research, finding a way to test the validity of findings may be straightforward. A much more complex task will be to find ways for practitioners to be active in both the proposition of findings, and also in their validation.

Towards theorised research findings

However much practitioner research is growing in popularity and perceived usefulness, its enduring difficulty will be the claims that researchers can make about the validity of its findings. The extensive action research literature, which ranges from texts containing detailed expositions of the theory and practice of action research to the most arcane post-modern theorising, unfortunately appears to be of little help. What is difficult to discern in any of the literature is how a research product which might be accorded the status of findings can be constructed and how findings might be validated (Elliott 1991,

If the Longitudinal Study of School Restructuring realised a sustainable form of collaborative analysis, its approach to the construction of research findings was less explicit. While the analysis was practitioner led, the writing of the case studies and subsequent discussion of findings was a task accomplished by the university research team. Funding and time constraints denied the school and university research teams any opportunity to explore the possibilities for extensive practitioner theorising in the Study.

The final task in practitioner research may be to include practitioners in a process of collaborative theorising, an inquiry similar to the collaborative analysis stage. Two criteria may be necessary for collaborative theorising. The first is that findings be evaluated as *trustworthy* by their explicit connections with practice and the interests of practitioners and their students. Collaborative theorising must also have the potential for research *validity*, by connecting with research literature and by being available for public scrutiny, using for example the public tests of validity outlined by Anderson and Heer. They proposed five validity tests: outcome (research leads to resolution of problem); process (research allows for learning); democratic (research is collaborative); catalytic (research leads to understanding and transformation); and dialogic (research accorded peer review).

If the findings of practitioner research are to be both trustworthy and valid, then it may be essential for that theorising to be genuinely collaborative. That is, the achievement of findings with the twin criteria of practitioner and university research might only be realisable through the negotiated agreement of school and university researchers who work within different research interests.

One way of undertaking collaborative theorising would be for school and university researchers to identify and critique the theorising present implicitly and explicitly in the documentation and analysis of practice in the earlier phases of practitioner research. Applied to case writing, the inquiry appears as the recognition of the form of *description*, *interpretation* and *theorising* contained in a practitioner account of practice. The discourse employed in the case might be the prompt for school and university researchers to discuss the interpretive framework used by the writer to describe and explain practice. From that point, the research teams are in a position to establish how the described practice fits within the interpretive framework. Similarly the research teams will also be able to link the interpreted practice to the published findings in the literature.

In the example of case writing in the Appendix and the thread of practice reported earlier collaborative theorising might suggest *co-operative*

learning, communication and relevance as the principal concepts in the writer's interpretive framework. The case theorises that the students 'seem to have taken a sort of *ownership* for the unit', which makes a conceptual connection to the notions of negotiated curriculum and democratic practice contained in the associated research proposition. If the research proposition is trustworthy, practitioners will be able to trace it through the descriptions of practice in the case but also in applications in their own practice. The research proposition may claim validity if the research literature provides accounts of studies which advance similar findings.

The work of the school and university research teams in the Longitudinal Study suggest that collaborative analysis and collaborative theorising in practitioner research can constitute a discursive environment inclusive of practitioner and academic research interests. With further testing, the outcome may be the practical dissolution of the dichotomy of *propositional* and *process* knowledge, which is perceived to hinder the participation by practitioners and academics in each others' work.

The professional development study

The professional development study is a doctoral study looking back at the completed work of six action research teams who together formed the Western Melbourne Roundtable. The key question which underpins this section of the paper is: *Could some aspects of the methodology used collaboratively in the longitudinal study be used by the academic researcher in the document analysis phase of the professional development study?*

The Western Melbourne Roundtable was one of 16 roundtables established in 1994 under the umbrella of the federal Innovative Links Project. Teams of teachers in five schools were funded to participate in the project which was founded on a commitment to school-university partnerships, professional development and innovation based on reflective practice and school identified issues. Each team worked in partnership with academic colleagues from the sixth roundtable team from Victoria University of Technology. The partnership also included representatives from education systems and teacher unions. The teams met together on a regular basis to explore local concerns and common interests in education and they also sent representatives to monthly roundtable meetings.

Over three years, members of the Roundtable recorded their experiences and shared their documented practice both locally and through a nationally coordinated network. Over 100 written cases, and as many commentaries were authored by members of the Western Melbourne Roundtable. They are personal narratives and/or reflections on critical incidents connected to their work; they are products of practitioner research. Interview transcripts represent personal and group reflections on the experience of case and commentary writing. These documents are one focus for this research project which was designed to gain new insights and a deeper understanding about the links between professional development, practitioner research and change in education through an examination of the partnership experiences of the Western Melbourne Roundtable.

Distinctions between the longitudinal study and this study are immediately clear. Most importantly, the research process for this study was designed by the researcher and even though the original work of the Western Melbourne Roundtable was negotiated, the current research project was not designed in collaboration with teachers, teams or the roundtable. Therefore, the challenge was to design a methodology for document analysis which was respectful of both the reflection process and the resultant pieces of practitioner writing which characterised the roundtable. If at all possible the aim was to design a methodology which sought collaborative and reflexive solutions to offset the problems created with an external researcher. On the other hand the methodology had to maximise the chances of finding an

answer to the research question: *What do these documents reveal about the connections between professional development, change, action research and partnerships?* A primary concern was to ensure that the research would be committed to a 'process of meaning construction... (where the researcher is) concerned with what the narrative means to the people who create it or read it... (and not one) in which the researcher imposes his or her own predetermined categories and theory on the text'. After much consideration and trialing of alternatives, an adaptation of the methodology from the longitudinal study was used because it promised a respectful strategy for analysing the practitioners accounts of their work as well as a process for identifying patterns and connections in practice.

The methodology adapted: Researcher sketching, threading...

As each case and associated commentary were read answers were sought for the questions: *Is there any explicit theory, opinion, interpretation being described? What is the author's main message?* Information was then recorded under the headings 'Sketch of practice', 'Thread of practice' and 'Research propositions'. Table 1 shows an example of this process where the researcher:

- Underlined key phrases to create a summary;
- Identified key words that provided a practical explanation for each segment of the sketch;
- Reviewed the sketch and thread to ensure strong connections;
- Drafted a description of what the case was about; and
- Drafted research propositions. Where research propositions are implied by the author these were recorded in **bold**.

The research propositions were then bundled under the four main themes identified in *Teachers Write* (learning about learning, student voice, reorganisation for learning and relationships) and the key areas for focus in the research project (professional development, action research, change and partnerships). Table 2 shows how the research propositions were linked to the headings. Once the research propositions were bundled it was possible to identify patterns of incidence and patterns of connection.

These research activities led to grounded theory building as incident to incident connections were made across documents (between case and commentaries, across team documents, across sites) and when concepts emerged, incidence to concept connections were made. Throughout this process issues raised by an author and/or commentator but not included in the sketch, thread or research propositions were also noted. Recording these details helped to clarify distinctions and also allowed for unpredictable themes to emerge. The bundled research propositions were connected with the questions in the interview schedule and used during the individual and group interviews. In this way the methodology provided for collaboration and verification through the interview process.

Table 1: Sketch, thread and proposition

Descriptive statement:

This case is about a teacher who wants a student to take responsibility for his behaviour.

Sketch of practice*	Thread of practice	Research propositions
Scott experiences difficulties in the (language) area of the curriculum. As a result his behaviour is often less than desirable...	Teacher identifies problem Teacher connects learning and behaviour	Teachers' work involves identifying problems and seeking solutions. Teachers are concerned when students fail to make progress. Teachers know that learning and student behaviour are connected.
... I reach the end of my tether...a final warning and reprimand in between a mouthful of back-chat and muttering on Scott's behalf.	Emotion	Critical (emotional) incidents lead to reflection and changed practice.
Based on PD...staff feedback...(and) in line with current educational trends and philosophy, it was decided that an element of student self assessment should be incorporated as a key component of the new report form.	School context Change process	Change is connected to educational trends, professional development and teacher input.
...the notion of children taking responsibility for their own learning has triggered something in the back of my mind...	Thinking about educational ideas	Students should take some responsibility for their own learning and behaviour.
...if self assessment was successful when children focused on their learning why couldn't it be just as successful when focussed on behaviour.	Teacher remembers successful innovation Connecting problem, educational idea and innovation	Educational principles and successful innovations can be adapted to meet the demands of different situations.

*This sketch is based on a case published in *Teachers Write*

Table 2: Bundled research propositions

Research propositions	Learning about learning	Student voice	Reorganisation for learning	Relationships	Action research	Change	PD	Partnerships
Teachers work involves identifying problems and seeking solutions.					1			
Teachers are concerned when students fail to make progress.	1							
Teachers know that learning and student behaviour are connected.	1							
Critical (emotional) incidents lead to reflection and changed practice.	1		1					
Change is connected to educational trends, professional development and teacher input.						1	1	

Teachers think that students should take some responsibility for their own learning and behaviour.		1						1
Teachers adapt educational principles and successful innovations to meet the demands of different situations.	1					1		

Reflections on the adapted methodology

The methodology of the longitudinal study was attractive in the context of this study because it provided a model for collaborative research which was respectful of practitioners yet facilitated the identification of research findings. The model could not be replicated in this study but was adapted with a view to holding on to the interconnected characteristics of respect and the collaborative generation of new knowledge.

The longitudinal methodology argues, in contrast to other qualitative paradigms, that texts be kept whole and that the language used by authors be the basis for creating summaries, key words and research findings. This respectful process was a crucial aspect of this study because it ensured that the focus remained on the words and ideas of the authors rather than slipping into coding which fitted the research questions. This process optimised the chances of trustworthiness in the search for research propositions.

Aiming for respect also meant that there needed to be a constant questioning of the process: What is the basis for identification of key phrases? Does the sketch represent the intentions of the author? Are there multiple ways of highlighting one piece of writing? Seeking to identify the author's intentions was not a precise activity and over time it was obvious that it was nearly always possible to change/improve what had already been done. Personal knowledge and experience both assisted and interfered with the task of interpreting and understanding and of course this was not static. A book read or conversation with a supervisor, friend or colleague could lead to thinking about a document in a new way. Given these observations new questions arose: *Are there any principles which would guide sketching and threading? Are there criteria by which a sketch and thread could be judged as trustworthy?* Based on the experience in this study it seems important to ensure that:

- those ideas which have influenced the context and the conduct of the research are clearly articulated
- the sketch and the case tell the same story
- the sketch rings true
- alternative sketch constructions are considered
- the sketch respects the intentions of the original case
- similarities and distinctions are identified between associated cases and commentaries

By recording the text segments (sketch), the key words (thread) and the research propositions side by side the connections are clear. It is possible to check the process and adjust any aspect. With the added step of distinguishing between the practitioner and external researcher propositions another level of respect is included through the recognition of the interpretations and theorising articulated by practitioners. The idea that document analysis is traceable or replicable is important within the framework of collaboration as well as being significant in the search for trustworthiness and validity. Any mapping or synthesising work undertaken by university researchers will be bounded by their knowledge, skills and the research questions they ask at the time of inquiry. When looking from one perspective this may appear to be a weakness in the research methodology and this would be true if the research claim was presented as a definitive finding. If however, a different researcher, at a different time, with different questions was able to replicate or was at least able to trace the work then the methodology provides the possibility of an even deeper understanding.

Once compiled and bundled there are at least two possible checks for trustworthiness. In the first instance verification might be achieved through a grounded theory process of constant comparison. A second option is to plan for a collaborative verification process involving the researcher and practitioner/s. Verifying the research propositions with the authors and/or members of the school team would achieve a level of collaboration which is not possible in a researcher alone methodology. Arguably, a number of individual interviews with members of each team would be appropriate to verify each group of documents and that as strong cross-site themes emerge that these be explored and verified through group interviews with participation from multiple teams.

Triangulation supports the claim for both trustworthiness and validity. In this instance *data triangulation* was achieved through the use of a variety of data sources (cases and commentaries, interview transcripts, school reports etc) and *investigator triangulation* was achieved by including the voices of the document authors or members of teams and the researcher. *Methodological triangulation* will be achieved through the comparison of research propositions identified during document analysis and the subsequent conduct of individual and group interviews. Finally, *theoretical triangulation* could be achieved through comparison of data collected in similar circumstances.

In addition to the claims for validity which might be achieved through triangulation the longitudinal study drew on a framework suggested by Anderson and Heer (1999:16). In arguing the validity of their research findings they referred to the 5 tests of validity (outcome, process, democratic, catalytic and dialogic) which might be applied to practitioner research. They report opportunities for each of these tests to be applied. It is unclear whether these tests might also be applied within the context of this professional development study. There is a clear place for seeking evidence of these types of validity in the documents which record the activities of the Western Melbourne Roundtable but can they be achieved in a research context which is driven by a university researcher? At this point, the question remains unanswered.

In this study the adaptation of the longitudinal methodology to allow for a researcher to undertake the sketching, threading, bundling and identification of research propositions lead to a respectful process. The steps kept teachers' practice and voice central in the research whilst also providing a process for tracing the identification of research findings. By adding a step, so that the bundled ideas and research propositions could be taken back to teacher-authors in individual and group interviews, it is possible to bring an additional reflexive and collaborative dimension to the work.

Technology and Educational Change Study

The Technology and Educational Change study was also conducted as part of a doctoral program. In this case, the research was conducted in conjunction with the start-up of the PD Partnerships Project, a joint initiative of the Department of Education, Employment and Training (DEET) and IBM. The PD Partnerships Project was the Victorian offshoot of the IBM Reinventing Education Project which originated in the USA and promoted a model of collegial professional development. Initially 6 schools (4 primary, 1 secondary and 1 central (P-8) school) and 12 teachers were involved.

The study aimed to research links between learning, change, practice and pedagogy as teachers engaged in a professional development project designed to further understandings and pedagogical knowledge about the role of information and communications technologies (ICT) in teaching and learning.

The role of the university colleague was complex in this case, involving coordination of the project, design and facilitation of professional development, design of the overall research methodology and doctoral studies. The research role fell somewhere in between the university roles previously described, but like the longitudinal study was guided by a desire to establish a co-researcher relationship that was respectful of teachers and their professional knowledge and that resulted in them deriving significant benefit from the relationship. As a result of this concern, the overall research design incorporated a strand of action research that was constructed with principles of Participatory Action Research (PAR) and critical theory in mind.

A second strand of the methodology was similar to the Professional Development study in that it involved social research, with the university researcher using qualitative methods in an attempt to make links between insights emerging from the PAR process and other professional learning experiences of the Project.

A major methodological difference between this and the other two studies was that journals and other forms of writing were the primary means of documentation, rather than cases. The aspect of methodology to be elaborated upon here is how strategies from the longitudinal study were adapted in the analysis phase to promote further interpretation, analysis and theorising about the experiences and reflections that had been documented.

Applying the Longitudinal Study methodology in a different context

Teacher researchers participated in the action research strand of the study by self-selecting into three inquiry teams and collaborating to identify a specific issue that they wished to investigate. The only constraint for inquiry foci was that they fell within system priorities that highlighted issues in the Middle and Early Years of schooling and use of information and communications technologies. Using Smith's Participatory Action Research (PAR) praxiology as a guide, a range of experiences were developed that aimed to move the group through continuing spirals as illustrated below:

The specific data generation strategies used to prompt these stages were:

- Understanding self (snapshots, weekly journals, seeing self through the eyes of others in school visit reflections)
- Establishing connections within the group (meetings, discussions, sharing practices, articulating values, describing school contexts).
- Integrating theory and practice (reading responses, synthesising private weekly journals into shared monthly journals, case and commentary writing, action research reports and professional learning evaluations, reactions to visiting speakers)
- Investigating/acting/educating/analysing (action research projects, journals, reports, observations, case and commentary writing, interviews)
- Developing critical insight (journals, reports, case and commentary writing, keyword –thread – commentary writing, reflections in reaction to visiting speakers, network meetings, discussions with critical reference group)
- Transforming structures and culture (Phase 2 planning in later cycles of action research, journals, reports, school curriculum and policy documents).

The study aimed to use what Wolcott proposes as being a full range of data-gathering techniques:

Experiencing, with emphasis on sensory data, particularly watching and listening; enquiring, in which the researcher's role becomes more intrusive than that of a 'mere observer'; and examining, in which the research makes use of materials prepared by others.

It should be noted, that while teacher researchers had full control over the data gathering techniques they used in their particular inquiries, the university researcher designed the overall structures within which they planned their inquiries and made their understandings and findings explicit through documentation. The range of documents generated provided different kinds of insights into the journey of change as experienced by the teachers and the issues, thinking and pedagogy that guided their practice. The sheer volume of documentation generated presented as a methodological issue in terms of how best to involve teachers in meaning construction so that it wasn't an onerous, time-consuming task, and that they derived benefit from such participation. A second consideration was how best to arrive at research findings that would hold up in light of trustworthiness and validity issues and that identified "signposts for action" that practitioners regarded as relevant and accessible .

The initial strategies used to involve teacher researchers in the analysis phase consisted mainly of teachers' synthesising their writing (journals and other reflections) and reflecting on student artefacts which were products of the action research process.

Some collaborative analysis and interpretation was encouraged at the end of the first year of the study between teachers in each inquiry team when they were asked to produce a joint report about their common inquiry focus. Within this PAR strand of the research the university researcher compiled the teacher researcher findings into one response which was returned to the teachers for member checking.

At this stage there was little collaborative analysis between the university researcher and the teacher researchers, with the role of the university researcher being a facilitator of the overall structure of the PAR process and a group member who also generated and shared journal summaries, school visit observations and reports. A concern that emerged was that a process for systematic interpretation, analysis and theory building had not been well established, with the reports performing more of an evaluative and summarising function.

The methodology of the longitudinal study was adapted at this stage as a way of increasing genuine collaborative validation between all researchers (teacher and university) and of encouraging more focused theorising that would be the basis of tentative research findings.

In particular, the strategy of identifying key words, constructing threads and writing commentaries was adapted. The revised analysis strategy proceeded as follows:

- A small group of teacher researchers engaged in key word, threading and commentary writing with three self-selected documents from the beginning, middle and latter part of the study.
- This sample of teacher researchers shared their writing with the main group of teacher researchers, who used the commentaries to identify key words and threads from their own perspective. They added a new commentary.
- University researcher shared independently constructed threads and commentaries.
- Discussion within the group to achieve collaborative validation of explanatory themes and to put forward tentative research propositions.
- University researcher used these keywords, themes and findings as a guide for further analysis of all data through threading and commentary; vignette and commentary; matrix/tables and classification; links with literature and other research findings.
- Second stage of reflexive discussion with teachers to validate university researcher reconstruction of insights and findings.

Thus this study involved some collaborative analysis and validation with the teacher researchers and other individual analysis by the university researcher which was 'member checked' by the teacher researchers. In retrospect, this process of keyword, thread and collaborative validation would have been a better process to use during the first year of the study, replacing monthly journal summaries. Use of the strategy in the second year indicated that earlier use may have encouraged more ongoing interpretation and theorising of the practices that had been described and reflected upon. Earlier use of this strategy would also have provided more of a basis to engage teacher researchers in debate about themes and tentative research propositions, thus strengthening claims for validity and generalisability.

The threading and commentary strategy was used separately by the university researcher in the social research strand of the methodology as a reflexive attempt to stay much closer to teachers' original narrative writing and to avoid submitting the data to overly reductionist academic research analysis. Compared to analysis using qualitative software, the threading strategy enabled a more holistic picture within both individual and successive narratives to be kept in focus. In this study it was found useful as part of a suite of analysis strategies that were applied to the data, and was used selectively depending on whether it appeared to be the best method to represent particular relationships and connections.

The analytical process in practice

The following example of keyword selection (taken from journals), thread and commentary demonstrates how the strategy led to explicit descriptions and theorising about practice.

The Beginning/The Changes

Exploration

Small group rotations

Open-ended, creative, challenging type activities

Less teaching of specific skills

Reflection time

Only the first paragraph (addressing "exploration") of the commentary is quoted here:

Exploration time is specific to both me as a teacher and to the children in my grade. One of the greatest fears in the beginning, regarding computer usage in my classroom, was the fact that I felt I didn't know enough to be able to teach my pupils how to use them. I came to realise that I didn't have to be an expert for computers to be used as a teaching tool within my grade. When introducing a new program I often ask the children to explore it and later discuss their findings with the rest of the grade. Usually a child discovers something other children didn't and this becomes a focus for our next lesson. Sometimes I ask the children to find out something specific about a program and then relate their findings back to the group. I find this is a much better way for the children to learn about specific programs as they have hands on knowledge and experience. Obviously this exploration is the best way for adults to learn as well, although we don't tend to do it as well as children. (Teacher researcher, May 2001)

The strategy used to move from this stage of analysis to proposing tentative research findings included further keyword selection from this commentary (by other researchers in the study) as the basis for exploring themes and insights emerging from the study. Cherednichenko et al suggest the categories practice described, interpreted, theorised and changed which have also been used as another level of differentiating aspects of practice:

Change	Learning	Practice/ Pedagogy	ICT	Practice Described (D); Interpreted (I); Theorised (T); Changed (C)
		Exploration time		T
	I didn't have to be an expert		I didn't have to be an expert to use computers as a teaching tool	I
		Children explore and discuss		D

		findings later	
		Discoveries focus for next lesson	D
		Find something specific and relate back to groups	D
	Learn about specific programs after hands on use		T
	Exploration is the best way for adults to learn.		T

Phrases such as ‘I came to realise...’, ‘I find...’, ‘Obviously this ...’ were taken as indicators of theorising.

From here tentative research propositions were built from teacher theorising, around the broad issues of change, learning, practice/pedagogy and ICT. The university researcher role was to build a synthesised map of these connections which were returned to the teacher researchers for further debate and validation. Connections with the literature were also incorporated at this stage.

Reflexivity was an important element of the methodology which resulted in changes being made during the struggle to recognise and transform the constraints implicit in the research process . It was necessary to critique and problem solve around issues of democracy and degrees of genuine collaboration from both ideological and methodological stances.

Reflexivity also resulted in validity concerns emerging which were addressed through limited application of the collaborative validation and theory building processes of the longitudinal study. This sampling, while not as extensive as the longitudinal study, nevertheless provided the university researcher with a stronger base upon which to claim validity by connecting collaborative research propositions to those that were independently constructed. Validity concerns were addressed further through the application of a range of constructs, in particular those recommended by Anderson and Heer .

As in the longitudinal study, trustworthiness considerations related to both the usefulness and accuracy of the tentative research findings for the teacher researchers and ultimately their profession. The further testing of findings involving additional cycles of collaborative validation and theory building went beyond the time frame of the current study but would have strengthened trustworthiness claims.

Trustworthiness was also addressed through traditionally recommended strategies such as triangulation (use of multiple data sources, involvement of teacher researchers with university researcher, making connections with theoretical literature). The methodology of the longitudinal study was important to this study in that it raised crucial ideological and methodological issues that needed to be addressed reflexively in an attempt to strengthen the basis for making claims regarding findings.

Conclusion

These three studies shared concerns about trustworthiness, validity, theory building and generalisability. The commitment to trustworthiness was a primary concern both in terms of process and content. University researchers challenged the traditional divide between practitioner and academic researcher by seeking methodological solutions which valued collaboration and reflexivity. This concern and commitment can be seen in the multifaceted search for research outcomes that were accurate, useful and connected to local practice and the interests of practitioners and students. In terms of validity, each study facilitated connections, aimed for usefulness in the application of research outcomes and provided opportunities for contestation and verification in a range of settings. Each project not only incorporated Anderson and Heer's tests for validity in action research, but raised the possibility of further constructs of validity. In particular, the idea of collective validity (achieved through a network of researchers engaged in collaborative theory building) and traceability have emerged as useful constructs.

Ultimately a form of self-reflexivity was addressed by the teacher and university researchers as they trained their gaze on themselves, and later engaged in discussions about ideology and methodology. The process made explicit our stance as researchers, both ideologically and methodologically and that has encouraged critique and problem solving around issues such as democratic relationships between university and teacher researchers and questioning how choices are made.

Many social researchers have argued that it is impossible to achieve generalisations as no context is replicated yet, in these studies patterns of practice have emerged across sites and across projects. It seems that the idea of a fuzzy generalisations may be very useful (Bassey 2001). Instead of being context bound, findings in the form of fuzzy generalisation, could become public ideas not just presented for checking but presented as the focus for another level of contestation and even verification as studies such as these make further connections and distinctions. The challenge here is to establish a basis for cross-study comparison of fuzzy generalisations including implications for methodological design that would facilitate this new level of collaborative theory building. Based on the ideas argued in this paper a number of characteristics might be seen as foundational. They include: collaborative work between researchers in universities and schools; reflexivity in process and focus; teachers' writing as a basis for describing, interpreting, theorising and changing practice and cross-site or meta understandings developed through dialogue aimed at contestation and verification.

Bibliography

Appendix 1: Connections and distinctions between the three studies

Characteristics	Longitudinal	Professional development	Technology and educational change
Common context	<ul style="list-style-type: none"> • Centralised accountability demands • Reduced freedom to apply professional judgement • Separation of researchers in universities and schools 		
Common intentions	<ul style="list-style-type: none"> • Practitioner research • Locally contextualised school change • Building research partnerships 		
Impetus	<ul style="list-style-type: none"> • Collaborative partnership with the NSN • ARC grant for longitudinal study of school restructuring 	<ul style="list-style-type: none"> • Australian Education Union representative and active participant in WMR • PhD 	<ul style="list-style-type: none"> • Joint initiative between DEET and IBM • PhD
Research focus	<ul style="list-style-type: none"> • Change • Structure • Teaching • Learning 	<ul style="list-style-type: none"> • Professional development • Innovation • Action research • Partnerships 	<ul style="list-style-type: none"> • ICT • Change • Practice and pedagogy • Learning
Research teams	<ul style="list-style-type: none"> • Four schools teams each including university research colleague/s 	<ul style="list-style-type: none"> • Five school teams (first stage) each including university colleague/s 	<ul style="list-style-type: none"> • Six school teams with a common project coordinator-facilitating researcher
Teacher research activity	<ul style="list-style-type: none"> • Action research 	<ul style="list-style-type: none"> • Action research 	<ul style="list-style-type: none"> • Action research
Teacher researcher writing	<ul style="list-style-type: none"> • Cases, commentaries, 	<ul style="list-style-type: none"> • Cases, commentaries, school reports, 	<ul style="list-style-type: none"> • Journals, emails, cases, snapshots,

	articles	articles	reports, planning and curriculum documents
University researcher activity	<ul style="list-style-type: none"> • Collaborative practitioner research • Developing research methodology • Building, supporting, connecting teacher research activity 	<ul style="list-style-type: none"> • Research design • Document analysis 	<ul style="list-style-type: none"> • Research design • Document analysis • Supporting teacher research activity • Making connections across research teams
University researcher writing	<ul style="list-style-type: none"> • Case studies • Research report • Academic publications 	<ul style="list-style-type: none"> • PhD thesis • School reports 	<ul style="list-style-type: none"> • PhD thesis • School reports, journals, reflections, threads and commentaries
Collaborative research activity	<ul style="list-style-type: none"> • Document analysis and development of research propositions 	<ul style="list-style-type: none"> • Individual and group interviews 	<ul style="list-style-type: none"> • Identification of research themes • Document analysis • Individual and group interviews
Collaborative research output	<ul style="list-style-type: none"> • School case studies • Research findings 	<ul style="list-style-type: none"> • Interview transcripts 	<ul style="list-style-type: none"> • Interview transcripts • Mid/end of year reports • School visit reflections • Sample research propositions

Appendix 2: Example of Case Writing: Robyn Smedley Year 5 teacher Beaconsfield Primary School, Aug 1999

'What unit are we doing next?' was the daily question as children sensed the end of the Space unit and the approach of the end of term. In the back of my mind I had already decided we needed a 'short' unit so I could get my breath back as the Space unit had been full on and lasting the most part of term 1.

'Vietnam.' 'Why?' 'Where's that?' 'They had a war.' 'My uncle told me about that.' Were some of the replies.

At the beginning the children were very interested in a new place, new way of living, eating, dressing etc and were working in a very co operative manner. As the work progressed towards 'the war' we started reading the novel 'Journey of a 1000 miles' by Ian Strachan. The children really took this on board. Because the main characters were children about the same age in a situation these children couldn't believe really happened, we read, discussed, debated, problem solved our way through the books for weeks. With other work the children had been ok with what they read/saw/were told. With this book they questioned. Why did they have to leave? What would you take if you had to suddenly leave your home? How big was the boat? (We measured it out and they could see how crowded it would have been.) How did they wash? Where did they go to the toilet? Sleep? Etc.

As we continued the story death by typhoon, murdered, kidnapped, terrified by pirates, death from illness and old age, are all events the children had to hear about and to discuss so as to understand how these things really did happen and how people had to cope and carry on.

The children were obviously talking about this at home as they were saying things like, 'Dad said... and Mum wanted to know...'

The news they were seeing on TV about the boat people landing in northern Australia took on a whole new focus and they were comparing the way that with how 'their family' was progressing and how they might be treated if and when they reached a place to stop.

Parents coming to help or just picking up their children commented how their child was enjoying the work and asking questions at home. They were discussing things they were talking about at school with their parents.

This 'short' unit of work envisaged as a 'filler' between 2 main work units became a means by which the children learnt not just about Vietnam but about how to discuss, question, debate the various topics which arose. They also learnt many life lessons which showed them that life for many people is unfair, frightening, very, very sad and how strong they were when so many things were against them.

They seem to have taken a sort of ownership for this unit. Even this week, one girl said, 'We have to watch The Great Outdoors this week because it is on Vietnam.'

We are now 4 weeks into this next unit of work.