

Robyn Brandenburg

Powerful Pedagogy

Self-Study of a Teacher Educator's Practice

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Self-Study of Teaching and Teacher Education Practices

Volume 6

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Self-Study of a Teacher Educator's Practice



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To Ruth and Reg

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to the way that I now understand pedagogy.

Series Editor's Foreword

Springer has instituted this series in Teacher Education: Self-study of Teacher Education Practices (S-STEP) in order to offer strong examples of quality research in the field of self-study of teaching and teacher education practices. The series highlights the work of teachers and teacher educators seriously working to facilitate personal changes in their pedagogy, but more so, as a consequence of their efforts, also brings to the fore the ways in which institutional change in teaching and teacher education might be catalysed. This book by Brandenburg does exactly that in the manner in which it lays out for the reader an extensive methodological approach to “unpacking” the intricacies of a teacher educator’s practice.

As has been noted by others, self-study of teaching and teacher education practices is derived of the questions, issues and concerns, of teacher educators (most commonly) in regard to their own practice (Berry, 2007; Bullough & Pinnegar, 2001; Dinkelman et al., 2006; Hamilton et al., 1998). However, as Brandenburg makes clear, self-study is not intended to remain a solely personal endeavour. Self-study is also designed to invite others to consider their own pedagogic experiences and to question their taken for granted assumptions about teaching and learning.

In this volume, Brandenburg takes the principles of self-study and rigorously applies them to her own work. She illustrates well how questioning one’s taken for granted assumptions can lead to powerful insights into teaching, learning and teacher education practices in ways that can dramatically reshape the nature of teacher education; both in conceptualisation and structure.

Brandenburg examines her work in careful detail in order to develop new ways of uncovering and then sharing the resultant knowledge; an essential element of quality in self-study.

Like the other books in this series, Brandenburg’s also serves to complement the International Handbook of Self-study of Teaching and Teacher Education practices (Loughran et al., 2004). It offers another exemplar of the diversity of research within the field and is another fine example of the complex nature of self-study. Her book adds another dimension to the developing store of knowledge about the ways in which teaching and learning about teaching are intertwined, interactive and central to the “real” work of teacher educators.

I find the learning inherent in Brandenburg's self-study engaging, informative and insightful. It highlights the importance of seeing into one's practice with new eyes, I have no doubt it will do the same for you.

John Loughran

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Preface

As a teacher, have you ever been curious about why you teach the way you do? Have you considered actually questioning your beliefs and practices in order to seek out the core of who you are as a teacher, and then explore what that means not only for yourself but for those you teach? *Powerful Pedagogy* is the outcome of questioning my assumptions about teaching and in various ways, gives voice to the many individuals who have had an impact on the development of my pedagogy as a teacher educator. In doing so, *Powerful Pedagogy* also illustrates the ways in which examining the ordinariness of everyday interactions through assumption hunting (Brookfield, 1995) can lead to extraordinary learning outcomes. Simple personal and professional interactions can result in profound learning; reflecting on critical moments and events can lead to challenging taken-for-granted assumptions about teaching and learning; and by constantly asking about the ‘why’ of teaching and learning, new and multiple perspectives emerge. However, as I discovered, researching practice from an insider perspective brings with it multiple challenges for in seeking to understand more about my developing identity as a teacher educator, it was inevitable that in hunting my learning and teaching assumptions, unanticipated outcomes might be revealed.

This book is an account of how I sought to understand my practice as an educator, and through systematic investigation, unravel the *underbelly* of my thinking. This unravelling proved to be challenging yet rewarding and, as many other researchers of teaching also reveal, enabled me to move my professional thinking and practice forward in my work of teaching teachers. As Berry (2007) so eloquently suggests, the process of teacher educator self-renewal is imprecise and never completely achieved, but self-study researchers aspire to closing the space as it were between accepting challenges and working towards new knowledge and deeper understanding of practice.

For me, one key impetus for studying my practice was to be able to more deeply understand the ways in which my knowledge as a teacher educator was developing. I wanted to be able to name knowledge in a way that became meaningful for me and I wanted to find answers to questions I had about developing pedagogical knowledge. I chose self-study as a framework to research practice as it provided me with both a methodology and a lens through which I could systematically examine my practice as a mathematics teacher educator. As an approach to studying practice,

self-study research has gained considerable momentum during the past decade, to the point now where individual and collaborative self-studies are beginning to reveal new and exciting knowledge about teaching, and learning about teaching in teacher education (Berry, 2007; Loughran, 2004b; Pereira, 2000; Russell, 2004). Self-study researchers often identify a lens through which their practice is systematically examined (Berry (2004b, 2007) refers to tension; Loughran (2002, 2006) anecdotes; Loughran & Northfield (1996) assertions; and, Senese (2002) and Austin & Senese (2004) axioms). The lens I used to examine my practice was assumptions.

Assumption hunting led me to uncover paradigmatic assumptions (i.e., those that direct how we see the world) which then led me to understand my teaching at a deeper level than before. The process involved identifying assumptions and exploring the influence of these assumptions on my practice. What has become clearer for me is that the teacher educator is not the only voice of expertise when learning about teaching (despite the perception that the authority of position (Munby & Russell, 1994) would traditionally suggest that this was the case). What I came to more vividly recognise was that pre-service teachers when provided with structured opportunities to examine their own practice and learning over time, contribute in significant ways to learning about teaching dialogue, and hence, meaningfully refine their own pedagogy. As such, pathways to understanding the development of the pedagogic situations I experienced with my pre-service teachers was not so linear as in the past, but rather, required us (pre-service teachers and teacher educator together) to have “faith in indirection” (Finkel, 2000) and to (re)consider our learning and practice such that we were all learners in and through teaching.

This book chronicles three years of my teacher educator journey and as such offers insights into ordinary and idiosyncratic classroom practices. In doing so, I do not propose a blueprint for practicing teacher education, for social, contextual, political, curricula, emotional, and gender issues combine to create intricate (and contextual) learning interplays way too entwined to suggest a blueprint would be possible, much less useful. As such, this is not a *how to do teacher education* book, it is a *how to see teaching differently* book; one which identifies and raises for scrutiny and critique, the markers which helped me in my learning and which continue to influence how I attempt to “enact my pedagogy of teacher education” (Loughran, 2006).

Powerful moves some way towards describing the impact on my beliefs, skills and practices, and the ways in which through understanding more about the intricacies and taken-for granted assumptions of teaching, I have moved towards a deeper understanding of what it means to teach and learn in a university environment. *Pedagogy*, in simple terms in this context, refers to the synergistic relationship which exists between learning and teaching - one informs and is impacted by the other. For me then, *Powerful Pedagogy* is a statement about the need to see teaching in new ways and to do so by placing inquiry at the centre of learning about the intricacies of teaching about teaching.

Overview of the Contents

The book is organised into three sections and each section serves a specific purpose. In Section I, *Researching Teaching in Teacher Education*, I briefly describe the context against which this research was undertaken. Identifying the learning and teaching context is important, for as teachers and teacher educators' work continues to be scrutinised, it is even more crucial for those involved in that venture to understand more about how and why challenging the status-quo might lead to the establishment of a new professionalism in education. Some key factors in challenging my own assumptions are revealed in the first chapter where in exploring a new professionalism, I initially examine the role of theory in understanding my approach to teaching practice and the development of knowledge and then move on to describe self-study which I used as both a methodology and a lens through which I examined my practice. To close the first section of the book I elaborate on the design of my research and the ways in which selfstudy helped me to focus on the process of research.

Section II, *Learners Learning*, comprises four chapters, and focuses on the how and what of the changes I introduced in my practice as a teacher educator. Each of the chapters in this section is prefaced by one of my learning and teaching assumptions. As you read, you will frequently encounter the term 'assumption'; these encounters are intentional. In fore-grounding my assumptions as an educator and exploring the manner in which these assumptions impacted my practice, I was challenged to see the ways in which they implicitly directed my beliefs and practices. Section III, *Powerful Pedagogy*, returns to my initial proposition that by using self-study as a methodological guide through which to examine my practice over time, I was able to see the power in that which I perhaps previously considered ordinary in the day-to-day aspects of my teaching.

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Part I

Researching Teaching in Teacher Education

In the first section, I discuss what has been termed by researchers as a progression towards a new professionalism in teacher education. This progression relies heavily on challenging the status-quo in teacher education. After situating this study in the broader educational context, I introduce my local context by way of elaborating on my pathway into teacher education and describe the dilemmas I began to confront in my teaching, only after realising that they existed. Through articulating my theoretical platform, I begin to encapsulate more about the *why* of teaching and learning through teaching. In the following chapter my discussion is based on self-study of my practice and attempts to respond to the questions: What is self-study? Why choose self-study? and, in what ways did self-study guide my practice? The final chapter in this section describes the design of my self-study and highlights what I see as the points of difference, or the uniqueness of the methodology in practice.

Chapter 1

A New Professionalism

Introduction

My research was completed amidst a backdrop of continued calls for reform in teacher education (Ramsey Report, 2000; Backing Australia's Ability, 2001; New Learning, Australian Council of Deans of Education (ACDE) 2001; New Teaching, New Learning: (ACDE); 2004). These enduring calls for teacher education reform have recently gained momentum and represent further claims from those involved in teacher education for accountability, well developed program relevance and the establishment of what has been perceived as a more encompassing contribution and connection to the teaching profession. Investigations into the alleged inadequacies of teacher education programs and numerous research studies have reported various outcomes about the effectiveness of current and modified approaches (Cochran-Smith & Zeichner, 2005; Korthagen, Kessels, Koster, Lagerwerf & Wubbels, 2001; Wideen, Mayer-Smith & Moon, 1998). Criticisms have been voiced from external organisations, as well as those voices from within. For example, Brouwer & Korthagen (2005) suggested, "the structure of teacher education programs may indeed be counterproductive to student teacher learning, and teacher educators themselves may not display the best examples of good teaching" (p. 157). Therefore, within the current educational climate there still exists a level of urgency for the profession not only to continue to respond to such calls for reform but also to be proactive in their response. Recent educational research refers to what has been described as a new professionalism (Day, 1999a; Hargreaves, 1994; Sachs, 1997) in teacher education. This new professionalism rests on the assumption that for systematic and meaningful change to become integral and sustainable within the profession, the approach to change must not be contrived, but must emerge from within a learning context where meanings are identified and negotiated.

My self-study, presented in this book, describes my proactivity as a teacher educator in a Bachelor of Education program and offers an indepth account of how I questioned the culture of teacher education; from the inside. It is an account of my practice as a mathematics teacher educator; how I came to understand more about the nature of taken-for-granted assumptions about teaching and learning and, the

impact of those assumptions on pre-service teacher learning; the development of professional knowledge; the impact of reflective practice; and, the importance of relationships in teaching, and learning about teaching. I began to examine what Whitehead (1993) referred to as “living contradictions”.

In one sense, the problem as I defined it was quite simple – I wanted to teach so that pre-service teachers could learn about teaching through their experiences, not mine. In seeking a solution, which required a deliberate challenging of the status-quo, complexities associated with teaching and learning about teaching were further exposed.

The Beginning Teacher Educator

Many teacher educators have described their entry into the teacher education profession (for example, Berry, 2007; Hamilton, 2004; Mueller, 2003) and as Mueller (2003) suggests, “no specific training exists for teacher educators” (p. 68) – there is indeed, no script. Like most other accounts of entry into the profession my transition represented personal and professional struggles which were largely dealt with in a private manner.

Teacher education had become a professional goal for me, set while studying for a Master of Education degree. I had successfully completed previous degrees; I had almost two decades of primary (elementary) teaching experience and, like so many others, had begun university teaching with highly regarded teaching credentials. I understood the importance of experience in learning; the personal qualities required, such as flexibility, innovation, responding to and instigating change; the roles of leadership and implications for self-development; the explicit and implicit curriculum; the frustrations associated with programs, processes and people; the importance of cooperation, collaboration and teamwork and the influences of critical incidents/events (Woods, 1993; Tripp, 1993) and the “teachable moments” (van Manen, 1990; Loughran, 2002) in that learning. My entry therefore, into the teacher education profession was quite unremarkable in many ways, and my assumptions about being successful in this role were based largely on the ways in which I had experienced teaching from a primary school teacher perspective. Generally, I felt that my previous experience had prepared me well for my new venture into mathematics teacher education and the issues linked to the transition process were not something I had initially or consciously considered. Although the impact of the ways in which my assumptions directly influenced my teaching is abundantly clear now, they were not clear at this stage in my teaching. Learning about teaching through “assumption hunting” (Brookfield, 1995) revealed that embedded assumptions are difficult to identify and even more difficult to alter. I must state, however, that at the beginning point in the study of my practice, I was quite aware of my assumptions about learning and teaching but had never sought, as an educator, to unravel those assumptions and explore their impact on my teaching.

Teaching Mathematics in Pre-service Teacher Education

For me, teaching mathematics in a university environment delivered some degree of academic freedom along with many initial curriculum challenges, however it was not until a number of years into my experience of teaching mathematics in the pre-service teacher education program that I began to feel a need to challenge my approach to teaching. One impetus for this self-challenge was inspired simply by one pre-service teacher's written comment at the conclusion of a semester where he wrote "practice what you preach". My initial response to this comment was "how dare he" and "what a nerve"! Feedback provided by pre-service teachers who had completed the mathematics units which I had previously taught generally reflected a high level of satisfaction. ("The assessment of the maths aids was very beneficial. Her feedback is excellent. I appreciate her efforts to give feedback on all assessments" (TB791, pre-service teacher, 2000) and, "I think the teaching and assignments are relevant and asks students to actively involve themselves in their own learning" (TB791 pre-service teacher, 2000). Why then, did I feel so affronted by one pre-service teacher's comment? In hindsight, this related to what Brookfield (1995) refers to as the "ten out of ten" syndrome; the often unachievable desire to connect with all learners in positive ways. It also reflected my assumption evident at this stage in my teaching, that positive pre-service teacher feedback represented success as a teacher educator.

My professional uneasiness continued. Clearly it became evident that I was required to be more than a classroom teacher, although at that point, I was not quite sure what the *more* meant. The formal student evaluation of teaching of the unit, TJ591 (Learning and Teaching Mathematics I), the first year Bachelor of Education subject, was also published at this time. The results of this evaluation confirmed some of my suspicions I held about my practice. The results (although representing only one means of assessment on the teaching of the unit), raised pertinent issues related to my clarity, intentions and general effectiveness as a teacher. For example, almost half of the pre-service teachers indicated that I had been unclear about what they were required to complete to be successful in the unit; half were neutral or disagreed about my ability to improve their understanding of concepts within the unit and overall, half of the pre-service teachers rated my teaching in the unit as either poor or satisfactory. Following an examination of pre-service teachers' feedback, it became obvious that although my teaching intention was that pre-service teachers would be constructing their own knowledge about teaching and learning mathematics through their own experience, the reality suggested something quite different.

Although I espoused and believed I was modeling (and indeed providing for) a social constructivist approach (Vygotsky, 1978) to learning about teaching, much of my practice was represented and interpreted by my pre-service teachers as being based on a transmission approach (Freire, 1970). In this way pre-service mathematics teachers' expectations of learning to teach as being formulaic, predictable and based on the acquisition of transmittable skills (Kincheloe, 2003) were

inadvertently being reinforced. I had unintentionally become a complicit provider and transmitter of knowledge, skills and practices and it was this revelation that led to the challenging of my *modus operandi* and raised questions about the efficacy of my approach to teaching about teaching: Who owned the learning? What followed was my focus on developing ways in which I could teach about teaching mathematics so that my pre-service teachers could learn about teaching through their experience, and not mine.

As a result of this preliminary research, I surveyed the pre-service teachers' wants and needs and I found that the pre-service teachers' responses highlighted a number of issues for me as their teacher educator. They sought: increased contact with schools and real-life teaching; experienced teachers and respected others (and recent graduates were requested to be incorporated more fully within the program); opportunities for developing relationships with school personnel and the planning and implementation of teaching activities; more peer teaching and planning; relevant assessment tasks and joint negotiation of criteria. However, it was not surprising to note that at this stage in their pre-service teacher preparation the focus for these pre-service teachers was on the how and what of teaching mathematics. This representation of teaching reflected teaching as a "craft"; a "repertoire of skills or competencies that accrue over time" (Hoban, 2004, p. 121) and in relation to mathematics teaching in particular, the desire was to know how to teach by use of examples and reference to my repertoire of experience. This also confirmed my belief that my previous teaching focus, although unintentional, was situating learning of and about teaching as a formulaic process in which skills and knowledge could be accrued and transmitted.

From these expressed needs, I developed a program of study for Semester Two, and reflective practices, as a means of enhancing understandings of teaching and learning, was integrated throughout the unit. The specific characteristics of my new approach to learning and teaching mathematics included:

- (1) Negotiation of the Learning and Teaching Mathematics units with each cohort, including the processes, content, learning and teaching experiences, and assessment and learning tasks
- (2) Introduction of partner teaching (commuting) where pairs (in the main) of pre-service teachers planned and taught mathematics lessons in schools for an approximately one hour session per week for up to six sessions
- (3) Introduction of systematic reflective practice as a means of unpacking learning using the ALACT framework (Korthagen et al., 2001)
- (4) An expectation that pre-service teachers would identify and explore critical incidents in teaching and learning
- (5) The creation of roundtable sessions as a formal, structured space for reflection.

In Table 1.1, I describe my original and my modified approach for the units Learning and Teaching Mathematics I and II.

All of this became the precursor to examining how these changes impacted pre-service teachers' learning about teaching and how understanding of teaching about

Table 1.1 Summary of comparison of original and modified approach to teaching and learning mathematics within the Bachelor of Education degree

Original approach	Modified approach
Predetermined unit description, content and assessment	Negotiated unit content, processes and assessment
Traditional lecture/tutorial format	Information sessions, forum and ‘roundtable discussions’
Lecturer assessment	Self, peer and lecturer assessment
On campus experiences (invited guest speakers for lectures)	Commuting partner teaching – on campus – in schools (up to six weekly) both primary/secondary schools
Summative reflection/evaluation (Student evaluation of Unit – SEU and Student evaluation of teaching – SET surveys provided and required by university)	Emphasis on experiences and systematic reflection in developing knowledge
	Introduction of ALACT model of reflective practice (Korthagen et al., 2001)
	Opportunities to reflect in a formative manner
	Critical incident questionnaire (Brookfield, 1995)
	Freewrite (LaBoskey, 1994)
	Weekly written reflections
	SET and SEU evaluations

teaching might be developed through this close attention to learning about practice.

My endeavour, therefore, in reconceptualising, restructuring and monitoring our learning within the mathematics units of the Bachelor of Education Program was to delve deeply into the day-to-day of our pre-service classroom experiences in order to understand more completely the ways in which our interactions promoted (or not) learning about teaching. This exposed for me the critical nature of the teacher educator/pre-service teacher learning relationship and prompted me to examine my taken-for-granted assumptions, beliefs and practices about teaching and learning.

Underpinning my reconceptualised approach to teaching and learning mathematics was the introduction of reflective practice; a practice which entailed both reflection in, on and for action. Reflection, rather than be taken as a *fait accompli* because, as Loughran (2002) suggests, reflection is something that “rings true for most people as something useful and informing” (p. 33), was to become integral, deliberate and systematic in this study. Reflection as a concept, a practice and approach within teacher education programs has been widely researched (Beck & Kosnik, 2002; Berry & Loughran, 2002a; Boud et al., 1985; Brookfield, 1995; Gore, 1993; Grimmer & Erikson, 1988; Hatton & Smith, 1995; Korthagen, 1985; Korthagen et al., 2001; Loughran, 2002; Munby & Russell, 1994; Schön, 1983, 1987), broadly interpreted and, often poorly enacted.

The framework I adapted and implemented with each of the four cohorts of pre-service teachers who participated in this study was based on Korthagen et al.'s (2001) ALACT model. Through reflection in and on practice, assumptions about teaching and learning (which more often than not had remained implicit and unchallenged), were investigated; and through this reflective investigation, multiple perspectives about teaching, and learning about teaching were identified.

Structures in Place and Happening

Reflecting on this early stage of a change process, it was evident that challenging the status-quo was confronting but also liberating as I was provided with a catalyst to see teaching and learning differently. Russell (1999) has suggested that for change to impact on pre-service teacher learning and ultimately student learning in school environments, approaches and practices in teacher education must firstly be re-evaluated. He states, "It is certainly not enough for teacher educators to advocate changes that they have not achieved in their own practice" (p. 1). In other words, teacher educators must challenge their *own* practices and assumptions and commit to examining practice, before they consider doing so with their students. Much has been revealed in teacher education research about the apprenticeships we have served as we learn about teaching, and these apprenticeships were once viewed as an impediment to progressing alternative views and practices as teachers. However, my research elaborated on the proposition that, through altered practices in teacher education, experience can be a "negotiated and interactive process rather than as one that is predetermined by teachers' [and pre-service teachers'] prior experiences" (Mewborn & Stinson, 2007, p. 1457).

Clearly, I was propositioning pre-service teachers; they were ultimately being asked to negotiate new ways of operating as a pre-service teacher and to have trust in me as their educator. This brought with it some element of professional risk for me, and required a great deal of support from pre-service teachers (especially the initial research cohort).

Developing My Conceptual Framework

The concept of reflection which underpins the research relates to Dewey's (1916, 1933) explication of reflection as being essential for the continuity of growth and the creation of knowledge. Although the definition of reflection remains contested within educational contexts (see, for example, LaBoskey, 1994; Loughran, 1996, 2002, 2004a; Smyth, 1989, 1992) and the outcomes of reflection based research studies have generated some disappointing results (Korthagen, 1985; Korthagen

et al., 2001; Hatton & Smith, 1995; Wideen et al., 1998), it has nevertheless been acknowledged that reflective practice in teacher education should be encouraged (Gore, 1993; Hatton & Smith, 1995; Korthagen et al., 2001; Loughran, 2002). There is a diversity of approaches to reflective practice and learning from reflection within teacher education, and this research will focus on the contributions of Schön (1983, 1987) van Manen (1977) and Korthagen et al. (2001) (in particular the ALACT framework).

The following schematic (Figure 1.1) represents the framework that has informed the nature and conduct of my research on teaching and learning from teaching. The outer circle represents teacher education and as such encompasses the beliefs, practices, assumptions, behaviours and ideals of learners within a teacher education environment. The two subsets relate to teacher educator teaching and pre-service teacher learning about teaching. The intersection of these subsets forms what I have named as, the crucible of inquiry and provides the focus for learning about teaching.

Traditionally, this intersection has been interpreted as a space largely represented by a transmission approach (Freire, 1970) to teaching. This research of my practice over time reveals the ways in which self-study can expand and reframe this space to incorporate: an extended understanding of what it means to teach; what it means to learn; and, what it means to learn about teaching and learning in teacher education. The specific actions which have been intended to contribute to this extended understanding include reflection (through such activities as ALACT, free-writes, critical incident questionnaires, written reflections); experience (through commuting partner teaching; roundtable reflection) and through the identification and exploration of assumptions and critical events, interactions and incidents in learning about teaching.

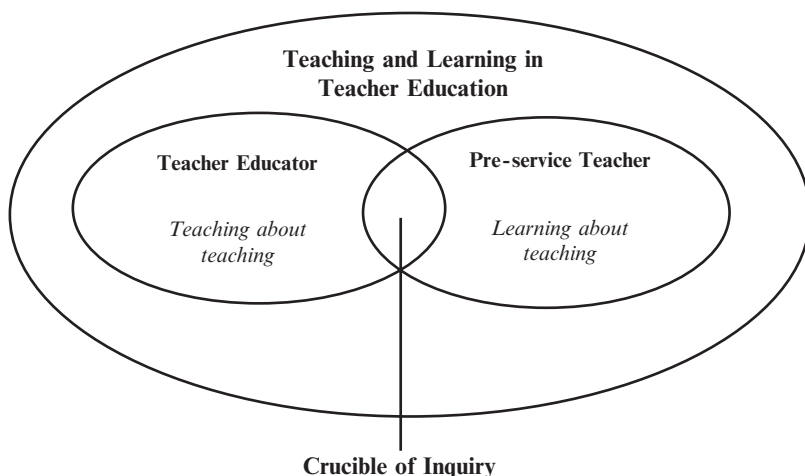


Fig. 1.1 Schematic representation of the conceptual framing

Assumptions as a Lens to Study Practice

The lens through which I examined my practice was assumptions. Understanding assumptions and the powerful ways in which they influence our practices as teacher educators and learners, through teaching, is a difficult process. In essence expressions of assumptions represent “who we are” (Brookfield, 1995). It is no surprise then that as we come to “hunt” (Brookfield, 1995) identify and examine our assumptions we do not always feel comfortable with what we find. Throughout this book I expose the many challenges, joys and frustrations of being confronted with new understandings about self and practices, and reveal my responses as I continued to make sense of my learning and teaching in mathematics pre-service teacher education. My focus on assumption hunting required me to dig deeply into the “tell of my classroom” (Fishman & McCarthy, 2002, p. 132), and my self; to uncover as it were, what had previously remained implicit. As Loughran (2006) suggests we need to “own up” to “the assumptions and taken-for-granted aspects of practice that quietly lurk in the depths of our sub-conscious” (p. 19).

Assumption Hunting

Throughout my research I systematically identified and explored our (pre-service teachers and my) often taken-for-granted, implicit and intangible directors of the ways in which we see and interpret our teaching and learning about teaching worlds. To assist in assumption hunting I referred to Brookfield’s (1995) categorisation of assumptions – paradigmatic, prescriptive and causal – and it was through using this framework for assumption categorisation that I was able to make deeper sense of my understandings and practices as a teacher educator. According to Brookfield, paradigmatic assumptions “bare the basic structuring axioms we use to order the world into fundamental categories” and as such represent the belief that “they’re objectively valid renderings of reality, the facts we know to be true” (p. 2). These paradigmatic assumptions represent my reality; of facts that I know to be true for me in my context and based on my experience as a teacher educator. An example of one of my paradigmatic assumptions is my belief that democratic practices should underpin the teaching and learning processes at university. Simply stated, each learner should have access to resources, experiences and opportunities for pedagogical growth.

Prescriptive assumptions “are assumptions about what we think ought to be happening in a particular situation ... Inevitably they are grounded in, and extensions of, our paradigmatic assumptions” (Brookfield, 1995, p. 3). Therefore, an extension of my paradigmatic assumption (above) which underpinned my new approach to learning about teaching was based on the introduction of pre-service teacher negotiation of the content, process and assessment tasks associated with the Learning and Teaching Mathematics units.

Causal assumptions represent yet another level of assumption identification and generally they “help us understand how the world works and the conditions under which processes can be changed ... they are usually stated in predictive terms” (p. 3). For example, one causal assumption I held and have systematically explored was that if I introduced structured reflective practices (i.e., Freewrites, LaBoskey, 2004) then pre-service teachers would develop a repertoire of reflection strategies to assist them in their learning about teaching.

Assumption hunting and identification was also an integral practice with each cohort of pre-service teachers and it was from this platform that we began to identify and unpack our assumptions and thereby scrutinise the ways in which these firmly held and often unchallenged beliefs affected the ways in which we operated as learners of teaching.

Chapter 2

Understanding the Underbelly: Making Sense of Theory

Introduction

When I introduce new mathematical concepts with pre-service teachers, I inevitably ask “What is the big idea?” and our exploration leads to a discussion that highlights multiple understandings about how big ideas are both perceived and articulated. As I write about understanding more about the underbelly of my thinking, I am drawn to once again ask “What is the big idea?” when discussing the role of theory when needing to articulate knowledge about my practice. With relation to a discussion about a new professionalism in education, perhaps it becomes pertinent to ask more about the nature of theory that is relevant to teacher educators and then examine the connection between teacher educator’s behaviours and their inner beliefs. In positioning teacher educators as producers of knowledge then we need to challenge traditional ideas of how knowledge is produced and disseminated (Berry, 2004b, 2007) and the foundation for this process is on the *having* of experience.

As a primary teacher, I rarely had recourse to reflect on theory and the ways in which theory had explicitly or implicitly influenced my teaching. I did things because I did them in much the same way as I believed things because I believed them; they just were. I did not have reason to challenge the status-quo. Teaching, for me, was a doing profession with both immediate and urgent needs and in retrospect, this belief transferred to my teacher education classrooms. In my discussion in this chapter of the role of theory, I will begin to untangle the ways in which my beliefs influenced what I thought pre-service teachers should know and understand about theory and developing knowledge, and about the ways in which articulating my own philosophy of learning began to influence my practice and beliefs as an educator.

Reflecting on my initial teaching of mathematics with pre-service teachers, I found that I taught about the “Big T” theorists (such as Dewey, Vygotsky, Bruner) and assumed that pre-service teachers would inevitably make learning connections and allow theory to underpin their understandings and practices as beginning teachers in meaningful ways (i.e., break down the theory-practice divide by attempts to make theory meaningful by understanding theorists and their theories). However,

following one pre-service teacher's comment in May 2002 ("I can remember all the theorists but I forget which theory goes with what theorist") I began to see that for some, understanding theory meant being able to adequately associate the theorist with the theory – a memory recall activity. To me this provided an indication that learning about what Korthagen et al. (2001) suggest is "Big T" theory, although informative, can remain peripheral to pre-service teacher learning, as it had not been connected in some meaningful way with personal experience. So what did I want pre-service teachers to know and understand about theory? By asking this question, I realised that I needed to articulate my own philosophy about understanding theory and in a sense, work backwards to what I thought pre-service teachers might need to know and understand about their developing theoretical understandings.

My Theoretical Platform: How Does Knowledge Develop?

I deliberately place boundaries around the extent of literature and argument in my discussion about the construction of knowledge and theoretical influences on the construction of knowledge in teaching. However, understanding more about the underbelly required me to situate myself somewhere in the conversation for as Lankshear & Knobel (2004) suggest constructivism, for example, can mean "all things to all people" and that "The current 'fetish' for constructivism, which has come to mean all things to all people ... must be challenged and then clearly defined" (p. 10). When working from a constructivist perspective it is generally understood that we create, rather than discover an external or already existing reality. As Whitaker (2002) proposes:

We do not awaken each morning and stumble through a predetermined and fixed reality. Each of us actively creates/constructs our own reality ... we discard some aspects, construe and reconstrue others, and in doing so, we constantly shape and re-shape our own reality.
(p. 76)

The nature of knowledge is highly contested (Shulman, 1986, 1987). The epistemological debate relates to the nature of knowledge and focuses on questions around "What is knowledge?" It has its foundations in philosophy and is often represented as a dichotomous argument. In other words, one interprets the construction of knowledge as resting on empirical (based in experience) or rational (knowledge attained by reasoned, logical thought) foundations. Confrey (1990) defines constructivism as:

[E]ssentially a theory about the limits of human knowledge, a belief that all knowledge is necessarily a product of our own cognitive acts. We can have no direct or unmediated knowledge of any external or objective reality. We construct our understanding through our experiences, and the character of our experience is influenced profoundly by our cognitive lens. (p. 108)

Contentions about the ways in which knowledge is constructed also extend to constructivism being described as a "one size fits all" picture of teaching and learning

(McCarty & Schwandt, 2000, p. 79); that all learners are cast in either the active or passive mould (McCarty & Schwandt, 2000, p. 80); and that the term constructivism is clearly fashionable but used loosely with no clear definition which then makes appraisal difficult. McCarty & Schwandt (2000) suggest that even when the epistemological characterisation of the type of knowledge has been agreed upon, there stills exists a void in the explanation about how this knowledge can be conveyed and that "... constructivists and constructionists err in their belief that a theory of best teaching can be derived from a theory of knowing" (p. 79).

One argument relating to suggested limitations of constructivism pertinent to my study is the notion that that all learners are cast as either passive or active in their learning. McCarty & Schwandt (2000) question the viability of creating such a dichotomy and ask:

How should a teacher judge a bright but shy student who never "actively" participates in class but presents excellent written work? Conversely, what of the student who compulsively participates in classroom conversation (an "active" student ...) despite the fact that this very activity seems to impede the student's effective learning of writing? ... there are just too many varieties of student. (p. 80)

Clearly then, within this constructivist debate there exists very little agreement, commonality and/or consensus about meaning related to constructivism, and as scholars argue, this "impasse" will be difficult to move beyond (Burbules, 2000, p. 308). In all of this debate, competing "realisms/claims/propositions", or "polarised characterisations" (Burbules, 2000, p. 310) are discussed and perpetuated (objective and subjective; knowledge as being created or discovered; individual, social). However, as a means of moving forward in understanding the constructivist debate, Burbules (2000) presents five propositions which, he states, cut across the "pro- and anti-constructivist positions" (p. 321). These are:

1. All understandings of the world partake of a social environment, even when they are formulated by individuals alone
2. Language provides the conditions for both understanding and mis-understanding
3. Our efforts at understanding the world always occur at a distinct time and place and under a set of circumstances that motivate and influence our choice of questions, methods, and reference groups for cross-checking our understandings
4. The underlying issue that divides the anti- and pro-constructivists is their attitudes towards difference and disagreement
5. Constructivism operates within a problem-based framework, in which one potential problem is always the status of one's constructions themselves (not being constructivist enough) (pp. 321–326).

In summarising his position, Burbules (2000) advocates that what is required is recognition that one operates "within and across existing views and differences" and one should proceed "with few preconceptions about what the end result of that shared inquiry will generate" (p. 325). Burbules's perspective is particularly relevant to my study as it captures for me the essence of an orientation towards learning and the social construction of knowledge within our mathematics learning and teaching environment. It relates to the development of pedagogy that rests on

challenging assumptions together with an exploration of multiple perspectives in coming to know in a socially constructed environment (Kroll, 2007).

As with many self-study researchers “Big T” social constructivist theory informed my understanding of the ways in which knowledge might be constructed within our mathematics learning environment. The theoretical framework which underpinned my (modified) practice with each cohort of pre-service teachers was based on a belief that reality is a personal construction that develops within a socially constructed context (Vygotsky, 1978). As such this approach to learning privileges the role of others in the social construction of knowledge. Within a socially constructed environment (Vygotsky, 1978) individual development is dependent upon social transactions within that learning environment, and cultural meanings are shared and internalised. This then creates opportunities for individual transformation, which, through the establishment of learning communities, might then become a “social transformation” (LaBoskey, 2004, p. 830). These types of interactions can be understood as “dialectically interacting moments” (Wertsch et al., 1995) whereby within the context, the individual and the environment interact to produce altered understandings, in a quest to seek “answers to questions regarding who we are, what we can know and how we should act” (McCarty & Schwandt, 2000, p. 85).

Two important elements were important for me in establishing new ways of learning with pre-service teachers in mathematics education. First, I believed that each individual must have an active (physical, cognitive, affective) role in learning, in constructing knowledge and in reflecting on that construction so as to transform their understanding and second, rather than view the learning and knowledge construction process in terms of dichotomies (whether they be object/reality, subject/object, theory/practice), learning was viewed as “intertwined and co-constructing” (Phillips, 2000, p. 131).

Learning within a socially constructed environment emphasises the role of significant others and Vygotsky (1978) highlights the importance of the zone of proximal development (ZPD) as it is within this “zone” that significant others can contribute to knowledge generation and transformation. He states that:

The distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. (Cole & Scribner, 1978, p. 86)

Identification of this ZPD was important to me in my teaching and this meant that I needed to know my pre-service teachers; I needed to continually work to discover the “zone” and I needed to be explicit about the role that others (peers, teacher educators, mentors) might have in establishing a deeper understanding of where we were all at, as it were. In making this zone explicit, learners can then be supported in their attempts to come to know through the establishment of communities of practice (Lave & Wenger, 1991); a place whereby learning is scaffolded by competent/knowledgeable others (an example of this which was evident in my practice was the development of Roundtable reflection sessions).

Understanding and articulating my theoretical platform meant that it was necessary to understand the “Big T” theorists; I needed to have experience with a focus on the theoretical underbelly and be conscious of the ways in which theory was being lived in my practice. I also needed to help pre-service teachers understand the “Big T” theorists and encourage them to identify their own theoretical platforms. I was guided in my learning and teaching by Korthagen et al.’s (2001) “Small t” theory. In this way, learning in teacher education for me, was based on a phronesis or a practical wisdom orientation and in this way, theoretical understandings develop through having relevant experience and this relevant experience, when reflected upon can lead to new knowledge.

Phronesis and Episteme

Discussions about the ways in which knowledge is developed in teacher education often refer to a phronesis-episteme dichotomy and put simply, phronesis refers to knowledge gained from an experiential, practical approach to practice and epistemic knowledge is that knowledge which is based on sets of propositions and has emerged from a theoretical base. An important question we need to ask is whether there is indeed a need for a knowledge base in teaching and if so, why, how and for whom might this base be created? In his article, *The Knower and the Known: The Nature of Knowledge in Research on Teaching*, Fenstermacher (1994a) argues for a knowledge base in teaching, and he also refers to the Aristotelian notion of “phronesis”, or practical reasoning (p. 45). In the time of Aristotle:

[Phronesis] concerned situations the nature and complexity of which were unknown beforehand: it dealt with them not by merely reapplying predetermined generic techniques but by recognising what combinations of actions are appropriate to complex or ambiguous situations. (Jonsen & Toulmin, 1988, p. 65)

Reflection is a key component which stimulates the development of phronesis, and hence is at the core of the learning process and the moral and ethical dimensions of teaching and learning about teaching that are valued (LaBoskey, 2004; Korthagen, 1985; Korthagen et al., 2001; Sachs, 1997). According to Korthagen et al. (2001) understanding phronesis as practical wisdom is based on a knowledge of “concrete particulars” which require a “grasp of generalities” (p. 25) and relies heavily on the “perceptual” rather than the “conceptual”. Korthagen et al. also state that:

[T]he ultimate appeal of phronesis is not to principles, rules, theorems, or any conceptual knowledge. Ultimately, the appeal is to perception. For to be able to choose a form of behaviour appropriate for the situation, above all, one must be able to perceive and discriminate the relevant details. (p. 25)

Therefore, knowledge as phronesis is based on a blending of theory and practice arising within the context of particular experience.

In contrast, episteme is an approach to the development of knowledge based within the positivist paradigm and as such is propositional in nature: propositional

knowledge reflects assertions that can be investigated and explained. Such propositions, according to Korthagen et al. (2001), learnt within this positivist approach, represent a “truth” and this truth, because it is considered part of, and consistent with, a theory then becomes “fixed, timeless and objective” (p. 23). Propositional knowledge developed in this way then becomes “purely intellectual insights, unaffected by emotions or desires” (p. 23). However, some difficulties associated with this approach to knowledge production relate not so much to the nature of the knowledge itself, or even the notion of one having “theoretical knowledge at one’s disposal” (p. 25) but rather with the users of the knowledge.

The problem of the knowledge user concurs with Kincheloe’s (2003) response to the limitations of the positivist approach which suggests that Western education, when based on this premise becomes a reductionist paradigm. This implies that “limited and correct meanings” (p. 9) can be derived from any phenomenon. In contrast, from a phronesis perspective, learning grows from experience and experience promotes familiarity and an increased ability to be able to assess situations and thereby choose the most appropriate courses of action relevant to the individual. Such insights which are derived through experience “cannot possibly be transferred” (Korthagen et al., 2001, p. 27). Therefore, within the context of teacher education, the role of the teacher educator becomes crucial. With reference to teacher educators, learning about teaching is not and should not be based on transference of concepts, or detailed explanations of rules and strategies about teaching with pre-service teachers, but rather the provision of assistance to the pre-service teacher in order to gain deeper understandings of his/her perceptions through questioning and guidance in order to explicate tacit learning.

A Knowledge Base for Teacher Educators

Berry (2004a) states, in positioning teacher educators as producers of knowledge, traditional notions of the ways in which knowledge is and has been produced and disseminated must be challenged.

In their review of the arguments relating to the identification and establishment of a knowledge base for teaching, Munby et al. (2002) cite research which identifies the complexities associated with the ways in which such a knowledge base may be created and understood. Other researchers, however, put forward the claim that defining a framework for a knowledge base of teaching is both distorting and/or limiting (Lather, 1986), since it cannot fully encompass the moral (LaBoskey, 2004); the personal (Liston & Zeichner, 1987); the political (Donmoyer, 1996) nor the affective character of such knowledge. Hamilton proposes that this base is not determined by a set of skills but rather it serves as an “anchor, a point where the social, moral, political personal and emotional fit together” (2004, p. 397). Understanding the creation of a knowledge base for teaching from this perspective is not new (Tickle, 1999) and according to Korthagen (2001) implies that teachers must be helped to become more aware of the connection between the professional

and the personal in learning about teacher education (Kelchtermans, 2005). The development of experiential knowledge underpins this approach to teacher educator knowledge.

Experiential Knowledge

Traditionally, the effectiveness of teaching in pre-service teacher education has been measured largely by reference to propositional statements which reflect an emphasis on knowledge *for* teaching. However, aspects of the new professionalism in teacher education emphasise that one must consider not only knowledge for teaching, but knowledge *in* and knowledge *of* teaching, as it is through understanding a combination of the ways in which knowledge is produced that one can come to understand more about what constitutes a knowledge base of teaching. Rather than view the production of teacher knowledge from a rigid, skill based and pre-determined perspective or as propositional and theoretical, Carter (1990) proposes that such knowledge is “experiential, procedural, situational and particularistic” (p. 307) and that in order to understand its development, experience must be unpacked (Munby et al., 2002, p. 887). Therefore, unpacking experience enables one to understand how the experience has contributed to a developing knowledge base of teacher educators.

Key constructs related to teacher educator knowledge relevant to my study include reflection (Korthagen et al., 2001; Schön, 1983, 1987) and the authority of experience (Munby & Russell, 1994) which presupposes that teacher knowledge viewed from this perspective is “more contextual than categorical” (LaBoskey, 2004, p. 822). Therefore in developing an understanding of what might constitute a teacher educator’s knowledge base, one must firstly consider knowledge for, in and of practice.

Knowledge for, in and of Practice

My research draws on the views exemplified by Cochran-Smith & Lytle (2004) who propose that a knowledge base for teacher educators is not only desirable, but essential, as in articulating learning more is known and shared about what constitutes this knowledge base. In this way, teacher educators are required to explicitly consider elements of experience which bring attention to “issues that impact teaching and learning [which] are brought into focus in different ways and at different times in order to shape the outcomes of teaching and learning” (Loughran, 2006, p. 76). By identifying and articulating this knowledge, Loughran asserts that, “that which may once have appeared shapeless and chaotic actually contains patterns” (2006, p. 76). Therefore, by explicating the learning gained from a systematic examination of experience as a teacher educator, one contributes to a broader discussion about what those patterns might be.

There are multiple ways of understanding what is meant by the knowledge base of teaching. One way is by reference to the research of Cochran-Smith & Lytle (2004) who describe “knowledge-for-practice”, “knowledge-in-practice” and “knowledge-of-practice” (p. 611). An initial inquiry into knowledge-for-practice provides the foundation by which knowledge in and of practice can be further understood. Knowledge-for-practice refers to the production of formal knowledge (Fenstermacher, 1994a; Richardson, 1997b) and constitutes what has been traditionally referred to as “the knowledge base” for/of teaching/teacher education. As such this form of knowledge reflects the ways in which competent practitioners deal with content matter and this knowledge base represents effective strategies practitioners employ to solve problems in practice. It could be suggested that with reference to teacher educators, much of their experience in learning about teaching emanates from this knowledge-for-teaching position as this was the dominant paradigm in their teacher education preparation.

Knowledge-in-practice represents what many researchers have named as practical knowledge (Cochran-Smith & Lytle, 2004; Grimmer & McKinnon, 1992; Russell, 1997). Challenging one’s own assumptions and reconsideration of one’s beliefs and actions are integral to developing knowledge-in-practice.

Knowledge-of-practice “treat[s] the knowledge and theory produced by others as generative material for interrogation and interpretation” (Cochran-Smith & Lytle, 2004, p. 614) and in this sense outcomes of research associated with knowledge-of-practice connect with the broader social, political and cultural conversations. One of the key elements of knowledge-of-practice is its link with the professional as a life-long learner who attempts to problematise her/his practices as well as that of others, and therefore continually renews what it means to teach and learn about teaching. Cochran-Smith & Lytle (2004) propose that self-study of teacher education practices is one form of practitioner inquiry which generates such knowledge-of-practice.

It becomes clear that, as Berry (2004a) proposes, the traditional ways in which knowledge is seen to develop in teacher education must be challenged. One must move towards understanding the ways in which knowledge for, of and in practice intersect in teaching and learning about and from teaching, and identify knowledge that is not only propositional in nature but that which is developed through *phronesis* – or practical wisdom – gained from experience. In many ways my research seeks to understand more about the ways that knowledge for, of and in practice intersects with my teaching and learning about and from teaching.

Summary

Articulating my theoretical positioning has been important as it helped me to see more about my assumptions and understand more about the way that I have acted (and continue to act) as a teacher educator. Defining a theoretical framework identifies the drivers of my thinking and practice. My questioning stance encouraged me to constantly ask: What is guiding my work and why am I responding in the ways I do?

Chapter 3

Self-Study of Practice

Learning to teach – like teaching itself – is always the process of becoming: a time formation and transformation, of scrutiny into what one is and who one can become.

(Britzman, 2003, p. 31)

Introduction

Given the ongoing debate about the relevance and effectiveness of teacher education programs, it becomes even more important for teacher educators to assess, and even reframe their roles as educators. Calls for teachers to reflect on practice, however, are not new. Stenhouse, as early as 1975, advocated that teachers research their practice in an attempt to better understand their own practice and therefore understand classroom contexts in meaningful ways. However it is particularly during the past decade that calls for teacher educators to reflect and take a research stance to their work have arisen, and the Self-Study of Teacher Education Practices (S-STEP) represents an organised effort to formalise the work of teacher educators who are engaged in researching their practice. According to Loughran (2004a), self-study practised by teacher educators is an “empowering way of examining and learning about practice while simultaneously developing opportunities for exploring scholarship in, and through, teaching” (p. 7).

Self-study is an approach to research which enables teacher educators (and other professionals) to reflect on, and scrutinise practice and assumptions about learning, so as to improve pedagogy and to challenge the status-quo within the profession. Underpinning all of this is the intention to further explore deeper understandings of the why of practice (Feldman, 2002). However, as with notions of reflection and reflective practice, defining the nature of self-study research remains complex and “open to individual interpretation” (Schuck, 2002, p. 327). Self-study is defined in multiple ways: as a process to research teacher educator practice and pre-service teachers’ perspectives from the “inside” (Hamilton & Pinnegar, 1998); as a distinct and unique methodology employed by teacher educators to research practice (Hamilton & Pinnegar, 1998); and as systematic and rigorous inquiry into practice, often instigated by a problem, which then leads to the theorising of practice and a deeper understanding of the why of teaching and learning about teaching and learning

(Loughran, 2003; Tidwell & Fitzgerald, 2004). Self-study may involve study of an individual, a program or an institution but common to all studies is a challenging of the status-quo in teacher education through rigorous and systematic inquiry into professional practice. A further requirement of self-study is dissemination of research outcomes to the educational community for critique and appraisal (Loughran, 2004a; Loughran & Northfield, 1996; Schuck, 2002).

Despite its relatively recent emergence as an approach to researching practice, self-study has already impacted and continues to influence the professional practice of teacher educators, locally, nationally and internationally. The significance of the self-study movement in impacting the work of teacher educators, was notably referred to by Zeichner in his AERA 1998 Division K Vice-Presidential address as, “probably the single most significant development ever in the field of teacher education research” (1999, p. 8). The initial concept of the self-study of teacher education practices, Special Interest Group (SIG) was established at the 1992 meeting of the American Educational Research Association (AERA) by a small number of teacher educator academics who came together out of a mutually felt need to question teacher education beliefs and practices in a systematic and rigorous manner with the aim of enhancing learning outcomes for all (i.e., themselves as teacher educators, prospective teachers, and the future students of these prospective teachers).

Self in Self-Study

Self-study is an approach which integrates reflection as a tool to view practice from varying perspectives (Dinkelman, 2003; Kosnik, 2001). Hamilton & Pinnegar (1998) propose, it is:

[T]he study of one's self, one's actions, one's ideas, as well as the 'not self'. It is autobiographical, historical, cultural, and political and it draws on one's life Self-study also involves a thoughtful look at texts read, experiences had, people known and ideas considered. These are investigated for their connections with and relationships to practice as a teacher educator. (p. 236)

My self-study focused on researching teaching from an insider perspective and I used reflective practice as a conduit for understanding more about assumptions and beliefs, and the impact of these on my practice. Therefore, an initial focus for me needed to be on the self within a teaching context. A caution which has been articulated by self-study scholars has been the identification of “a romantic tone” which might emerge “when researchers focus too closely on their own learning” (Bullough & Pinnegar, 2004, p. 319). Therefore, throughout the conduct of my research I needed to constantly ask: What concept of self is operating within my self-study and what are the limitations of my study which is conducted by the self of the self?

Bullough & Pinnegar (2004) propose that in order for pre-service teachers to develop voice and therefore a sense of self/selves, teacher educators must “speak in a strong voice for the sake of their students” (p. 335). In essence then, teacher

educators need to work on developing a clear understanding of who they are and how they operate within their world context, thereby instilling a confidence for pre-service teachers to do the same, i.e., finding their own voice.

Characteristics of Self-Study

Self-study is increasingly defined by parameters which include characteristics rather than by an agreed upon definition and scholars identify characteristics which are evident in self-studies, as markers of this research paradigm. Guilfoyle et al. (2004) propose that there are four characteristics of self-study research. These characteristics include: (1) human interaction; (2) the understanding that the “researcher and researched are temporal, indeterminate and changing”; (3) an understanding that there is an obligation to discover all that can be known about the students’/researchers’ context, background, goals, social relationships, purposes and learning; and (4) the belief that “humans have an impact on each other and the content and processes in which they are engaged” (p. 1112). These characteristics assume that professional qualities must be enacted in order to conduct self-study.

These qualities include an ability to recognise (and in some cases, learn to expect and/or tolerate) temporality and the way in which changing contexts, people and events inevitably impacts research. It is acknowledged that during an era whereby education reform is seen as being inadequate in terms of recognising and implementing change in teacher education, self-study provides a means by which teacher educators can immediately instigate research and respond to authentic problems in practice with an aim of (sustainable) and effective improvement in pedagogical practice. As such the process is underpinned by a cycle of identification, action, reflection, response, evaluation and (re)implementation, and the realisation that moments cannot be transfixed in time.

A focal point in self-study research is the establishment of relationships in learning about teaching, and a belief in the importance of understanding how relationships with others impact on the ways in which learning about teaching is experienced and how emergent knowledge is constructed (Vygotsky, 1978; Social Constructivism). An extension of the establishment of professional relationships is the notion of professional responsibility; i.e., there is an obligation to identify aspects of the context, learners, assumptions, goals and beliefs held by learners which will necessarily impact on research. These four characteristics of self-study research (Guilfoyle et al., 2004) provide what could be interpreted as broad guidelines or an ontological lens for approaching self-study research.

As a means of further refining these characteristics to my research context I referred to LaBoskey’s (2004) five characteristics of self-study which include:

1. An initiation by, and focus on self
2. Improvement – aimed
3. Interactivity at one or more stages throughout the process

4. Utilisation of multiple, mainly qualitative methods of data collection, analysis and representation
5. Conceptualisation of validity as validation thus endeavouring to advance the field through the construction, testing, sharing and re-testing of exemplars of teaching practice (p. 175).

Although there is an initial focus on self there is an obligation for what LaBoskey (2004) suggests as interactivity throughout the research process. This interactivity includes connections with colleagues, critical friends, pre-service teachers and interested others. Yet another interpretation of interactivity is collaboration.

Collaboration in Self-Study

Self-study researchers refer to the collaborative nature of self-study (Kosnik, 2001; Loughran, 2004a; Loughran & Northfield, 1996; Schuck, 2002) and state that for self-studies to maintain credibility, validity (Feldman, 2003) and trustworthiness, involvement of and with others, is imperative. ‘Others’ might include those involved in the formulation and implementation of the study and those that assist in the verification and the ongoing data interpretation. LaBoskey (1998) highlights the importance of others but also emphasises interaction as opposed to collaboration, suggesting that: “*interactive* may be more apropos as a referent for multi-party self-study than *collaborative*, especially because, in many cases, the researchers are not just interacting around an external data set; the interactions are the data set, or at least part of it” (p. 151). Suffice it to say that, most researchers in this field identify some form of connection with others as an essential prerequisite for self-study and imperative for me in my research was the establishment of collaborative relationships with pre-service teachers.

Further to an expectation of collaboration, or interaction, frameworks for focusing on self-study as a methodology have been suggested (for example, Bodone et al., 2004; Feldman et al., 2004). In compiling guiding frameworks for self-study researchers they suggest that further questions need to be developed about the outcomes of the research and that the researchers need to be critical of themselves in terms of their roles as teacher educator-researchers.

In essence, self-study, as a form of teacher educator research, recognises the value of experience and reflection as contributors to the knowledge base of educators, which in turn contributes to ways of knowing. These ways of knowing develop over time and are the result of often “messy and non-linear” pathways (Mitchell, 2002, p. 252), which influence the understandings associated with learning more about the learning, in contrast to an emphasis on the practice of teaching. Increased understanding of teacher education conducted within the context of teacher education, by teacher educators is a distinguishing feature of self-study. However, as Berry (2004b), Elijah (2004), and Mitchell (2002), for example, caution, teacher-researchers can experience a sense of vulnerability as a result of

conducting self-study research as in making public their private experience, there exists in this exposure, opportunities for judgment and challenge from the profession. Given that self-study researchers risk feeling vulnerable and exposing their pedagogical ‘failures’, one might ask, “Why do self-study?”

Away from a Traditional Paradigm

I wanted to move away from a traditional ‘transfer of knowledge’ paradigm in my mathematics education classes and move towards a self-study approach where my (our) taken-for-granted ways of operating and inherent belief systems (or assumptions) were provoked. However, identification and challenging assumptions has implications for practice as a teacher educator and pre-service teachers and these implications have been revealed in self-study research (see, for example, Berry, 2004a, 2007; Russell, 2004; Senese, 2002). Self-studies by teacher educator researchers provide exemplars whereby the aim is to more closely align their practice and beliefs so that congruity in terms of intended and actual outcomes could be enhanced. In doing so, these teacher educators were required to identify their assumptions which inherently directed their practice, and then establish the ways in which congruency (if any) with pre-service teachers was being achieved.

For example, Berry (2004a) identifies six tensions which arose from the study of her practice and one of these tensions refers to “telling and growth” (p. 1313). This tension relates, for example, to Brookfield’s (1995) category of prescriptive assumptions for it reflects what we [as educators] think ought to be happening; in this case, within teacher education classrooms. This tension – learning to balance the teacher educator’s “own desire to tell their student teachers about teaching with their understanding of the importance of providing opportunities for students to learn about teaching for themselves” (2004a, p. 1314) – casts into stark relief the dilemmas faced by teacher educators identifying and acknowledging that telling will no longer suffice. In examining the impact of not telling, Berry identifies repercussions in terms of the ways in which not telling, for example, might influence pre-service teacher evaluations of teacher educator’s teaching. One assumption which underpins many pre-service teachers’ beliefs about learning to teach rests on the transmission, or telling model. When teacher educators do not tell, or withhold, by way of attempting to create balance between telling and providing space for pre-service teacher self-directed learning, evaluations from pre-service teachers might be negative and therefore impact on overall evaluations of teaching. Negative evaluations have implications for teacher educator employment and ongoing tenure within institutions. The questions Berry proposes represent knowledge about practice gained from a phronesis approach to teaching. She suggests that closure and resolution is not always possible, nor in some cases, is it the ultimate outcome. It is living through and with tensions that one can further acknowledge needs for

balance in identifying and accommodating multiple agendas in teaching about teaching.

It is inevitable that teacher educators and pre-service teachers who work from an assumption challenging or an understanding tension base for pedagogical inquiry will experience levels of frustration, “discomfort, uncertainty, [and] restless inquiry” (Kincheloe, 2003, p. 44). This point that has been well made, for example, in the work of Lyons & Freidus (2004, p. 1100) who report on both teacher educator and pre-service teacher experiences with the implementation of reflective portfolios in self-study. Initial levels of enthusiasm of those experiencing the changes as a result of self-study research are replaced by frustration as so often, learners need to learn to tolerate states of disequilibrium. However, as Bullough & Pinnegar (2004) propose, a disintegrative state will exist until the new knowledge has become integrated and new routines are developed.

Self-study holds appeal for those involved in teacher education (and other professions) as a means of researching practice, with reflective inquiry as the conduit for learning about teaching. However, why did I and why do other teacher educators (and other professionals) choose self-study when it demands intensive personal and professional commitment; rigorous and systematic data collection and analysis; an interruption to routine and habitual practices, which in essence (re)creates harmony and zones of comfort; and exposure of vulnerabilities as a teacher educator?

Why Self-Study?

My research is an example of self-study research that has arisen from my concerns to better understand and improve the relationship between my teaching about teaching and my students learning to teach in the mathematics units of the Bachelor of Education Course. Choosing to conduct a self-study is my deliberate attempt to understand more about practice (my own and that of my students) and to better understand outcomes of practice in the context of a changing and complex world. In one sense, this study is a response to LaBoskey’s (2004) call for self-study researchers to identify and respond to “why” questions related to understanding and researching practice:

The purpose [of self-study] is to improve that practice, in this case teacher education, in order to maximise the benefits for the clients, in this instance pre-service and in-service teachers and their current and future students. Thus, the aim for teacher educators involved in self-study is to better understand, facilitate, and articulate the teacher-learning process ... it is enormously complex, highly dependent on context and its multiple variations, and personally and socially mediated. (p. 858)

Increasing understanding of teacher education conducted within the context of teacher education, by teacher educators has been, and continues to be, a distinguishing feature of self-study. Although other methods (such as action research, ethnographic research) are also approaches used to research the work of teacher educators, it is the insider perspective, the ongoing, and ever-evolving study of

practice-within-context that is identified as paramount to self-study (LaBoskey, 2004). The development of understanding about teaching and learning, reframing, and new knowledge which emerges from this practice can be transformative in nature and this new learning is then evidenced in practice.

By definition the conduct of self-study research is open to individual interpretation. Researchers conducting self-studies speak of systematically gathering and analysing data in an ongoing way so that authentic problems and issues related to practice are dealt with; of partnerships and collaborative practice which offer critical feedback; and of sharing knowledge with others in educational research (and increasingly other disciplines) and thereby articulating the learning they have gained from examining practice. This point is crucial. Articulation of knowledge is essential if we, as a profession, are to better understand our practice and the effect that our practice/s has on us and on those who are preparing to be teachers. Crucial for me in my learning about being a teacher educator was the identification and articulation of the theoretical underpinnings of my approach to practice and the documentation of the processes I introduced and modified with my cohorts of pre-service teachers, with the ultimate aim of improving teaching and learning.

Chapter 4

Designing my Self-Study Research

Introduction

My research was undertaken with four cohorts of pre-service teachers at varying stages of their Bachelor of Education Degree at the University of Ballarat, Victoria and the content area was Learning and Teaching Mathematics I (First year, TJ591) and Learning and Teaching Mathematics II (Third year, TJ792). I conducted this study over a period of three years beginning in June, 2002 and concluding in December, 2004. The pre-service teacher cohorts constituted both males and females – averaging 20–25% males; 75–80% females – the majority of whom were Caucasian. The percentage of mature age pre-service teachers (i.e., those who are non-direct school leavers and have generally had workforce experience), represented approximately 20% of the total number of pre-service teachers in each cohort. The average cohort size was 85 and all pre-service teachers referred to in my study have been allocated pseudonyms.

Researching my practice using self-study as a methodology meant that I needed to question the intent and the process of my research. What data gathering techniques would prove to be most beneficial as a means of meeting our needs as learners about teaching? (I needed to be critically selective). What might the data reveal about new understandings of learning about teaching? (I needed to analyse data in a systematic and ongoing way). What was the research telling me about me? (I needed to challenge my assumptions). What was the research telling me about the ways in which the pre-service teachers were experiencing their learning? (I needed to focus on teaching so that pre-service teachers were learning through their experiences, and not mine). I developed a semi-structured but flexible framework for data collection and selected a range of data gathering techniques which I felt would initially meet my self-study research needs. (For an overview of the research design/data gathering tools, see Appendix 1). Although I began with a framework, as my study progressed I modified my data collection and the tools I used to collect data and this was as a direct response to my need to understand learning in deeper ways.

In this chapter I describe the ways in which I structured, organised and analysed my data. I illustrate the ways in which I designed specific data gathering tools as a matter of need in order to more deeply understand aspects of practice (for example,

my development of the multiple perspectives tasks which were designed as a tool through which I gained a deeper understanding of the multiple perspectives on particular roundtable interactions).

Types of Data Gathering Techniques

The data gathering techniques used in my self-study research included:

1. Audio-taping and written field notes of selected roundtables
2. Pre-service teachers' written work (Freewrites; Critical Incident Questionnaires; Roundtables and Roundtable reflections; Post-teaching written reflections)
3. Multiple perspectives tasks, where a number of pre-service teachers were invited to respond to critical interactions identified within the roundtable sessions, along with the teacher educator
4. Pre-service teacher email communication (Cohort Two; Semester Two, 2003); pre-service teachers were required to email the reflection of the ALACT summary (Korthagen et al., 2001) post-teaching. These reflections were then collated and analysed
5. Teacher educator journal entries, and field notes
6. Assumption writing and examination (Brookfield, 1995).

Roundtables

Roundtables (Brandenburg, 2004b) replaced traditional tutorial sessions which, more often than not, had been previously based on teacher educator identification of pre-service teacher needs; teacher educator instigated discussion and teacher educator assessment of the learning. The sixteen roundtable sessions (over the three years of my study) were physically constructed as such, each averaging twelve pre-service teachers per table. They provided opportunities for pre-service teachers to reflect on, and make sense of, their teaching experiences in schools using the ALACT framework as a guide to discussion. Although the roundtable sessions were designed to encourage the development and articulation of pre-service teachers' voices, they became a major catalyst for me in learning more about my pedagogy.

In gathering the data from roundtable sessions, I relied on audio-taping and transcription, and/or field notes which were constructed in detail. I transcribed data from the roundtables in a Four Stage process (I have included details of this process in Appendix 2) but simply, during the initial transcribing stage I wrote notes in brackets which highlighted an issue for me, or added further meaning or contextual information to the conversation. These additional notes emphasised terms used in the dialogue; mood, facial expressions; tone, in terms of agitation, defensiveness; agreement which was noted by pre-service teachers nodding; and generally my interpretation of the level of emotion displayed in representing that dialogue. The Second Stage involved a form of tabulation whereby the transcript was then allocated a reference

and a line number; Stage Three involved coding whereby the transcript was coded and categorised and Stage Four involved the categorical analysis where each transcript was read to identify “relationships between data items” (Lankshear & Knobel, 2004, p. 271) which then were refined to a number of categories.

Roundtable Field Notes

Another form of data collection I consistently used included taking field notes which I wrote as the roundtable sessions were being conducted. The combination of audio-taping and/or taking field notes became important for a number of reasons. For some pre-service teachers, the audio-recording of roundtable sessions may have been confronting and in this sense, contribute to the silencing of particular pre-service teachers and influence the manner in which some might have participated. At the same time, in my role as participant researcher, audio-recording of the session/s allowed for an increased focus on participation within the session and provided rich data which could be revisited and analysed from multiple perspectives over time. Writing field notes during sessions increased my responsibility to take careful notes so as to represent the nature of the discussion as accurately as possible. During these sessions, pertinent statements were transcribed directly as they were spoken.

The data from the roundtable sessions were collated in summary form immediately afterwards and the key ideas were presented to each class at the beginning of the roundtable session during the following week. My purpose for providing summaries to the pre-service teachers was as a validation exercise to ensure that my interpretations adequately and accurately represented a snapshot of the experience of the main ideas of the roundtable sessions. It was through analysing data from the roundtable reflection sessions that so much of my learning about teaching in teacher education emerged, and as I stated in my introduction to this book, examining everyday classroom interactions (post session and some months later) led me to uncover profound new learning as a teacher educator.

Pre-service Teachers’ Post-Roundtable Written Reflections

Written reflections were also completed by the pre-service teachers at the conclusion of each roundtable session. Pre-service teachers were required to summarise their learning from the session and these reflections formed one element of their professional portfolio, an assessment item for this subject. In the initial stages of my research with the first two cohorts of pre-service teachers, roundtable reflections were an assessable task; one which was completed post-session and included as part of the professional mathematics portfolio which was developed throughout the semester. However, following discussion with the initial two cohorts it was decided that for subsequent cohorts, although the roundtable reflection would remain a requisite in terms of reflecting on practice, it would no longer be an

assessable task. In this way pre-service teachers could complete the reflection without being influenced by the pressure of formal assessment.

Pre-service Teachers' Post "Buddy Teaching" Written Reflections

Pre-service teachers provided written feedback from their mathematics teaching sessions in schools and I include an extract (below) as an example. This extract was selected as it provides an insight into Nellie's thinking and her reactions to largely unanticipated events in her class and parallels the event with her thinking and emotions at the same time. The written reflections also provided a springboard for discussion during roundtable sessions.

What an absolute nightmare! Plan a lesson using MAB [multibase arithmetic blocks] and assume a basic knowledge of place value. Wrong! No MABs and never seen a place value mat before. What do you do? I panicked! I felt myself drowning in this lesson. It wasn't when John started crying because the pressure of oral counting was too much that tipped me over the edge. It was when I held up a place value mat and said "who has seen one of these before?" and expecting them all to say "me" and they all shook their heads and stayed silent that I got worried...

Use the whiteboard, that's an idea! Talk about the tens and ones. Children at the back aren't listening. They're fighting over the place value mats, worried because there are three mats and two children. Who will share and what will Genna do without a partner? Can she have a mat all to herself? Maybe the maths lesson should have been about this?

Finish explanation: tell them to use the bundling sticks. Okay, Richard [teaching partner] your turn to take over, I've had enough. "What do you want me to do?", asks Richard. "Try and explain the tens and ones" I say looking for a hole in the floor to swallow me up ... Little by little the light gets clearer and the children are working away. I even manage to call John from his foetal position under the table to go and do some work despite his accusations of maths being stupid and us being stupid and everyone being stupid.

Quarter to three and let's pack up, time for a game of heads and tails. Surely not much else could go wrong? Second note to self: never make these kinds of assumptions. Tim goes out first in all three games. Hurls self to floor and throws tantrum. Children all take a step back... "It's only a game" I manage to say quite feebly, over his sobbing, "no need to get so upset". The kids look at me like I am a monster. I look at Richard and wonder if we could make anybody else cry today.

(Nellie, Tuesday, September 17, 2002)

Another means by which pre-service teachers' learning from experience was captured was through the multiple perspectives tasks.

Multiple Perspectives Tasks

The development of the multiple perspectives task (Brandenburg, 2005b) is an example of the way in which self-study methodology prompted me as a teacher

educator-participant researcher to identify and respond to critical interactions which arose from roundtable reflection sessions. In this way, I made meaningful connections between “pedagogy and research design” (LaBoskey, 2004, p. 842). The multiple perspectives task was developed as an extension of my roundtable data collection and included the completion of a reflective activity aimed at providing multiple perceptions on critical incidents, events and/or interactions. I felt that I needed to understand some interactions more deeply as it became obvious to me that while I was deliberately focused on aligning my intentions with a reality of how my teaching was being experienced by pre-service teachers, there were multiple interpretations.

The multiple perspectives task involved the following process. Up to four pre-service teachers were invited to complete the multiple perspectives follow up task; participation was voluntary and the pre-service teachers were not compelled to complete the task. In both cases, two of the four pre-service teachers accepted. I randomly selected the four pre-service teachers and the number of respondents was capped at between two and four as this allowed me to examine a sample of perspectives in detail. Pre-service teachers in each instance had received their final grade for the unit during the previous semester and therefore, they were not advantaged nor disadvantaged in terms of their final unit grades.

Excerpts from the transcribed data (Roundtable Eleven, August 2003) and the field notes data (Roundtable Fifteen, August 2004) were distributed to each participant four months post roundtable session. Each participant, independently, was asked to respond to the lines of data as transcribed from the session. The prompts for the task included a question: “What were you thinking, feeling or wanting at this time?” Individual responses were then collated. I have included an example of one line of a multiple perspectives task which was completed following Roundtable Fifteen (August 2004) (Table 4.1).

While fascinating and informative in terms of others’ perspectives and consequently enriching my understanding of pedagogy, the data also provided some confronting insights into the ways in which interactions (particularly) were being perceived by all learners during roundtable sessions.

Pre-service Teachers Focused Written Tasks

Integral to my modified approach to teaching and learning mathematics was the inclusion of structured and ongoing reflection and I anticipated that by offering a variety of reflective modes that a richer understanding of the learning might emerge for these pre-service teachers. The written tasks included ALACT reflections; free-writes and Critical Incident Questionnaires (CIQ, adapted from Brookfield, 1995). (In Chapter 5, I focus on each of the types of reflection and analyse the impact on learning).

Table 4.1 Example of multiple perspectives task from field notes Roundtable Fifteen, August 2004

	Roundtable in-session notes	Robyn	Dee	Justin
R15.504	Justin: “We’re teaching students, not subjects”	Justin – connecting with the learner; where the emphasis should be in teaching and learning	The boy on the floor is reminding me of this. He is the human as learner	This thought had been in the back of my mind for some time and I felt by sharing it, peers might better understand that our work in the classroom is not about ourselves and our own accolades – or about teaching according to the content of a KLA, [Key Learning Area] but it is about the students and their learning/ needs

The ALACT Model of Reflective Practice

The ALACT model reflects the Deweyan perspective of the integral nature of experience in learning, and the interrelationship between experience and reflection to enhance learning. This approach to reflection and reflective inquiry is underpinned by an element of deliberation; both philosophies (Dewey and Korthagen) represent systematic approaches and each can be represented as an “alternation between action and reflection” (Korthagen et al., 2001, p. 43). The ALACT cycle (Korthagen et al., 2001) was introduced with each cohort of pre-service teachers as a tool or structure for reflecting on practice. The idea of introducing such a tool was in response to the findings obtained from my early study which indicated that pre-service teachers found open and unstructured reflection tasks difficult, irrelevant and generally written for a specific audience.

The ALACT model provided a structured framework by which pre-service teachers might reflect on their experiences. The ALACT reflective cycle includes five stages which include: Action; Looking back on the action; Awareness of essential aspects; Creating alternatives, and Trial. This series of phases is referred to as “The Inner Cycle”. An additional “Outer Cycle” offered a guide for me as teacher educator, working with each phase of the inner cycle, to assist with the process of reflection within this framework. The corresponding teacher educator expectations are as follows: Phase One: A – Action – help the learner in finding useful experiences

to reflect upon; Phase Two: L – Looking back on the action – offer acceptance, empathy, genuineness, concreteness as those experiences are explored; Phase Three: Awareness of essential aspects – continue to offer acceptance, empathy, genuineness, as well as confrontation where necessary, provide help with generalising experience, utilising the “here-and- now”, offer help in making things explicit with the learner; Phase Four: Creating alternative methods of action – offer all the previous skills and help the learner in finding and choosing solutions; Phase Five: Trial – help in continuing the learning process. Additional teacher educator skills, identified by Korthagen et al., which are desirable for effective learning within this cycle, include keeping silent, emphasising and taking advantage of the learner’s strong points and assisting the learner with the process of learning to learn. Both the Inner and the Outer Cycle are depicted in Figure 4.1.

This framework, by its cyclical nature, enabled both pre-service teachers and teacher educator to identify a useful experience for deeper examination and employ a consistent strategy as a means of unpacking the experience; identifying essential aspects; considering alternative methods of action which then ultimately informs subsequent action. The application of the “Outer Cycle” for me in working with pre-service teachers enabled a reflective focus for each phase of the cycle and provides a scaffold for the teacher educator in assisting with the process.

A further source of data I obtained from pre-service teachers was in the form of “freewrites” which were adapted from LaBoskey (1994).

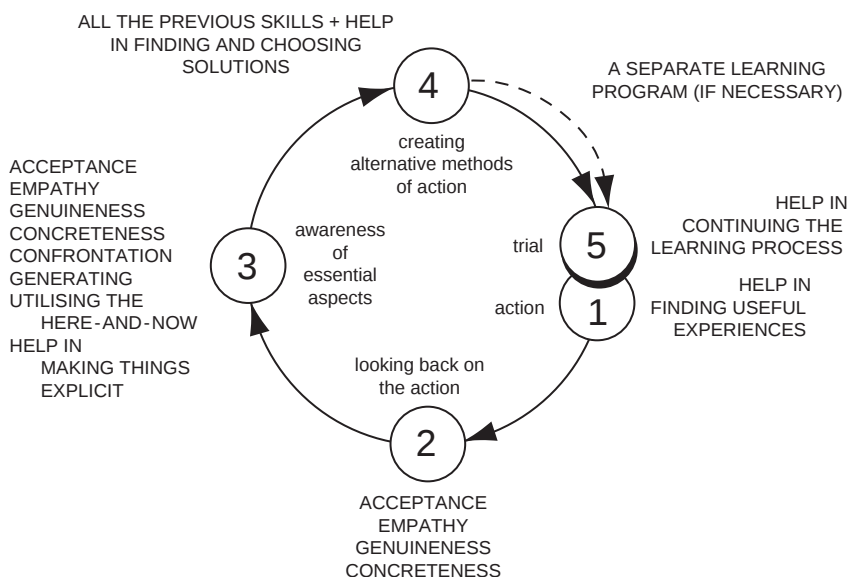


Fig. 4.1 Diagram of ALACT Inner and Outer Cycle (Korthagen et al., 2001, p. 130)

Freewrites

LaBoskey (1994) identifies the “freewrite”, an open-ended reflective writing piece - in my research completed at random times both during and at the conclusion of a semester – as a means of eliciting the responses of pre-service teachers about their learning at a particular point. As such, freewrites were conducted with each cohort and in most cases, they were completed twice (mid-semester and at the conclusion of the semester). To complete a freewrite, each pre-service teacher responded to an open-ended prompt (for example, “Please take ten minutes to write about your experiences (so far) this semester”). I then read the responses, identified the emergent themes and coded, categorised (Lankshear & Knobel, 2004) and analysed the responses. Key points which emerged from examining this data were then provided to each cohort (for example, one important insight I gained from summarising one cohorts’ responses was the various ways in which partner teaching in schools was being experienced. Pre-service teachers raised pertinent issues which were affecting them in the development and maintenance of their partnership teaching in schools; knowing made a timely response possible). Therefore, using freewrites as a data gathering tool enabled me to elicit a deeper understanding of the ways in which pre-service teachers were experiencing their learning about mathematics teaching and prompt timely changes in practice if required.

A further means of gathering data was through the implementation of critical incident questionnaires.

Critical Incidents as Data Gathering

In my study the definition of a critical incident is that of an interaction, usually verbal, which is regarded by participants as critical and initiates a form of reflective practice. Critical incidents provided a stimulus for reflection and as such connect with Fenstermacher’s (1994a) position that in making the tacit explicit (in this case, by implementing the practice of identifying and reflectively exploring the critical incident) that practical knowledge might be both developed and shared within the learning community. The nature of a critical incident, event or interaction was discussed with each cohort and pre-service teachers were encouraged to individually identify, discuss and write about incidents, events or interactions which they had determined to be critical. Pre-service teachers in each cohort were directed towards a deeper understanding of the identification and exploration of critical incidents, events and interactions within their teacher education and classroom encounters. One approach I used to direct this deeper understanding of incidents, events and/or interactions was through the use of a critical incident questionnaire (Brookfield, 1995). I adapted this questionnaire for the mathematics classes. The questions which pre-service teachers responded to were as follows:

1. At what moment in the class(es) this week did you feel most engaged with what was happening? (see Appendix 3)
2. At what moment in the class(es) this week did you feel most distanced from what was happening?
3. What action that anyone (student, teacher) took in class this week did you find most affirming and helpful?
4. What action that anyone (student, teacher) took in class this week did you find most puzzling or confusing?
5. What about the class(es) this week surprised you the most?

This practice of completing the critical incident questionnaires encouraged pre-service teachers to identify and respond to critical and/or problematic events and interactions and as such provided for me snapshots of their reflective processes.

Teacher Educator Journal Entries

Journal entries have been increasingly employed as a data gathering technique in teacher/practitioner research as a means for promoting reflection in and on practice. Studies have confirmed the use of journal entries as an effective means of capturing, reporting on, reflecting in/on and evaluating pertinent data (Brookfield, 1995; Calderhead & Shorrock, 1997; Korthagen & Lagerwerf, 1996). In my research, journal reflections provided opportunities for me to unpack my learning in terms of clarifying assumptions; expressing feelings and understandings related to specific issues and/or interactions; providing feedback for future directions in teaching and, as a means of articulating my learning from given situations. The journal entries therefore became an individual endeavour to monitor my learning journey and provided opportunities for both in situ and retrospective reflection.

My initial entries reflected an ongoing documentation of the process associated with the introduction of a new approach to learning and teaching mathematics, and identified the logistics of doing so. These journal entries also represented my reflections on times where there was doubt and anxiety about the approach I was implementing:

Knowing what it feels like to embark on something new, to be a number of paces from the comfort zone, to feel inadequate, to have expectations about oneself and to know others have expectations - a challenge!

(Extract from journal entry, July 10, 2002)

Journal writing provided me with a means to reflect on the research process and this space was one where I teased out and refined details about my learning. Written journal entries reflected my responses to critical incidents, interactions and events (Kosnik, 2001) in my teaching and thereby provided a means for me to identify and explore incidents/interactions and events and the impact they had on my understanding of my teaching and the ways in which I was learning about teacher education.

Assumptions

Another key data source referred to in this analysis was pre-service teachers' written assumptions (Appendix 4). In each cohort, as part of writing about their initial (and later, summative) experiences of the mathematics unit, pre-service teachers discussed with me the nature of an assumption and how to write one. As a means of monitoring whether the taken-for-granted assumptions identified by pre-service teachers had been challenged throughout the semester, each pre-service teacher in each cohort wrote three assumptions about learning and teaching mathematics during Week Two of the semester. These assumptions were then revisited during Week Twelve to examine the ways in which any of these assumptions had been supported and/or challenged as a result of their experiences during the semester.

Analysis: An Insight into a Researcher's Pedagogical Frame

Much of what lies at the core of self-study research relates to the uniqueness of the methodology and ultimately the "different philosophical and political stance" (Pinnegar, 1998, p. 31). The uniqueness of self-study methodology became clearer to me as time progressed. It was not until I really began to *mine* the data that more about understanding teaching through researching my practice was exposed. For me this meant more than collecting and analysing data from a distance. My need to represent the data in valid and fair ways prompted me to develop processes whereby data could be validated. I constantly ploughed through data and revisited data over time and so gained deeper and sometimes greater understandings of alternative viewpoints and representations. For example, transcribing roundtable reflection sessions was conducted as a four stage process (described in detail in Appendix 2). A further example of my need to correlate my data gathering, organisation and analysis with my need to provide fair representations of pre-service teachers' perspectives was the development of the multiple perspectives tasks. These tasks allowed me to penetrate more deeply into multiple ways that particular interactions and events in ordinary everyday practice were being perceived.

The above examples illustrate the ways in which self-study methodology became not only a driver for data collection but a stimulus for creative approaches to collecting and interpreting data according to our needs as learners. In this way, inquiry stimulated my need for ongoing modification to my approach to researching my practice.

Summary

My approach to data collection, organisation and analysis reveals much about my own pedagogical frame as a self-study researcher. My research design was partly based on an understanding that this framework needed to be both flexible and

responsive to our needs as teachers and learners about teaching. Using multiple data gathering methods allowed me to extract and make explicit the core of learning. I needed to revisit some data over time and this allowed me to delve more deeply into why some interactions, events or moments were interpreted in the way that they were. In many instances it was my need to understand more about critical incidents that prompted deeper examination of the data.

Part II

Learners Learning

The overall focus in this section is on learners learning. Broadly speaking, my contention is that learning about teaching is based on a complex interplay which rests initially on reconceptualising teacher educators and pre-service teachers as ‘co-learners’. The four chapters presented in this section focus on the new strategies I introduced with pre-service teachers and in each chapter I examine one of the key assumptions I had formulated about learning and teaching within this environment. Each chapter begins with an assumption and appropriate data is examined as a means of uncovering whether my assumption had been supported, challenged and/or developed.

Chapter 5

Learning about Reflection in Teaching

Assumption One: The Integration of Multiple Reflective Practices Will Challenge Learners to Reflect Critically on Their Learning

This chapter explores our learning about teaching through reflection. My discussion is framed around my assumption that through the integration of multiple reflective practices in the Learning and Teaching Mathematics units, pre-service teachers would be encouraged to reflect critically on their learning. Reflective practices included an introduction to multiple reflective tools (the ALACT cycle of reflection, Freewrites and Critical Incident Questionnaires) and I discuss why and how reflective tools were introduced and utilised; what we learnt from their implementation and examine the ways in which my initial assumption was supported and/or challenged. I begin this chapter with a brief review of the literature relating to the impact of reflective practice in teacher education programs and the ability (or inability) of programs to succeed in the development of critical reflection, in particular.

Introduction

The past decade, particularly, has seen a proliferation of studies related to the initiation, integration and sustainability of reflection and reflective practices within pre-service teacher education programs (see, Korthagen, 1985; Korthagen et al., 2001; Loughran & Northfield, 1996; Russell, 1997; Russell & Korthagen, 1995). The criticism that commonly arises with any discussion regarding reflection, and the development of critical reflection particularly is the lack of evidence to support claims that internalisation, transformation and transportability across learning contexts can be developed (Brookfield, 1995; Hatton & Smith, 1995; Smyth, 1995; Wideen et al., 1998). Other criticisms which relate to the use of reflective practice in pre-service teacher education programs arise from that which has been described as a technical reflective approach, whereby particular models, frameworks and tools (which

provide a guiding structure to reflective practice), become inherently prescriptive and restrictive and hence contribute to another form of the technical reductionist model of learning about teaching (Kelchtermans, 2005; Kincheloe, 2003).

An Integrated and Structured Reflective Approach

Prior to introducing an integrated and structured reflective approach within the Learning and Teaching Mathematics (LTM) units, I conducted a pilot study with a cohort of Third Year Bachelor of Education pre-service teachers ($n = 56$) where I explored their current understandings and experiences of reflective approaches to teaching and learning, and their ideals related to the use of reflective practices. These pre-service teachers had completed two and a half years of a Bachelor of Education teaching degree and had already formed firm opinions about the value of reflective practice/s for themselves. This pilot study helped to focus my attention on issues which emerged as problematic for pre-service teachers about the value of reflection in learning about teaching mathematics. For example, in the pilot data, some students expressed feelings of resistance to formal written reflective tasks: “I’m reflected out” (Darren); some believed that reflection was the “latest fad”. “It’s like pyramids and crystals; it’s the latest fad ... Reflection is the ‘in’ term. As I have said previously, I reflect anyway and I don’t think this reflection needs to be written. I would prefer to talk to you” (Deanne); others saw it as a practice that involved writing for a particular purpose which was underpinned by assessment: “I write what the lecturer wants to hear” (Emma); and some requested more structure in reflective practice: “It’s ad hoc – I want a structured approach. I’m sick of writing a description on the left side of the page about what I wrote on the right hand side” (Chris). This pilot data informed the reflective approach I developed with each subsequent cohort. The aim was to introduce reflection so that it might become more pertinent to pre-service teachers as a means to further develop their learning about teaching.

In this way, I believed that reflection might have intrinsic value as a practice leading to a deeper understanding of learning about teaching and self as learner, and be envisaged by pre-service teachers as more than just another routine task to complete. I anticipated, for example, that by introducing partner teaching in schools combined with multiple tools by which to reflect on learning, that pre-service teachers would come to debrief (critically) in more meaningful ways. In this sense then, “commonsense reflective practice” which pre-service teachers were predominantly familiar with might be replaced with “reflective action stemming from professional thinking” (Pollard, 2002, p. 23). Because many of the pre-service teachers had expressed a discomfort with the teaching of mathematics and many of them had negative experiences with their own learning of mathematics they therefore became anxious when confronted with the prospect of teaching mathematics. By introducing structured reflection in and on practice, pre-service teachers might be encouraged to unpack such issues related to teaching and learning mathematics in a

supportive learning environment and as a consequence be able to articulate the ways in which they were learning as a result of their experiences.

A Triad of Tools for Written Reflection

Reflective practice in my Learning and Teaching Mathematics (LTM) units comprised a triad of approaches which included: (1) The ALACT Framework; (2) Freewrites; and (3) Critical Incident Questionnaires (CIQ).

1. I selected and adapted Korthagen's ALACT model as it provided a cyclical (rather than hierarchical) framework for reflection. My justification for the choice of ALACT was founded on information provided by previous cohorts of pre-service teachers, some of whom requested the need for a reflective framework, rather than an ad hoc approach to written reflection on experience. As has previously been described, the ALACT cycle comprises five phases: Action (A); Looking back on the action (L); Awareness of essential aspects (A); Creating alternatives (C); and Trial (T). The ALACT framework provided a formal structure for written lesson/critical incident/interaction reflections. This framework also provided a helpful structure for Roundtable Reflection which focused on oral discourse.
2. In addition to the introduction of the ALACT framework for reflecting on experience, "Freewrites" (LaBoskey, 1994) were chosen as they provided pre-service teachers with opportunities to reflect in a structured, but open-ended manner about their experiences of learning about teaching. In a Freewrite, pre-service teachers were allocated approximately ten to fifteen minutes to write a 'snapshot' response of their experiences from the LTM units (including university and partner teaching experiences). During Roundtable sessions, pre-service teachers and I wrote for approximately fifteen minutes (individually) about a recent vivid experience of teaching and/or learning. These snapshots of learning were then discussed and analysed for key points which had emerged from experience and shared in the following week. The purpose for completing the Freewrites was to establish a means by which we as a cohort could understand more about what was acknowledged by pre-service teachers and myself as being both problematic and beneficial from our professional experiences in schools and during university classes. In addition to producing a Freewrite summary for pre-service teachers, the Freewrite responses were also read for emergent themes, coded, categorised and analysed to inform this research.
3. Critical Incident Questionnaires (CIQ) (Brookfield, 1995) provided a further structured approach to gathering 'snapshots of learning' data related to pre-service teachers' experiences, and in this case, the questions were specific, referring to particular aspects of learning. Each pre-service teacher responded to the following questions: (1) At what moment in the class(es) this week did you feel most engaged with what was happening?; (2) At what moment in the class(es) this week did you feel most distanced from what was happening?; (3) What action

that anyone (student, teacher) took in class this week did you find most affirming and helpful?; (4) What action that anyone (student, teacher) took in class this week did you find most puzzling or confusing?; and (5) What about the class(es) this week surprised you the most? The CIQ questionnaire was intended to elicit elements associated with pre-service teachers' emotional engagement with learning, mathematics content and the effect of the learning environment.

By introducing multiple written approaches to reflecting in and on practice (ALACT, Freewrites, CIQ) it was anticipated that the process of reflecting on one's practice would not only become an integral practice in pre-service teachers' learning about teaching, but also, provide a range of alternative approaches for reflecting on practice and hence, cater for multiple learning styles.

Data

The analysis presented in this chapter is based on data I collected from three cohorts and examines snapshots of written reflections. Table 5.1 presents a summary of information that comprises this dataset. The data I have used in my analysis included emailed written reflections and Critical Incident Questionnaires (CIQ, Phase One); ALACT reflections; Freewrite summaries (Phase Two) and ALACT reflections and written questionnaires (Phase Three).

Phase One of the research comprised Third Year Bachelor of Education pre-service teachers (n=36) who were required to produce up to four emailed reflections following partner teaching in schools during Semester One, 2003 (total number of emailed reflections received n=106). CIQs were also collected from the Phase One cohort. Phase Two comprised First Year Bachelor of Education pre-service teachers (n=47) who were required to write one written reflection on a critical incident using the ALACT framework, during Semester Two, 2003 (written reflections received n=47). Freewrites were also collected and analysed from the Phase Two cohort. The Phase Three cohort (TJ792, Semester One, 2004) provided written questionnaire responses and ALACT reflections (n=15) which were coded and used as a comparison dataset.

In the following section I describe the categories which arose from analysis of the Phase One (emailed reflections) and Phase Two (ALACT reflections) data.

Categories of Analysis

Following multiple readings and coding of the Phase One and Phase Two written reflections (following partner teaching in schools), a number of categories emerged from the data. These categories were: Mathematical Content (MC); Student Behaviour (SB); Student Engagement (SE); and, Pre-service Teacher Based Issues (PSTB). The following tables (Tables 5.2 and 5.3) list each of the categories of reflection, the total number of instances of each category, the percentage of total instances and an illustrative example of each category from the Phase One and Phase Two data.

Table 5.1 Summary of data types and sources: written reflection

Phase	Pre-service teacher level	Type of reflection	Number of students	Total number of reflections collected	Semester
Phase One TJ792	Third year	Emailed reflections about partner teaching in schools	36	106	Semester One, 2003
		Critical incident questionnaires (CIQ)		30	
Phase Two TJ591	First year	ALACT reflections	47	47	Semester Two, 2003
		Freewrites	30		
Phase Three TJ792	Third year	ALACT reflections	15	15	Semester One, 2004
		Questionnaire Written Reflection on TJ792	15	15	Semester One, 2004

Table 5.2 Summary: Phase One written reflections

Categories of reflection: (code)	Number of instances (total n = 106)	Percentage of total instances	Illustrative example
Mathematical Content (MC)	28	26	The children had to bundle two digit numbers with icy-pole sticks. The children in this group found it hard to distinguish between units and tens and would read 36 as six tens and three units (Jose)
Student Behaviour (SB)	17	16	One student took the opportunity to misbehave. He tore up his sheet of paper and tried to distract the other students at his table (Joe)
Student engagement (SE)	17	16	The students really enjoyed it and many commented that it did not feel like they were doing maths (Sam)
Pre-service teacher based issues (PSTB)	40	38	Felt like we probably both were treading on each others' toes and did not give the children clear instructions on who they should be approaching for what. We decided to come up with some new strategies for this lesson (Nell)

My discussion in the following section is based on my analysis of the data from the categories (above) as well as two sub-categories from Phase One and Phase Two which related to Pre-service Teacher Based Issues (PSTB). These sub categories (derived from the main categories listed above) included: (1) partner teaching; and (2) personal attributes. The following discussion includes a comparative analysis of Phase One and Phase Two data and identifies outcomes associated with each approach to reflection.

Table 5.3 Summary: Phase Two written reflections

Categories (code)	Reflection: number of instances (total n = 47)	Percentage of total instances	Illustrative example
Mathematical Content (MC)	3	6	Percentages: what is 32/100 as a percentage? Random answers provided by students (Kale)
Student Behaviour (SB)	15	32	Student holding pen - end broken off and began harming herself (Darli)
Student engagement (SE)	6	13	Female student not wanting to be part of the activity – shopping activity; negative attitude (Aaron)
Pre-service teacher based issues (PSTB)	16	34	I was not able to explain the concept to them effectively so that they could gain an understanding (Erin)
ALACT	40/47	85	
Traditional	7/47	15	

Uptake of Reflective Model

The adoption of the ALACT framework was optional for the Phase One cohort, and of the total number of email communications I received (n = 106) only four (or 4%) of the emailed reflections on partner teaching in schools utilised this framework. However, following my explicit intervention by making ALACT a formal assessment requirement (i.e., pre-service teachers were required to reflect using this cycle), of the total number of Phase Two reflections, 40/47 or 85% of pre-service teachers presented their reflections using the ALACT framework. (The remaining seven pre-service teachers did not present their reflections using the ALACT cycle, and did not provide reasons for not doing so).

The Phase One reflections typically represented what I interpreted as a traditional lesson reflection which focused on technical aspects of the lesson, such as timing, resources, management and student behaviour. It was interesting to note that these reflections were generally written as chronological representations of the ways in which lessons were experienced, and generally began with the introduction, followed by the procedure, the activities, a statement of a key issue of concern, and a conclusion. The following response provides a typical example of what I interpreted to be a traditional lesson reflection:

On Wednesday 21st May Lana and I completed our final lesson at Ranger Primary School in the grade prep/one class.

The lesson involved students forming groups of four, measuring their heights, ordering the heights of their group members from tallest to shortest and then completing the worksheet.

Once the lesson started, the students took their time to come to the floor and were quite rowdy.

The problem with the lesson was the absence of the regular class teacher ... the students knew that Lana and I weren't fully trained teachers and felt this was a reason for them to not concentrate during this lesson.

Overall, the outcomes of the lesson were achieved ... the students did enjoy the lesson and were able to discuss what they had learnt at the end of the lesson.

(Anne, Phase One, Email reflection, May 2003)

However, pre-service teacher Phase Two reflections (presented using the ALACT framework) provided data to suggest that reflection was occurring as something other than a chronological retell of events as they occurred in their teaching. By using ALACT, pre-service teachers focused on an incident, event or interaction and examined this in the light of their own learning. In the following section, I compare and contrast written reflections which emanate from experience without a required framework (Phase One) and written reflection using a required framework (ALACT, Phase Two).

Mathematical Content

The Phase One data indicated that one of the key areas for pre-service teacher reflection related to Mathematical Content (26% of total mentions) while in contrast, Phase Two recorded only 6% of total mentions related to Mathematical Content. These Phase One reflections represented an extensive variety of concerns related to issues including: (1) using open ended questioning to structure questions and elicit multiple student responses: "I really needed to go over open-ended [mathematical] questions to get some ideas of how to structure the questions, based on measurement, to the students" (Amy); (2) place value and the distinguishing of units and tens: "The children had to bundle two digit numbers with icy-pole sticks. The children in this group found it hard to distinguish between units and tens and would read 36 as six tens and three units" (Jose); (3) concepts of time, space and location "Students had to visualise a map of Australia" (Bella); and (4) using compass points "Some students weren't quite as comfortable using compass points" (Bec). A number of these reflections identified the pre-service teacher's capacity to more deeply examine the content and the concepts presented within the teaching sessions. For example, Cas stated, "One of the things that hasn't happened in our lessons [during school placements] is a deeper examination of the subject matter. I think we have skimmed the surface but have missed some good opportunities for deeper learning". This sentiment was also supported by Ebony who suggested, "I felt that much more could have been taken from the lesson by the students on the mathematical concepts, which comes from reinforcement and continued discussion". This percentage (26%) of reflections related to problems with mathematical content would not be entirely unexpected for pre-service teachers at any stage of their education course since many experience anxieties with their personal level of mathematical conceptual understanding, and lack confidence and/or an ability to

teach and explore student understanding of mathematical concepts in a deeper and more meaningful way (as Cas suggested above, "... I think we have skimmed the surface but have missed some good opportunities for deeper learning").

However, when utilising the ALACT cycle to guide reflection, the data for Phase Two revealed a significant contrast in emphasis; only 6% of the total instances referred to mathematical content as a stimulus for the reflective process. The content areas from this group related only to (1) percentages: "What is 32/100 as a percentage? Students gave random answers" (Kale); and (2) geometry: "Triangle upside down – not the right way up didn't recognise as a triangle" (Saira); "How many degrees in a triangle? If a triangle has 180 degrees and you are given the answer to two angles how do you think you would find that angle? As soon as I had finished he looked up and said 'Oh, I know'" (Breanne).

The above data is interesting because of the difference in emphasis on mathematical content between the two cohorts. This difference might suggest that by employing the ALACT model as a framework for reflection, pre-service teachers were encouraged to think differently about their practice; to shift away from a focus on content.

The data discussed in the next section suggests that there was a movement towards a focus on student behaviour and engagement. The next two combined categories relate to Student Behaviour and Student Engagement, which were prominent in both Phase One and Phase Two cohort responses.

Student Behaviour and Student Engagement

Classroom management styles and learning about student (dis)engagement was a focus for pre-service teachers from both Phase One and Phase Two cohorts. Approximately one third (32%) of the written responses received from the Phase One cohort were based around issues of school students themselves (Student Behaviour, 16%; Student Engagement, 16%). Phase Two combined data revealed that 45% of the combined responses (Student Behaviour, 32%; Student Engagement, 13%) related to these categories. Almost half of the total instances of reflections from the Phase Two data focused on student behaviour and engagement. Both sets of data have approximately the same percentages of instances which referred to student behaviour and engagement, however, a noteworthy difference was evident in terms of the number of instances of reflection which focused on student behaviour alone (Phase One, 16% and Phase Two, 32%). It is interesting to note that pre-service teachers from Phase Two, who were utilising the ALACT framework, registered twice the number of instances of reflection about student behaviour compared with the Phase One cohort.

Student behaviours reported typically represented negative experiences for both Phase One and Phase Two pre-service teachers and involved, for example (1) misbehaviour: "One student took the opportunity to misbehave. He tore up his sheet of paper and tried to distract the other students at his table" (Joe, Phase Two);

(2) protestation and tears: “He protested and resorted to tears after being allocated to a group” (Nat, Phase One); (3) student annoyance: “The fast students got annoyed ... they would get distracted and annoy other students” (Bec, Phase One) and (4) a lack of student cooperation: “They were shouting at each other and didn’t seem to want to cooperate during group work” (Kes, Phase Two). These reflections indicate that pre-service teachers in both Phase One and Phase Two could clearly identify (typically) negative behaviours within their classroom teaching experiences. However, it seems that when pre-service teachers used ALACT as a tool for reflection on learning, the number of instances which related to student behaviour represented one third of the total number of mentions. This may indicate that the ALACT tool may have prompted pre-service teachers to be more likely to identify an instance (especially one related to negative behaviour) more selectively. It may also indicate that pre-service teachers focus more predominantly on negative aspects in their learning about teaching as these experiences represent challenges for which they may have felt under-prepared to deal with as a neophyte. In this sense, their expectations about managing student behaviour had been challenged, and the ALACT tool provided a means by which they could unpack the incident or interaction and hopefully, understand more about the alternative possibilities for dealing with such instances should they arise in future teaching contexts.

In contrast, instances which related to student engagement represented a ‘learning connection’ and commonly referred to (1) student enjoyment: “The students’ faces and their verbal amazement, their drawings and words to say how they felt about their learning really showed they enjoyed their task ... the students were proud ... they all understood and enjoyed the task ... we needed to challenge one child more” (Mel, Phase Two) and, “The students really enjoyed it and many commented that it didn’t feel like they were doing maths” (Sam, Phase Two); and (2) the necessity to continuously modify activities to maintain levels of student excitement and enthusiasm: “We decided to approach the lesson by keeping the activities short and exciting to help keep the students engaged as they were at such a young age ... by continuously changing the activities slightly, it helped us as pre-service teachers to keep the enthusiasm levels of the students high” (Mark, Phase Two).

One way of understanding the student engagement/behaviour data is by reference to the affective and emotional aspects of learning about teaching (for example, see Boud et al., 1985; Korthagen et al., 2001). The data presented here illustrates, to some extent, the ways in which pre-service teachers could identify and subsequently examine the affective dimensions of learning to teach, and in identifying the challenges presented in the various contexts, produce alternative practices for future teaching. For example, Mark recognised the importance of short, varied activities to assist in keeping younger learners engaged in tasks; Mel noted the “verbal amazement” and the pride children displayed in their learning when sharing this with their pre-service teachers. In this sense, the pre-service teachers were constantly required to reposition the focus of their teaching and their learning about teaching. Rather than focusing on their delivery as pre-service teachers, they were consciously examining and reflecting on the ways in which the children were displaying their learning in affective and cognitive ways.

Pre-service Teacher Based Issues

The final category of analysis relates to Pre-service Teacher Based Issues. More than one third of the total mentions in both phases focused on issues related to the pre-service teacher themselves (Phase One, 38%; Phase Two, 34%). On further examination, two significant sub-categories emerged from this data. These subcategories were: (1) Partner Teaching and (2) Personal Attributes. The following section provides a discussion of this category (and its subcategories).

Partner Teaching

One of my prescriptive assumptions (i.e., an assumption which reflects what one thinks should be happening) about learning through reflective practice, was based on what I determined to be the positive effects of partner teaching in schools. More than the traditional single placement for professional experience, I assumed that the partner model would allow individuals to plan, teach and reflect on their teaching together and in this way, gain multiple and hence, potentially deeper insights into their learning. The analysis of the Phase One and Phase Two pre-service teacher written responses both challenged and supported my assumption about the value of the partner teaching model.

An initial sub-category identified in the analysis of Phase One and Phase Two pre service teacher reflections illustrated the (unexpected for me) challenges associated with teaching mathematics with a partner. For some, partner teaching was described as a confusing situation for both the pre-service teacher and the student. Not only did pre-service teachers need to negotiate their roles in the teaching environment, they needed to be consistent with expectations in order to minimise student confusion. Pete articulates this dilemma in the following response: “Having two teachers in the one class influenced students’ behaviour ... Chris and I accidentally told students different instructions and the students became confused. Therefore, having a buddy made the lesson difficult at times” (Pete, Phase One). Another pre-service teacher mentioned that the difficulties in teaching with a partner related to differences in methods and objectives: “I find co-teaching difficult. I think I will do better when I can manage all a particular lesson by myself. I go in to a lesson with clear outcomes and lesson structure and I find it difficult to manage with a co-teacher who has different teaching methods and probably different objectives in mind” (Cate, Phase One). The differences in pedagogical approach also caused consternation for Kim (Phase Two) who wrote about her teaching partner’s approach to a student who was experiencing difficulty pronouncing the word circle. Her partner suggested that by getting the mouth ready and saying the word circle ten times, the difficulty in pronunciation would be overcome. Kim rejected this approach stating that it only drew attention to this student’s inadequacy and would affect the student’s self esteem. Teaching as partners required that these pre-service teachers were in tune with each other’s thinking, but this was not necessarily the

case, and often the equilibrium between teaching partners became unbalanced. Further evidence of this is provided in Nell's (Phase One) reflection where she stated, "... it felt like we probably both were treading on each others' toes and did not give the children clear instructions on who they should be approaching for what". Nell's response suggests a tentativeness of communication between partners where both are collectively responsible for decision making.

Others however, suggested that the experience of working with a peer had been a valuable learning experience. The reflection written by Pete reinforced this sentiment, "I believe I gained much from being able to share my thoughts and ideas with someone else, observe different approaches" (Phase One). Emma (Phase Two) also indicated that working with a teaching partner was beneficial when, following an incident where students were vying for power while using the Edudome Kit (practical geometry construction activity kit) both Emma and her partner felt more confident to respond by together conducting a student forum on classroom expectations and collaboration.

These pre-service teacher responses about partner teaching are interesting when considered in the light of my intentions for this experience. An assumption I had made when introducing partner teaching was that partners would provide support for each other in planning, teaching, evaluating and reflecting on teaching, and in this sense, there would be a provision for peer critique and opportunities for critical reflection. Although some pre-service teachers stated that they gained valuable insights into their own and others' learning from being able to share thoughts, others were less positive about this partnership and felt that they experienced confusion, frustration and lack of personal and professional control.

This raised further questions for me. What types of partnerships might be the most effective in terms of meeting everyone's needs? Although some partnerships were satisfactory according to pre-service teacher feedback, clearly some partnerships were challenging. What elements of a teaching partnership contribute to extending pre-service teachers' pedagogy and what elements restrict this growth? If pre-service teachers work in partnership with a friend, what restrictions might this place on the levels and types of criticism that one feels is appropriate to offer a peer? If pre-service teachers work with another who is less known to them, is the partnership then complicated by not knowing the other, and therefore more time must be put in terms of developing a trusting relationship? (The impact of partner teaching was also revealed in the Freewrite responses elaborated in the following section of this chapter).

Personal Attributes

The second subcategory of Pre-service Teacher Based Issues related to the personal attributes of pre-service teachers. Partner teaching demanded an individual confidence in conjunction with the establishment of a working partnership; the aspects of which I had not initially explicitly considered. The personal attributes required

for this partnership included patience: “My teaching patience” (Jim, Phase One); identification and acknowledgement of one’s disposition and its potential effect: “I need to be less dominant in a group situation” (Allie, Phase Two), the development of confidence as pre-service teachers: “We feel our confidence is growing as we develop as teachers” (Hollie, Phase One) and for some, a continued lack of confidence: “I lacked confidence in teaching” (Mel, Phase Two). Pre-service teacher identification of personal attributes as important in their thinking about teaching correlates with research conducted by Korthagen et al. (2001) who suggested that “an important aim of reflection by teachers should be the development of ... teachers’ self-understanding” (p. 265).

These pre-service teacher responses raised issues about working in a partnership which became pertinent for me as a teacher educator and prompted further questions about the ways in which pre-service teachers were experiencing this aspect of their learning. Through their reflections these pre-service teachers were beginning to identify and explore their own personal characteristics and the way/s these characteristics seemed to influence their interactions with school students, peers and other teachers. Pre-service teachers from both Phase One and Phase Two registered an acknowledgement of the role of personal attributes in the development of (un)successful teaching partnerships in schools, regardless of the reflective tool (unstructured or ALACT) they were using to unpack their experiences.

The following section describes and analyses data related to the Freewrite – another reflective tool – introduced to each cohort. This analysis uses data from the Phase Two cohort and interestingly, despite the use of a different tool, raises similar responses as the ALACT/email responses from pre-service teachers regarding the benefits and restrictions of partner teaching. In this sense, different snapshots of written reflection provided by pre-service teachers across different cohorts, using different reflective tools, served as a means of validating particular concerns through their recurrence.

Freewrites

I introduced Freewrites (LaBoskey, 1994) with each cohort as another means of formally eliciting reflective responses on experience. I chose one cohort for detailed examination as the data were identified as representative of the issues revealed from Freewrites when collated across all of my research. Additionally, this particular dataset revealed one category – partner teaching – which became (unexpectedly) significant in that the responses indicated multiple perspectives about the ways in which the partner teaching in schools was being experienced by pre-service teachers. The analysis of this Phase Two data (collected during Week Nine, Semester Two, 2003, n = 30) challenged my assumptions about the impact and experience of partner teaching, which, as previously described, was an integral practice within the modified approach to learning and teaching mathematics.

Table 5.4 identifies one of the major categories – Partner Teaching – and describes the three sub-categories which emerged from the Freewrite data analysis for Week Nine, Semester Two, 2003. This description is accompanied by an illustrative example of each sub-category. The three sub-categories include (1) New set of personal skills; (2) Developing further understandings about learning; and (3) Challenging taken-for-granted beliefs. Each of these categories is then discussed in the following section for the aspects of learning about teaching which were revealed through the use of this tool.

The analysis of this data set yielded some interesting results with reference to the pre-service teacher reflective focus; for example, the main category (partner teaching) and the subsequent element of surprise for me as a teacher educator. From the selected sample ($n = 30$), 16/30 or more than 50% of the references related to the category of aspects associated with partner teaching. This compares with the Phase One and Two written reflections (above) which identified partner teaching as both problematic and supportive in terms of learning about teaching.

New Set of Personal Skills

The first category – New Set of Personal Skills – correlates strongly with the sub-category identified by Phase One and Phase Two cohorts: Partner Teaching and Personal Attributes (discussed above). Pre-service teachers' responses reflected the requirement that partner teaching demanded a new set of personal skills. Typically this new set of personal skills referred to the establishment and maintenance of defined roles while planning and teaching, and a belief that at times, partners needed to, "resist [a] natural urge to take control of the lesson" (Sal). This important awareness of the other as teacher was also reflected in Fran's comment when she stated, "It [partner teaching] was different from team teaching, always being aware of another person who was also 'in charge'. Where I would normally do

Table 5.4 Freewrite sub-categories, Week Nine, Semester Two, 2003

Partner teaching	Illustrative example
New set of personal skills	While relatively comfortable in the class I did find the team teaching required a whole new set of skills and I had to resist my natural urge to take control of the lesson
Developing further understandings about learning	Team teaching can open you up to how others teach, hence give you some good examples and ideas that you can take on board as a teacher
Challenging taken-for-granted beliefs	A 'critical moment' was when the activity was taking too long-myself and the pst [pre-service teacher] taking the class realised this (thought about several possibilities but continued). I guess thinking about how if this is to happen constantly, future learning will be compromised – kids won't learn and we as teachers while able to acknowledge the 'problem' won't learn anything new from it

something, I had to check myself so as not to ‘take over’”. Gemma recognised that “[She] felt uneasy, not wanting to step on my partner’s toes; not wanting to jump in too much when the class got too uncontrollable under her.”

What became evident from these responses was that teaching and learning about teaching in a partnership situation required constant negotiation of boundaries, discussions related to the content and teaching approaches selected and a respect for the other as a teaching partner. For some pre-service teachers this created opportunities and experiences which were viewed as positive, such as was evident in Di’s reflection: “Having a ‘buddy’ there was great as we could add bits and pieces as each other spoke. I could see what the children were not getting as D spoke, so I could add my own information, as I’m sure D could when I spoke. It felt as though we were reaching more children as we both had different styles, which different children responded to.” Yet for others, the partnership experience proved challenging and it was interesting to note that those concerns identified were commonly linked to the partner relationship; referring to the nature of the partnership (friendship based or random pairing). For some, this ‘buddy teacher’ relationship proved troublesome in that the partner was also a good friend and hence, this created an issue as the established personal relationship was being reframed as a developing professional partnership. For example, Jon wrote, “... the peer assessment is difficult because my partner is my friend. I would have liked a [supervisor] teacher assessment.” Perhaps Jon may have been implying in his response that a supervising teacher assessment would have been more objective, that it may be difficult to write in an honest and open way about aspects of a colleague’s teaching approach when one already has an already established personal relationship with that person.

Some pre-service teachers also mentioned the constant challenge of negotiating decisions with a peer and not wanting to “step on my partners’ toes” (Gemma). (This response was also evident from the Phase One data, for example, when Nell suggested that at times during partner teaching, “... it felt like we probably both were treading on each others’ toes and did not give the children clear instructions on who they should be approaching for what’.) Whilst some partnerships were intent on redefining teaching boundaries and considering their partner’s learning style, others continued to be challenged by working in a partnership selected by me, for them. For example, in the following reflection written by Jen (pre-service teacher) she stated that her expectations of her role changed when she discovered at short notice that she had been allocated a teaching partner.

I was expecting to be going to a school by myself, but when I turned up to meet Robyn, I found out that I had been placed with another person as my buddy. Thankfully it was someone I already knew. Personally I think that this is the wrong thing to do, by placing me with an individual without forewarning ... Although my ideals were essentially the same, I was experiencing a lot of indecision ... The only thing I took away was that my expectations changed as soon as I ... found out that I was working with someone.

(Written reflection, TJ792, Semester One, 2004)

Jen also wrote at the conclusion of the semester that her preference would be to work alone as partner teaching became complicated in that one was constantly attempting to focus not only on oneself but also on the ‘other’ in the teaching

partnership. She also mentioned that she would have preferred to be working “with somebody I knew well, trusted and that I had chosen to work with”.

I probably would have preferred to be working by myself so that there was less to be worrying about. It would have been much easier to focus on what I was thinking and working towards rather than focusing not only on my thoughts towards myself, but also my thoughts towards Sally and her thoughts towards me ... I would rather have been working with somebody I knew well, trusted, and that I had chosen to work with so that I was able to build up a good working relationship.

(Written reflection, TJ792, Semester One, 2004)

Clearly, the issues raised by Jen highlight the implications of decisions made by me, for Jen, in her teaching experience and elicit deeper understandings for me about how the partner relationships worked (or did not work) in practice. Her response also indicated the need for developing trust with her partner as integral to her experience of an effective teaching partnership.

Analysing this Freewrite snapshot and the pre-service teachers’ written reflections (above) illuminated aspects of: (1) pre-service teachers’ learning about practice; and (2) my learning as a teacher educator. An underlying assumption I had made about partner teaching was that, in essence, a partnership would be beneficial for learning about teaching, as each pre-service teacher would have a peer with whom they could plan, teach, evaluate and reflect. For some, this assumption was supported; yet for others, clearly, this teaching partnership created tensions. For example, issues of expediency for me (by way of placing pre-service teachers with partners without consultation) created longer term repercussions for pre-service teachers in managing their learning in their professional placements.

It was through identifying issues and working through these tensions with individual partnerships and with the cohort of pre-service teachers during university (de)briefing sessions that allowed these concerns to be raised and addressed by us. In so doing, the challenges of new learning within a teaching partnership could be made explicit; for example, discussions related to the tensions of dealing with a friendship in a teaching partnership or tensions related to accommodating the ‘other’ in the teaching environment, and these became the basis for subsequent Roundtable Reflection sessions.

Flexibility in a Partnership

The Freewrite analysis and subsequent discussion of the previous two categories – New Set of Personal Skills and Developing Further Understandings about Learning – highlighted the ways in which partner teaching contributed to pre-service teacher, and teacher educator, learning about teaching. There were also multiple examples of instances which provided evidence that pre-service teachers’ needed to be flexible in their understanding of a teaching partnership.

I illustrate this by way of example. Sue identifies a critical moment in her teaching (“taking too long”) and then explains how, together with her partner, they consider alternative possibilities to deal with the problem and how they chose to deal with it (in this case, choosing to proceed with the activity even though they recognised that it wasn’t working well).

A ‘critical moment’ was when the activity was taking too long – myself and the pst [pre-service teacher] taking the class realised this (thought about several possibilities but continued). I guess thinking about how if this is to happen constantly, future learning will be compromised - kids won’t learn and we as teachers, while able to acknowledge the ‘problem’ won’t learn anything new from it. Perhaps it is an experience thing – ‘problem’ – and it also results/arises because of the situation we are in.

(Sue, Freewrite, Semester Two, 2003)

Sue’s reflection on her choice to continue with the activity (even though she knew it wasn’t ‘working’) indicates a deeper layer of thinking about her teaching; that is, if this choice is constantly made in teaching, then it may be that “future learning will be compromised” (both her own learning and that of her students). The choices made in teaching and learning situations have consequences for learning and for many pre-service teachers moving out of their comfort zone into an unknown zone in order to extend learning opportunities, presents an ongoing challenge. Experienced teachers (and teacher educators) acknowledge that, integral to teaching practice, is the need to respond to learning situations as they occur within the moment of teaching and to alter planned sequences of activities so that the particular needs of learners might be better catered for. In the example above, Sue illustrates her understanding that being flexible is important when one is teaching (evidenced by her and her partner’s examination of possibilities) but also extends the challenge for herself by suggesting that if she continues to respond rigidly to learning situations such as those experienced with her partner, then learning for all will be compromised.

Summary of Freewrite Data

The opportunity for pre-service teachers to observe their peers teaching was generally identified as a positive aspect of the partner teaching experience. Interestingly, this was an outcome that I had not anticipated. For example, Eddie wrote, “we get to see someone else with the same background @uni 3rd year, never taught b4”. Similarly, Ellen stated, “I can’t wait to see her [partner] teach – to see how and what peers do – another style of teaching ...” while Dan suggested, “... it has been good to see how other psts [pre-service teachers] operate. Usually on rounds [professional teaching] you only get to see experienced teachers.” Ewan stated, “team teaching can open you up to how others teach.” These comments indicate that partner teaching provided models of practice which enabled pre-service teachers to affirm their own progress and to consider other ways of approaching teaching and learning by observing their peers which then enabled them to begin to explore a

deeper understanding of the range of ways in which teaching might be approached. These data suggest that partner teaching might perhaps provide an extension of the 'experienced other' learning from teaching approach whereby peers learn about teaching from peers within a teaching context.

In summary, in terms of written examples of critically reflective practice (as defined by Hatton & Smith, 1995), the Freewrite data reveals little evidence. However, it might also be concluded that the process of writing reflections in a Freewrite format assisted pre-service teachers in the clarification of issues of importance for them and, at the same time through discussion of such issues, provided a potential bank of knowledge for these pre-service teachers about: the personal skills required when working in a partnership; the need for ongoing negotiation about roles when teaching, and an acknowledgement of the influence of peers in learning about pedagogy.

In terms of my own learning, doing my own Freewrite and analysing pre-service teacher responses to the task has enabled me to identify more about the ways in which pre-service teachers were experiencing their learning, and particularly their learning within a partner teaching mode. My intention was that the partner teaching would provide the experience and ALACT, Freewrites and CIQs the reflective tools for unpacking experience. In this way we could better understand the meaning of our experiences and be supported in our teaching and learning about mathematics. The data suggests that one way that we were learning about our teaching was through the impact of our choices as teachers on each other and on learners in a teaching situation. The choices we make about how we reflect on our teaching; who we teach with and how learners in classrooms respond indicate that our teaching is much more than an evaluation of the ways in which our choices affect us as individuals (i.e., that teaching involves more than just the self). As the previous discussion of data has indicated, it also implores us to consciously and systematically consider the ongoing ramifications of our actions within the learning environment. One key question this raises for me is to consider the ways in which pre-service teacher partnerships are defined. This question also is highlighted in the analysis of CIQs; the third reflective tool introduced with each cohort.

Critical Incident Questionnaire Data and Analysis

The Critical Incident Questionnaires (CIQ) provided an approach to reflection which, although requiring responses to predetermined questions, allowed for an open response in terms of pre-service teachers' selection of critical and or problematic events/interactions to analyse. CIQs were (typically) completed once during the semester, usually mid-semester, during university class time.

The pre-service teachers were allocated ten minutes to complete the questionnaire, then individually invited to share their responses with the class for approximately five minutes. It was during the CIQ discussion that pertinent issues about pre-service teacher learning about teaching were raised. Then, following each

session, CIQ responses were read by me; categories identified and the number of mentions for each category tallied for each of the five CIQ questions. To illustrate the nature of the learning derived through the use of this tool, the data for this snapshot of learning was gathered from the Third Year TJ792 LTM cohort, Mid-Semester One, 2004 ($n = 45$). These data were selected as they represented sentiments that were reported across all cohorts.

Table 5.5 (below) summarises the responses for each of the five CIQ questions; the key categories for each question; the number of mentions associated with each category (and the percentage of the total number of mentions) and an illustrative example from each category.

The ensuing discussion provides an analysis of the pertinent responses for each question and in doing so, it must be noted that in some instances, points of discussion and analysis emerged from a category where, for example, there were only two instances recorded. (An example of this is in relation to Question Four, “Not fitting the Norm”). This highlights the importance of some less frequent but still important data.

Following is an example of the categorisations and the frequency of responses for Question One (Table 5.6): At what moment in the class(es) this week did you feel most engaged with what was happening?

In Table 5.5, I have illustrated the way in which each of the CIQ questions were coded and categorised. For example, eleven of the total number of mentions provided by pre-service teachers indicated that they felt most engaged during interactive information sessions, and this represented 24% of the total number of mentions. The illustrative example suggests that completing reflective tasks during information sessions encouraged pre-service teachers to analyse how and what they think when “doing maths”.

In the next section I discuss the responses to each of the CIQ questions in turn and examine pre-service teacher responses in relation to that which was identified as critical for them in their learning about teaching.

Question One

With reference to the moment in classes where pre-service teachers felt most engaged (Question One, Table 5.5), the highest frequency of response (51%) was related to Roundtable sessions, as they provided opportunities not only to discuss pertinent issues but also to influence the direction of the discussion and hence facilitate student engagement as they had some input into the nature and direction of the conversation. (Roundtable Reflection is discussed in the following chapter; briefly, roundtables were introduced with each cohort of pre-service teachers as a means of reflecting orally on experience). Pre-service teachers’ responses to moments of engagement experienced during Roundtable Reflection included: sharing, “a time to share ideas and concerns; we were all engaged in discussing strategies, ideas and problems” (James); relevance and connections: “the topics discussed

Table 5.5 Key categories identified from critical incident questionnaire

Critical Incident Questionnaire Questions 1–5	Category	Number of mentions of total	Percentage of total mentions	Illustrative example
At what moment in the class (es) this week did you feel most engaged with what was happening?	Roundtable	23	51	During the roundtable because you feel more involved and you also have the opportunity to influence what is discussed
	Information session	11	24	When we were asked (at the information session) to complete reflective questions ... this required me to really analyse how I think and what I think when doing maths
At what moment in the class (es) this week did you feel most distanced from what was happening?	Information session	17	37	During the lecture, because like all lectures it follows a similar format of the teacher expending information out the front
What action that anyone (student, teacher) took in class this week did you find most affirming and helpful?	Group discussion	13	28	I find it most affirming when another student values your ideas and has some input into the discussion supporting what I have said Personal insights from others into problematic areas
What action that anyone (student, teacher) took in class this week did you find most puzzling or confusing?	No response	15	34	
	Not fitting the norm	2	4.5	Being ignored by younger students who obviously have made assumptions about me and find me not worth talking to or including
What about the class(es) this week surprised you the most?	Roundtable	12	25.5	I was surprised that we all had so much to say about everything and kept the roundtable going for so long. This reflection stuff is only getting better
	Interesting and helpful questioning	10	21	The thing that surprised me the most ... was the effectiveness simple questioning can have on determining a student's view or understanding of mathematics

Table 5.6 CIQ responses to Question One: “At what moment in the class(es) this week did you feel most engaged with what was happening?”

Categories	Number of mentions	Percentage of total mentions	Illustrative example
Roundtable session	23	51	During the roundtable because you feel more involved and you also have the opportunity to influence what is discussed (Jim)
Information session activity	11	24	When we were asked (at the information session) to complete reflective questions ... this required me to really analyse how I think and what I think when doing maths (Tess)
Not a moment, general positive yes	3	7	Most of the time because I find it interesting to learn how to teach maths; how children learn and the different ideas and strategies that will be valuable for my effective teaching future (Jane)
Tutorial presentations	8	18	Actually presenting assessment tutorial presentation to the class; talking and discovering myself made clear in my mind the gaps in my own knowledge and that I have to plan for it – I thought it would just happen (Sam)
Total number of instances	45	100	

were relevant to our current situation and it helped to see (hear) that others were experiencing similar things” (Sal); opportunities to contribute: “gives everyone a chance to contribute” (Nancy); and self-confidence and esteem: “I felt an input of mine was worthwhile” (Fiona); and the relaxed atmosphere: “the atmosphere was more relaxed” (Dan).

The second most frequent category of response (24%) related to pre-service teachers’ feelings of engagement was during the information sessions. Information sessions were conducted weekly throughout each semester, replacing what was traditionally a lecture. The intention for each information session was to provide information, but in an interactive manner. This included short reflective activities; focused questions requiring small group or partner discussion and generally, sharing of pre-service teacher/teacher educator beliefs, opinions and strategies. In the session during which the pre-service teachers completed the CIQ (TJ792, Third Year, Phase One, Week Three) interaction was developed through asking pre-service teachers to respond to the following question: “If mathematics were a fruit/colour/animal, what would it be for you?” CIQ written responses to this question were then shared with the group during this information session and the ensuing discussion raised insightful thinking and positive feedback. For example, Sam wrote: “I felt most engaged when we were discussing things in relation to what they would be ... it was interesting and engaging and I really had to think about it” while Jenny stated, “this [information session] required me to really analyse how I think and what I think when doing maths.” These responses suggested that the interactive

information sessions provided a means by which pre-service teachers could engage with their learning about mathematics teaching. Rather than be recipients of information, pre-service teachers were encouraged to connect with the discussion via activity, short written reflections and discussions.

Question Two

In direct contrast with their responses to question one, pre-service teachers responses to question two: “At what moment in the class(es) this week did you feel most distanced from what was happening?” indicated that more than one third felt most distanced during the information sessions (37% of total responses). This time, their reasons included lack of personal input from them, their inability to have an opportunity to influence what was being discussed. For some, they were distracted by the requirement to “copy notes” and in doing so, lost contact with the conversation: “I seem to concentrate more upon getting the notes down rather than taking in information” (Sue). Other responses were based on students’ experiences of lectures (or information sessions) generally: “like all lectures, it follows a similar format of the teacher expending (sic) information out the front. The maths lectures are more interactive though” (Toby). Although this pre-service teacher stated a concern about the format of the information sessions (i.e., that they seem to be only about information giving), he also recognised that an effort had been made to make the mathematics sessions more interactive. Some other pre-service teachers specifically identified my teacher educator approach as being problematic for them. For example, my request for them to copy material from the overhead, respond to questions and at times remain unheard: “half the time I didn’t hear her” (Helen) created a sense of frustration for some.

Question Three

In response to Question Three – “What action that anyone (student, teacher) took in class this week did you find most affirming and helpful?” – it was interesting to note the impact that group discussion had on pre-service teacher learning. Twenty-eight percent of the total mentions referred to the importance of discussion as a means of support and eliciting problematic areas for pre-service teachers. For instance, “I find it most affirming when another student values your ideas and has some input into the discussion supporting what I have said” (Fran); “Personal insights from others into problematic areas” (Sue); and, “it was great when our peers can give us advice and you actually learn from that; more than you do from a teacher” (Dan). The most frequent response to this question referred to the connections with peers and the relationship to pre-service teachers’ own experiences as well as shared concerns; “[you’re] not alone: when we sit

down to discuss topics or aspects of our teaching I learn a great deal and realise that I am not the only one” (Sally). (The notion of the impact of discussion with peers is further developed in the section, Pre-service Teachers’ Reflective Preferences).

Question Four

Pre-service teacher responses to this question (which required written responses to what was identified as the most puzzling or confusing action which had occurred during the previous week) were revealing in two ways: First, in relation to the number of mentions with reference to the “no response” sub-category and second, the belief expressed by two pre-service teachers (perhaps insignificant in terms of the total number of mentions), that they felt that they did not “fit the norm” in terms of peer expectations.

The “no response” category was the sub-category with the highest percentage of the total responses (15/44 or 34%) of the pre-service teachers’ responses to this question indicating that they could not identify or did not experience a puzzling and/or confusing situation in the previous week. It might also be concluded from these responses that pre-service teachers were either unable or unprepared to articulate such an instance.

Although “not fitting the norm” was mentioned by only two pre-service teachers, I selected their comments for analysis as they identified sentiments that other pre-service teachers might have felt, both within their cohort as well as those in other cohorts. In this way, the two comments formally articulated puzzling and/or confusing situations which had impacted on the way pre-service teachers assumed others had perceived them and their contributions. An example of this is provided by Jan (a mature age pre-service teacher) who wrote that the most puzzling aspect for her was: “Being ignored by younger students who obviously have made assumptions about me and find me not worth talking to or including”. Interestingly, other data provided in her peers’ responses suggested that Jan’s perceptions of herself within the group were not necessarily those shared by her peers. For instance Jim wrote: “When discussing the mathematics of measurement, Jan said it was like grapes. I thought the way she interpreted it was a very good way to look at maths and break it down” (Jim, CIQ). Toni stated that: “Jan – she had a really innovative idea about mobile phones. I thought this was a good idea that would have many worthwhile adaptations” (CIQ). These two references to Jan in Jim and Toni’s CIQ responses to Question Four about Jan as a participant seem to suggest that her peers had formed positive views about her contributions and valued her creative and innovative insights compared to her own more self-consciously critical self perception. Analysing the responses provided by two pre-service teachers regarding one of their peers has highlighted for me the multiple layers of interaction which might be occurring during class discussions and interactions.

Question Five

The final question from the critical incident questionnaire – Question Five – related to the identification of the most surprising element of classes during the past week for these pre-service teachers. Two key sub-categories from this question were references to Roundtable Reflection sessions (25.5%) and the importance of interesting and helpful questioning (21%). As Vincent mentioned, with reference to roundtable reflection “I was surprised that we all had so much to say about everything and kept the roundtable going for so long. This reflection stuff is only getting better”. Also, a discussion based on questioning enabled (at least some) pre-service teachers to understand more about the role of questioning, and probing, in learning about teaching: “The thing that surprised me the most ... was the effectiveness [that] simple questioning can have on determining a students’ view or understanding of mathematics” (Gina).

Summary of Learning from CIQ Responses

Analysis of the CIQ responses has helped me better understand what it means for pre-service teachers to learn about their learning, and exemplified for me the ways in which I have learnt about teaching through reflecting on pre-service teachers’ written responses. For instance, pre-service teacher’s written CIQ responses have highlighted the multiplicity of the ways in which experiences are interpreted (for instance, the ways in which information sessions are perceived); and pre-service teachers themselves are perceived (for example, Jan). The importance of discussion amongst peers as a means of supporting learning, although not surprising, reinforced my assumption that shared discourse related to pre-service teacher experience provides opportunities for constructive de-briefing. De-briefing in this way exposed the notion that other pre-service teachers shared some of the same dilemmas in teaching and learning about teaching and therefore, pre-service teachers found solace in the fact that they were not the only ones grappling with often problematic issues.

Discussion of Tools for Written Reflection

Analysis of pre-service teachers’ written reflections (Freewrites, ALACT, Critical Incident Questionnaires) has helped me better understand a number of issues related to my assumption, that a triad of reflective tools would enhance pre-service teacher reflection and (specifically) lead to *critical* reflection about teaching. I anticipated that partner teaching would be an effective means for pre-service teachers in each cohort to maximise their teaching (and learning about teaching)

experiences by sharing planning, teaching, evaluation and reflection with a peer. Two important outcomes emerged for me in terms of this assumption. First, systematic reflection (using multiple approaches) revealed instances whereby both pre-service teachers and the teacher educator experienced states of doubt, hesitation and perplexity which were frequently problem-based (Loughran, 2002). Second, multiple reflective practices encouraged pre-service teachers to reflect selectively, rather than critically, on their learning.

Our experiences provided the basis for our reflections and in this sense, related to the Deweyan (1933) focus on the role of experience in reflection, and to the benefits of structured (models, cycles) and unstructured reflective approaches which emphasised the importance of the experience *had* (Munby & Russell, 1994). Further to this, it appears that when pre-service teachers reflected on their teaching, using a traditional unstructured approach (i.e., prior to the introduction of these tools), their reflections were frequently descriptive (Hatton & Smith, 1995) linear and chronological, i.e., as they experienced it. This descriptive writing related to Hatton & Smith's (1995) Stage One (of four stages) of reflective writing which refers to descriptive writing as a report and which answers the question: What did I do? The nature and form of these reflections also can be related to van Manen's (1977) Stage One, Technical Rationality in which the focus of writing is on classroom practice, and reflections frequently linked to the success or failure of particular strategies. Both stages (i.e., Hatton & Smith's and van Manen's) are representative of rudimentary or initial levels of reflective practice and as such, are not indicative of critical reflection (Brookfield, 1995; Gore & Zeichner, 1991; Hatton & Smith, 1995; van Manen, 1977). Therefore, with reference to the analysis of the data of the Phase One cohort, it might be concluded that reflection was indeed occurring in a systematic manner throughout the semester; that it emerged from pre-service teachers' experiences, was generally problem-based and typically descriptive in nature. However, there was little evidence of critical reflection occurring, in the sense defined by Hatton & Smith (1995) as, "involving reasons for decisions or events which takes account of the broader historical, social and/or political contexts" (p. 11).

When pre-service teachers employed the ALACT framework and were required to identify and explore a critical incident, interaction or event from their teaching experience, the focus seemed to shift from content, for example, and was more related to issues associated with student behaviour and student engagement. According to Hatton & Smith (1995) this would not be classified as critical reflection, but perhaps displayed more of a critical orientation towards selecting and exploring an incident, interaction or event which proved problematic. By identifying these interactions as critical, these pre-service teachers might be illustrating the use of a precursor to a critically reflective orientation.

Pre-service teachers' written reflections provided some evidence to suggest that they were developing their skills and understandings of teaching through their experiences of teaching, and were beginning to be able to specify and articulate their new learning. For example, Paul stated, "It [buddy teaching] was a great learning curve for us as pre-service teachers as we had noticed a progression in our teaching

and had strengthened our abilities in observing and questioning and observing in the different techniques they used in maths”. Paul’s insight about his “progression” indicates something more about the way he is thinking as a teacher/learner and terms such as “learning curve” and “progression” provides evidence to suggest there is movement in his thinking about teaching, as a result of his experiences. This pre-service teacher articulation of learning through reflection was also evident in the following responses which suggested, for example, that experience in schools had indeed been crucial in stimulating thoughts and discussions about a range of issues including understanding more about learning as a pre-service teacher: “Sometimes working backwards enables a student to develop a concept” (Mich); the impact of student feedback on teaching and learning “As I am learning I like to hear the students’ feedback as the more feedback we get the better we will be” (Anni); “Getting the students to give feedback is a great resource and I think it will be one I will use in teaching more often” (Aimie); core professional traits which become crucial in the day-to-day management of classroom dynamics: “Being a friend to the students can be counter-productive. We need to strike a balance between respect (so we don’t have to manage behaviour all the time) and having fun and knowing the boundaries” (Cass); and a recognition that negative experiences may be reframed to inform future actions: “Mel and I decided to take the negatives from the last lesson and turn them into positives” (Allie).

In relation to my second outcome (i.e., multiple reflective practices would encourage pre-service teachers to reflect critically on their learning), it may be that a variety of reflective tools may provide the potential for reflection to occur and perhaps by employing a tool of preference, pre-service teachers might begin to develop competence in the use of that tool which might then provide a precursor to critical reflection. The data presented in this chapter would suggest that this is indeed the case.

Which reflective tools are preferred by these pre-service teachers? In the next section of this chapter, I discuss and evaluate pre-service teachers’ preferred reflective styles (and the tools that support them) and, elaborate on the ALACT framework as a guide for reflection.

Discussion of Preferred Reflective Tool

Introducing and implementing reflective tools to assist in reflective practice was intended to provide pre-service teachers with a framework to guide their approach to reflection, hence reflecting my assumption that pre-service teachers required a structured approach to reflecting on their experiences and practices in learning about teaching. Responses provided by the Phase Three cohort (TJ792, Third Year; n = 46) to the question: “What is your preferred reflective mode?” are discussed here as a means of illustrating the preferences of pre-service teachers.

In the following section I describe the data which were selected as they were considered representative of the views expressed by the pre-service teachers

Table 5.7 Responses by pre-service teachers to most preferred reflective model

Preferred reflective mode	Number of instances (n = 46)	Percentage of total instances	Illustrative response
ALACT (A)	17	37	ALACT is a great way to reflect on the activity as you realise where the students are expanding their learning and it helps you plan your next activity (Sal)
Discussion with others (D)	13	28	Discussion – talking about what went well, what didn't and what could be improved (Neal)
Writing (W)	5	11	Written journal (Jim)
Self (S)	8	17	I prefer to use my own method of reflecting (Evan)
Not ALACT (NA)	3	7	ALACT can be limiting (Roger)

generally, across the cohorts who participated in this research. Following the coding of the responses, five categories emerged. These were: ALACT (A); Discussion with others (D); Writing (W); Self (S) and Not ALACT (NA). Table 5.7 (above) lists the five categories with their corresponding number of instances of mentions, the percentage of the total mentions (n = 46) and an illustrative example of a pre-service teacher written response related to their preferred learning style.

The ALACT Framework as a Guide to Reflection

These pre-service teachers' most frequent response to the question about their preferred reflective style was related to the ALACT framework (37%). Each of these written responses specifically identified ALACT as their preferred reflective tool and indicated support for both the structure, with its focus on learning about the learning through trial and discovery e.g., "it [ALACT] gives you the chance to try again in a classroom situation; you could continue to trial until you come up with a good solution" (Pat); "we are able to go through a process of discovering what happened and then attempting to improve this" (Tom). Pre-service teachers commented on the ease and naturalness of the cycle; e.g., "I referred to the ALACT model as it seemed to be similar to what I do whilst teaching" (Michele); "ALACT is a great guide but I think it almost just reflects what should be a 'natural' process of reflection", (Emma). The naturalness' of the framework was commonly mentioned as an important factor across all cohorts. For example, Kelsy stated: "I want knowledge and I ask myself 'why?' and reflect all the way and evaluate how it's going ... I like the ALACT because it feels natural" (personal communication via telephone conversation, July, 2003, one year later).

Analysis of the data suggested that pre-service teachers' developing understanding of pedagogy seemed to be influenced by experiential learning (Jamieson, 1994; Kolb & Fry, 1975); that is, based on a: "cyclical process of concrete experience,

reflective observation, abstract conceptualisation and active experimentation” (Korthagen et al., 2001, p. 43). Some pre-service teachers, in their reflections, revealed the reflexivity of learning cycles based on experience and active experimentation. For example, Sal stated “ALACT is a great way to reflect on the activity as you realise where the students are expanding their learning and it helps you plan your next activity”. In this situation, the focus was dually on the students’ expansion of learning and the pre-service teachers’ identification and planning of meaningful and connected learning activities.

Reflection utilising the ALACT model provided a framework for monitoring this process and it also encouraged learning to be explicated from the experience. In this sense the ALACT model supported “the ideal process of experiential learning as an alternation between action and reflection” (Korthagen et al., 2001, p. 43). This cycle of reflection on experience is akin to the Deweyan (1933) process when one is confronted by a puzzling experience, or a problem (Action); the mind immediately explores alternative possibilities which are referred to as suggestions and the exploration of multiple ideas (Creating Alternatives); the reasoning phase where one mentally elaborates on the ideas (Looking back on the Action) and the testing of a hypothesis which may take the form of an imaginative or a covert action (Trial).

The majority of reflective frameworks and tools refer to stages and/or phases within the reflective process which progress in a hierarchical manner. The beginning stages relate to initial reflection levels, which imply descriptive recall of events and experiences, these then develop in a progressive manner as the reflection increases in sophistication, ultimately leading to critical reflection (as described, for example, by van Manen, 1990; Valli, 1992; Hatton & Smith, 1995). For some pre-service teachers, the ALACT framework operated in way that allowed them to develop a critical orientation in terms of selection and identification of a problem focus. As Jim stated: “I believe that I will continue to use the ALACT model of reflection as I will be able to identify single aspects and change them accordingly, rather than trying to change the whole lesson”.

It could be inferred from the data from the ALACT responses (Phase Two) which represented reflection based on a structured analysis of an incident/interaction (rather than a description of events as they were experienced in a linear and chronological manner) that these pre-service teachers were prompted to reflect in an analytical manner. The intervention, based on the introduction of a structured framework for reflection, impacted on these pre-service teachers’ ways of thinking about incidents/interactions and in this sense, required a critical selection which then provided the basis for a more detailed consideration of the problematic experience, event and/or interaction. Rather than recount and retell the experience, more was required in terms of the selection of the focus and/or stimulus. It was also interesting to note that the focus for pre-service teacher reflection transferred from issues associated with mathematical content to school students’ behaviour and levels of engagement (45%, or the majority of instances reported in Phase Two).

This shift in focus was further supported by a random sampling of a Phase Three cohort (TJ792, Semester One, 2004). Reflections were coded ($n = 15$), categorised and analysed utilising the four categories: mathematical content (MC); student behaviour (SB); student engagement (SE); and, pre-service teacher based issues (PSTB). In this sample, only 13% or 2/15 instances focused on mathematical content. The most frequent focus for the pre-service teachers within this sample in their reflective writing was student behaviours (47% or 7/15) and student engagement (20% or 3/15). These categories combined provide evidence that suggests two thirds (or 67%) of the instances of reflection were stimulated by a focus on student behaviour/engagement. This may provide further evidence to suggest that the ALACT frame directed pre-service teacher thinking.

Discussion with Others, Writing, Self and Not ALACT as Modes of Reflection

Almost one third of the total instances of preferred reflection mode related to a preference for reflection based on discussion with others (28%). Ted's response perhaps epitomises these: "I find it easier to talk with someone who was there and then write it down". Others referred to a mental capacity to "file it away for improvement for future lessons" (Bec) and yet others mentioned the power of working through issues together, as can be seen in Pete's comment: "coming up with solutions together is very effective practice".

Eleven percent of the total number of instances referred to writing as pre-service teachers preferred style of reflective practice. This raises an interesting dilemma for me as a teacher educator which highlights a discrepancy between my expectations related to written reflection on experience and learner willingness and preference in terms of reflective learning styles. Clearly writing was not the preferred mode of this group of pre-service teachers. Recognising this difference between me and my students causes me to ask the question: Whose needs are being met through the reflective practices and how? Other pre-service teachers suggested that there be less emphasis on written reflection as "some people just process things in their heads" (Ian). Seventeen percent of the total responses mentioned a preference that pre-service teachers use their own style while 7% stated that they would not use ALACT as a model for reflection as it was restricting: "I don't find using a predetermined frame all that helpful – it's too restricting" (Tim); and, "very regimented and I write for the ALACT and not for my own teaching benefit" (Wendy). These responses raise the issue of the need to cater for individual reflective styles by presenting a range of alternatives, and the notion that adhering to a framework (for example, ALACT) can be interpreted by pre-service teachers as yet another form of technical reductionism (Kelchtermans, 2005).

Summary: Challenging My Assumption

Prescriptive assumptions (Brookfield, 1995) are assumptions which reflect what one believes ought to be happening in an educative experience. In this case, my prescriptive assumption that the integration of multiple written reflective tools – ALACT, Freewrite and CIQs – would stimulate learners to reflect critically on learning has been challenged. My prescriptive assumption was grounded in the paradigmatic assumption that the promotion of critical thinking in teacher education is integral to educational, social, moral and academic advancement (Brookfield, 1995; Gore & Zeichner, 1991; Korthagen, 1985; Korthagen et al., 2001; Loughran, 2006). The analysis presented in this chapter has focused on the impact of multiple written approaches for instigating reflection and on the consideration as to whether or not there was any discernible evidence of a movement toward the development of critical reflection for pre-service teachers as they learnt about teaching through reflection.

Three key outcomes have resulted from the analysis of the written reflections provided by the pre-service teachers: first, written reflection using a framework can interrupt the habitual pre-service teacher propensity for reflection-as-retell; second, multiple approaches, using an eclectic range of reflective tools can induce reflective traction, which may become a precursor to critical reflection; and third, teacher educator learning can be enhanced by systematically exploring snapshots of reflection.

Reflection as Retell

The analysis of the data in this chapter provided evidence to suggest that written reflection in teacher education, although an ideal of, and integral to teacher education programs, remains at least in this case, problematic. Intentions for practice are not always mirrored in the reality of practice. Reflection may simply be interpreted as description, and taken in this sense, can become a linear, chronological account of events as they were experienced. It could perhaps be concluded that the majority of written reflections provided by these pre-service teachers could be classified in this way and represented little more than recall. And, as Hatton & Smith (1995) have suggested, such pre-service teacher response may not therefore genuinely register as reflection; rather it is descriptive writing.

However, it might also be concluded from this analysis, that the implementation of reflective frameworks that provided a structure for reflection (ALACT, Freewrites and CIQs) obliged pre-service teachers to be critically selective about the incident/interaction and/or event that they reflected about and as such, encouraged reflection through an analytical, rather than a descriptive lens. Pre-service teachers through their structured written reflections, identified their locus of concern in their developing pedagogy. These concerns included, for example, the

supports, scaffolds and anxieties associated with partner teaching; knowledge of mathematical content and concepts; student engagement and behaviour; and, the benefits and limitations of reflective models.

Reflective Traction

With reference to learning about reflection in teaching, it seems that what might further enhance reflection in teacher education is not only the integration and systematic scrutiny of written reflective practice/s, but also the provision of opportunities for learners to establish a connection with reflection. Reflective traction is intended to mean an entry point, or a beginning point which allows for the initiation of a connection to the reflection process. This traction may then provide an impetus for further critical examination of experience as well as creating new ways of encouraging teacher educators to be equally challenged by a process that captures the thinking of both the teacher and the student and minimise the possibility for reflection being a routine.

It might also be concluded from the data examined in this chapter that an eclectic approach (i.e., offering several different tools for reflection) provided opportunities for pre-service teachers to establish reflective traction. For example, reflective traction might be provided for pre-service teachers by the ALACT framework (37% of these pre-service teachers identified the ALACT framework as their preferred mode of reflecting on practice), while for others it was the free write or roundtable. In terms of the ALACT model, as the data has shown, when utilising this framework, the style of reflection was exemplified by discrimination in terms of the incident/interaction/event selection and subsequent analysis, rather than the traditional description and recall of an event. A systematic reflective approach may lead to a more formalised structure for reflecting on experience which then may minimise the *ad hoc* nature of reflection and in doing so, provide a cyclical framework (ALACT, for example). Conversely, implementation of a structured reflective approach to practice using various tools can (and was) experienced by some pre-service teachers as an imposition and perhaps as Kelchtermans (2005) has suggested, yet another form of reflective technical reductionism.

Being intimately involved with the implementation of the selected approaches, the assessment related to the reflective approaches and the evaluation of learning, demands ongoing management and scrutiny of my practice. Through the process of retrospective reflection and in responding to this data, albeit with time as a filter, issues associated with reflective practices in teacher education have been foregrounded, which have informed my pedagogy. For example, I can now confidently state that the intervention by means of selected and multiple innovative reflective practices (ALACT; Freewrites; CIQ) while based on educationally sound intent, will not necessarily lead to effective reflective practice (Loughran, 2002). It may, however, provide a means by which pre-service teachers establish reflective traction, opening a window to, and creating an impetus for, critical reflection.

Teacher Educator Learning

New understandings of the impact of reflective tools prompt further questioning of my taken-for-granted assumptions, practices and beliefs. For instance, is the implementation of structured reflective practice cognizant of that which some scholars have argued is more indicative of a form of technical reductionism (Kincheloe, 2003; Kelchtermans, 2005)? As Loughran (2003) has suggested, quality learning requires learner consent, and some pre-service teachers, regardless of the expectations of the program remained unaffected by the reflective process. The importance of learner consent is evident. For example, consider the following (unsolicited email), forwarded to me by Alan (Phase One) at the conclusion of the semester:

In this self-initiated entry I wanted to look at all the reflection we have been doing and look at whether it is worth it. Because we have done so much reflection it has been an issue for me because I believe it is a waste of time ... I reflect better by thinking about what I have done, not by writing it down. The only reason I do them is because I have to. I don't find any use in doing them and I don't like them ... I hate being pressured into writing something ... I have enjoyed the professional practice in maths this semester but I have not enjoyed all the reflection.

(Alan, Phase One, Semester One, 2003)

Alan raises an important issue for me as teacher educator; that is the negative impact on him of multiple tools used in an attempt to elicit more about his learning. In his case, multiple approaches may have created a problem whereby he felt “pressured” and only completed the written tasks because “I have to. I don’t find any use in doing them”. Perhaps fewer tools or even a choice of tools may have been more appropriate for pre-service teachers such as Alan. This instance highlights the need for reflective balance and ongoing teacher educator scrutiny of the effect of these modified approaches to teaching and learning about learning through reflection. I need to be open and sensitive to pre-service teacher preferences and be prepared to adapt my program to include pre-service teacher choice of reflective tools.

Learning About Reflection in Teaching: Overview

This chapter has examined the ways in which written reflections can provide insights into understanding how reflection in learning about teaching is experienced, integrated and interpreted within the Learning and Teaching Mathematics Units within the Bachelor of Education Course. The interrogation of snapshots of written reflection based on an eclectic range of reflective tools provided for pre-service teachers across cohorts suggests that although it is possible to integrate written reflection in learning about teaching, the outcomes, at least in this case, are variable.

In situ and retrospective analysis of the written reflections exemplified key issues associated with these pre-service teachers’ learning within the mathematics units; for example, the challenges associated with partner teaching; the impact of student engagement and behaviour in learning about teaching; and, the identification and

examination of both professional and personal attributes. The aspects of learning represented in the written reflections relate directly to having the experience (Korthagen et al., 2001; Munby & Russell, 1994) and the determination of a locus of concern which were perceived by the pre-service teachers as problematic.

In situ and retrospective analysis of the data has challenged my assumptions as teacher educator about the nature of written reflection and of the construct of critical reflection. In this sense, perhaps the data has had more impact on my *modus operandi* as it has helped to expose the questions associated with ‘why written reflective practice?’ in terms of whose needs are being met and whose questions matter, rather than the ‘what’ and the practical implications of written reflections. Reflective traction has much to endear itself to both the teacher of teaching and the learning of teaching if teacher education is to genuinely claim to encourage and enhance teacher education practices.

Chapter 6

Roundtable Reflection

Assumption Two: Roundtable Reflection Will Provide Opportunities for Pre-service Teachers to Challenge Taken-for-Granted Assumptions About Learning and Teaching Mathematics

This chapter explores my assumption that the practice of Roundtable Reflection would not only provide structured opportunities for pre-service teachers to share their teaching experiences, but also challenge their taken-for-granted beliefs about learning and teaching mathematics. I begin this chapter with a brief overview of the literature related to the examination of voice in pre-service teacher education.

Voice in Teacher Education

Voice has been widely researched in the literatures of teacher research (Clandinin & Connelly, 1990; Hamilton & Pinnegar, 1998; Loughran et al., 2002), reflective practice (Alerby & Elidottir, 2003) and self-study (Bodone et al., 2004; Berry & Loughran, 2002a; Elijah, 2004; LaBoskey, 2004; Loughran & Russell, 2002; Tidwell & Fitzgerald, 2004). The initial impetus for examining the role of voice in my Learning and Teaching Mathematics context emerged from early in the research feedback received from pre-service teachers. From my analysis of the feedback, I had identified two key understandings about my teaching: first, that my voice as a teacher educator had been privileged within the discourse of mathematics teaching and, second, that I needed to teach so that pre-service teachers learnt about teaching through verbally reflecting on their own experience. Establishing the practice of Roundtable Reflection (RR) was a direct response to this feedback. I wanted to move away from the notion of teaching as telling and listening as learning (Berry, 2007; Berry & Loughran, 2002).

Although minimal research exists about the day-to-day functioning and analysis of teacher education classrooms utilising a RR approach to learning (in this context, participating in group discussions in a circle arrangement), scholars such as

Brookfield (1995), Kincheloe et al. (1999) register caution when implementing oral reflective practice based in circle arrangements. These researchers suggest that although the intention of oral reflection might be to promote inclusion of all pre-service teachers in reflective discussion, the reverse effect may occur, in that pre-service teachers may feel vulnerable and disabled in their thinking and hence their learning. This is because, for some pre-service teachers, this physical restructuring of the learning environment (i.e., as Roundtables) could be interpreted and experienced as a form of oppression and become confronting. The circle, by its very structure may create “pressure to participate and perform” (Brookfield, 1995, p. 10) and in doing so, restrict the establishment of the development of trust among peers and teacher educators. Brookfield (1995), for example, also suggests that de-centering the teacher and devolving teacher educator authority can sometimes be interpreted as false modesty and “induce mistrust and shut down learning” (p. 14) by pre-service teachers and therefore actively work against developing a trusting environment.

This chapter examines my prescriptive assumption that pre-service teachers would be maximising their opportunities for learning about teaching by being encouraged to verbally unpack their experiences in a supportive environment. The context for this reflective unpacking was during RR sessions, which were conducted weekly, following partner teaching in schools, for up to six weeks per semester. Both mine and my pre-service teachers’ involvement in, and close examination of, RR sessions provided insights into the ways in which pre-service teachers chose to learn about teaching as well as insights into my role as teacher educator (including the ways in which I needed to constantly negotiate my boundaries as a teacher educator), and raised challenges associated with learning about teaching through reflective discourse. Throughout this chapter, I describe how RR sessions became opportunities for me (and pre-service teachers) to learn more about multiple perceptions of experience and hence, expose us to others’ ways of understanding interactions, events and incidents which had been experienced in our teaching.

Roundtable Reflection as Inquiry into Practice

Integral to reflective practice is the notion of inquiry (Clarke & Erikson, 2004; Cochran-Smith & Lytle, 2004; LaBoskey, 2004; Loughran & Russell, 2002; Schön, 1983, 1987). The inquiry process within my Learning and Teaching Mathematics context reflects a systematic, formal explication of puzzling or problematic situations which emerged from pre-service teachers’ experiences. The puzzling and problematic situations did not present an immediate or obvious solution at the time (Dewey, 1933; Korthagen, 1985, Korthagen et al., 2001; Loughran, 1996). As a means of integrating inquiry into practice, RR sessions were introduced with each cohort of pre-service teachers. Inquiry, supported by a RR approach moved away from an extensively researched traditional expectation in teaching and learning about teaching that valued answers rather than questions (Richert, 1995). In this

way, by participating in RR, pre-service teachers were encouraged to inquire into and about their own practice, in a more formal way.

The “commuting experience” (Korthagen et al., 2001, p. 150) involved pre-service teachers along with their partners, commuting between the university and the school settings; teaching mathematics in Prep – Year Ten classrooms and reflecting weekly in group seminars, known as Roundtables. These RR sessions were intended to encourage peer interaction, within a supportive space which was designed to enable participants to verbally reflect on experience(s) and challenge assumptions about learning and teaching. Integral within this definition of RR is the nature of the Roundtable as a forum designed for ongoing identification, reflective discussion and interrogation of issues associated with both the practice of teaching and learning about teaching.

Roundtables replaced some of the traditional tutorial sessions within the semester long units (typically of thirteen weeks duration). Traditional tutorial sessions within this teaching context consisted of teacher educator selected readings as an extension of the weekly lecture with the session structure pre-planned with predetermined outcomes; activities are linked to the topics and set learning tasks, based on group work, are completed. Tutorial sessions were conducted during the first half of each semester, and RR sessions replaced tutorial sessions during the second half of the semester as it was during this time that pre-service teachers completed their weekly partner teaching in schools.

In contrast to more traditional forms of tutorial based debriefing, during RR sessions pre-service teachers themselves established the agenda for discussion based on their teaching experience in schools. Extension readings and resources provided in the subsequent Roundtable were then based on the needs of the pre-service teachers which have been previously identified through the RR. (For example, if teaching the concept of ‘time’ was problematic, I would then provide supplementary reading by way of articles related to teaching this concept during the following Roundtable). Numbers of Roundtable sessions and times of these sessions varied with each cohort, but typically each cohort experienced four roundtable sessions, with each session averaging approximately one hour.

It was also anticipated that the identification of (often) problematic pre-service teacher experiences would then prompt pre-service teachers to challenge their own and their peers’ taken-for-granted assumptions regarding learning and teaching mathematics. Alternatives could then be explored from varying perspectives (i.e., taking a problem which arose from practice and examining it in the light of alternative and future possibilities for practice). Roundtables were developed to offer an approach to learning about teaching based on eight teacher educator assumptions which I developed as a result of analysing the data collated from my pilot study. These assumptions are:

1. RR will provide opportunities for pre-service teachers/teacher educator to make sense of experience/s in a supportive environment
2. Pre-service teachers will generate discussion by raising issues related to their experience

3. The role of the teacher educator will be to introduce the session, clarify the framework and consciously refrain from dominating discussion
4. All pre-service teachers will be provided with an opportunity to raise an issue, and hence, encourage development of their voice
5. Learning outcomes cannot be predetermined
6. Learning/s will be made explicit
7. Opinions will be respected
8. References will be made to the ALACT model of reflective practice (Inner/Outer cycle).

During the first roundtable session for each cohort, the structure and expectations for roundtables were explained, including the important underpinning principle that pre-service teachers maintained personal choice about their oral contributions.

The ALACT framework provided an overlay for the verbal discourse of roundtables such that pre-service teachers were required to consider the ALACT cycle when reflecting within the group. As a way of monitoring my involvement in the reflective discourse, I was guided by the Outer Cycle of the ALACT framework.

The ALACT Framework and Roundtable Reflection

I introduced the ALACT model for reflective practice as a way of implementing a formal reflective structure within roundtable sessions and as such it provided an overlay, or guide for the reflective process. Pre-service teachers were encouraged to consider this cycle as an approach to reflecting on the teaching experience/s with their teaching partners and as participants in the RR sessions. I anticipated that by providing a framework for oral reflective discourse, the ad hoc nature of reflection on practice (suggested by pre-service teachers in their pilot study responses, and which indicated a developing resistance to reflection) might be curtailed and in this way, perhaps become more meaningful to pre-service teachers as a means of understanding their learning about teaching.

The ALACT framework also provided a reflective tool for me as teacher educator during the Roundtable sessions. The ALACT framework consists of both an Inner and an Outer Cycle. The appeal of this approach for me was in the structure of the Outer Cycle, particularly, as it became my guide for my role while participating in RR sessions. Each phase of the Inner Cycle has corresponding expectations within the Outer Cycle. For example, in the Outer Cycle, Phase One requires the teacher educator to assist pre-service teachers in finding useful experiences to reflect upon; Phase Two suggests that teacher educators display acceptance, empathy, genuineness and assist in making the issues concrete; Phase Three is represented by all of Phase Two qualities, and specifically calls on the teacher educator to make learning explicit; Phase Four revolves around teacher educator help for pre-service teachers if they experience difficulty in finding and choosing solutions to problems; and Phase Five is based on helping the continuation of the learning

process. Further skills which are suggested as desirable for facilitating effective learning through using the outer cycle include an expectation that teacher educators will attempt to remain silent and allow pre-service teachers to pursue discussions related to their needs as learners. (Refer to Chapter 4 for diagram of Outer Cycle).

The Physical Structure of the Roundtable

For each Roundtable session, traditional rows of tutorial seating were restructured to form a shape representing a roundtable. The intention of this arrangement was threefold: first, to physically decentre the teacher educator, and thus challenge the traditional practice of the physical centrality of the teacher in learning; second, to establish an environment where participants have increased visual contact with others thus increase likelihood of engagement and third, to divest authority for learning to all members of the group and hence model reflective practice as a process in which all participants might contribute to the discourse.

Guidelines for Conducting Roundtable Sessions

Expectations associated with RR included an understanding that the sessions were to be regarded by participants (pre-service teacher/teacher educator) as both listening and speaking spaces and that pre-service teachers could choose to verbally participate in the discussion, but were not compelled to contribute. Although pre-service teachers were required to attend the session as an assessment task, their verbal contributions were not formally assessed. The aim for each session, as explained to the pre-service teachers, was to establish and maintain a learning environment where members felt supported, and yet challenged in their thinking and where they could therefore express concerns and expose issues regarding learning about teaching. In doing so, assumptions about learning and teaching could then be identified and challenged. The challenge for both the pre-service teachers and for me in this situation was to constantly fine-tune and monitor the balance between feelings of safety (that is taking professional risks and experiencing vulnerability) and developing and maintaining a professional respect and confidentiality amongst the group. This situation relates to research conducted by Berry (2004a,b; 2007), who refers to the experience of learner vulnerability manifested as a tension within learning environments, where learners challenge both self and others.

I introduced each RR session often with a summary of the key points from the previous Roundtable session. I then discussed the expectations associated with the function of RR and invited pre-service teachers to identify an issue which they might like to examine further within a group learning environment. It was the content of these discussions which led to a deeper understanding of the ways in which

we (pre-service teachers and me) were identifying and examining a range of issues associated with learning and teaching mathematics.

Pre-service Teacher Feedback About Roundtable Reflection

As I analysed all of the data sources across all cohorts, pre-service teachers suggested that Roundtable Reflections were one of the most engaging aspects of the Learning and Teaching Mathematics units. For example, this was evident in the pre-service teachers' response to the question, "At what moment in the class(es) this week did you feel most engaged with what was happening?" (CIQ, Question One, 2003), where 51% of the total mentions referred to the Roundtable sessions. Further, in response to the question: "What is your preferred reflective mode?" (Questionnaire, TJ792, 2004), almost one third of the responses referred to discussion with others during Roundtables.

In the next section, I specifically discuss data I collected from Roundtable sessions (Roundtable One, Semester Two, 2002, $n = 24$; Roundtable Eleven, Semester Two, 2003, $n = 12$; Roundtable Twelve, Semester Two, 2003, $n = 12$). Each Roundtable session was conducted in the week following the first partner teaching session in schools. Each session was audio-taped, transcribed and the data were coded. Through this coding of the data across three sessions I identified two key categories; (1) Roundtable Reflection as Problem Identification and Problem Solving, and (2) The Nature of my Role as Teacher Educator. Sub-categories related to Category One refer to (1) the Affective Dimension of Teaching and Learning, and (2) Positive and Negative Assumptions.

Roundtable Reflection as Problem Identification and Problem Solving

Pre-service teachers, through inquiry during RR sessions, were identifying and attempting to explore problematic situations which they had experienced while partner teaching in schools. For example, Sam (Roundtable Eleven) illustrates this in the following quote by indicating that the session allowed him to unpack authentic problems and issues which emerged from his own experiences:

It's good [RR] because we can really play to it, because they're our own problems they're not ... a case scenario; we can find out different ways to sort out our problems in relation to schools and work; and, we don't do it anywhere else like how to deal with that sort of thing... this is all we do about dealing with problems.

(Sam, Roundtable Eleven, August 2003)

Sam's response speaks of the power of the authenticity of experience in learning about teaching, meaning that unpacking his own problems is preferable to responding

to artificial, teacher provided case studies and/or scenarios. He appreciates and prefers the opportunities provided in the roundtables to discuss his learning in a way that he does not experience in any other part of the teacher education program.

My rationale for selecting Roundtable One for detailed analysis was based on the positive comments by the pre-service teachers who had participated in the session; for example, “This was the best session I have attended at uni.” (Jill) and, “There’s a real buzz out there about the Roundtable session” (Liz). My curiosity led me to ask why this session had left such an impression on these pre-service teachers. (Similar comments were also made by pre-service teachers following sessions with subsequent cohorts.)

Roundtable reflection encouraged pre-service teachers to identify the problems associated with their practice and provided a space for an attempt to problem-solve. I begin my discussion of problem identification and problem solving by exploring an issue faced by Jess as she attempted to teach subtraction to a class of Prep/One students (5 and 6 years old) and the ways in which her peers attempted to offer multiple possibilities for both understanding and solving her problem. This was a typical scenario where a pre-service teacher attempted to teach a concept she felt she was well prepared to teach and multiple issues prevented this from being a successful experience for both her and her students. I as discuss Jess’s dilemma, I make explicit links to the ALACT reflective framework and identify the reflective cycle which becomes evident during the Roundtable reflection discourse.

A Problem for Jess: Teaching the Mathematical Concept of Subtraction

Jess’s problem which prompted the reflective discussion revolved around Jess’s attempt to teach about the subtraction concept with a group of six year one students. (This is ALACT, Phase One). Looking back on the action (ALACT, Phase Two) Jess identified that her planned strategy was ineffective for the majority of the group:

I had six in my group and one or two of them knew what the take-away sign [was] ... I assumed that they [all knew it] I used the big tree I made in the teaching aids last semester, and I asked “Can anyone tell me what you know subtraction or take away means?” And they’re all ... “it’s like when someone steals apples” or they just had no idea ... and I thought ... they were just making up things [pre-service teacher laughter] it was things you have in a tree. They just had no idea ... I thought they would have a much bigger understanding of what subtraction was.

(Jess, Roundtable One, July 2002)

In ‘Looking back’ on the incident Jess is able to identify her awareness of the essential aspects (ALACT, Phase Three) of the problem which include a lack of understanding by the students of her questions and a difference between what she

expected the students to know and what they actually knew. As she was speaking to the group during this roundtable, I noted that Jess seemed to become anxious when describing her scenario. She mentions that the students seemed to have “no idea” of the word “subtraction” or “take-away” and the concrete materials Jess had provided (a felt tree with fruit attached) instead of helping to make the concept concrete, only confused the students. In fact, the concrete aid became a distraction, as Jess continued, to explain:

I took the tree away. ... I didn't have an answer of what subtraction was ... I gave one sort of answer and then I sort of had ... to explain ... give them, yeah, tell them what it was and then a lot still couldn't [understand] so I put three apples [up] and said I was hungry and ate two and took two away and they couldn't even write ... in their books, like three take away one equals two ... They just, they just, I just thought they'd be able to do that pretty easy. I thought they'd be able to participate.

(Jess, Roundtable One, July 2002)

In her articulation of this problem to the group, Jess displayed signs of frustration and agitation, which were evident in the quiver in her voice, the speed of her speech and her inability to complete sentences. Her frustration also revolved around the pre-organised way in which she had approached her teaching; for example, she had met the classroom teacher prior to teaching the class to discuss the students' knowledge of the content area; she had volunteered time to meet the students in advance and she had planned the session and created teaching aids to assist in the teaching of the subtraction concept. In short, she had tried to do everything she could to make the concept work. But, even with detailed preparation, her session had become unexpectedly problematic. The Roundtable format then allowed for alternative approaches to be suggested by other group members, including some that had been trialed by pre-service teachers in similar situations (ALACT, Phase Four, Creating Alternatives). For example, Sally suggested the use of a counting book for student clarification, an alteration of the terminology of: “take-away” in order to assist student understanding through a visual stimulus and a description of her experience where the students created their own subtraction algorithms:

On my last teaching round I had preps and I did subtraction and used my book that we made. We didn't work with subtraction, we used take away but my teacher suggested to allow them invent their own [subtraction algorithms]. We used apples and when they cut it, it was like you know when you invent spelling and they were inventing their own sort of little algorithms. A lot of them did things back to front and ... some were just [using] a slash through the three and one take away three oh, three take any one or something, they'd do a three with a slash then a two and it was when you went to them they explained to you that you could see that they were totally on track.

(Sally, Roundtable One, July 2002)

Sally was reporting on a practice which she used, which was based on an approach to teaching that encouraged students to develop and explore their own algorithms, under guidance, rather than be taught using specific terminology and structured steps. Sally's approach was in contrast to Jess's expectations for her teaching of the subtraction concept that included a linear process of developing a concept with a

group of students and creating understanding by staging group conversations in a sequential manner. Sally however, suggested a somewhat less widely acknowledged approach to teaching the concept of subtraction, i.e., by allowing students to explore the creation of algorithms using trial and error.

Julie, another pre-service teacher, at this point during RT1, suggested that learning was like “rungs of a ladder” and that learning was a process of climbing until the “wow” moment was reached; while Anita recalled her experience of the successful use of a counting frame combined with peer teaching from students within the class as a means of encouraging students to create their own subtraction stories. Adding her idea, Shonia suggested that perhaps Jess could refer again to the teacher and to also ask the students what they had remembered and begin with the “familiar”. This could be accomplished by asking the students to explain their understandings. Further to this suggestion, Shonia highlights the role of prior learning, student entering behaviour and revision as a way to further ascertain group understanding of the concept of subtraction:

You could get some of those activities, ask her [teacher] what activities they have done and go back over it with them and get them to explain ... to you know and say, oh, y’oh, “Your teacher said that you did this activity a couple of weeks ago. Do you remember what it was?” Get them to explain that to you, the activity, to you, and then see what their understandings are and then you if you have to re-go over the activity again. It’s a good place to start, because they’ll have familiar, like be familiar with it.

(Shonia, Roundtable One, July 2002)

Anita discussed her successful use of a counting frame combined with peer teaching from students within the class. Unpacking this problematic situation revealed challenges pre-service teachers were facing in terms of challenging taken-for-granted assumptions about teaching. As different pre-service teachers contributed their experiences, the problematic aspects related to Jess’s situation were being examined and alternative possibilities were being articulated within the Roundtable session. As a result of this discussion with her peers about subtraction, Jess was exposed to some contributing factors associated with learning and teaching new concepts which included:

- Individual levels of understanding mathematical concepts within a class group vary
- Inadequacy of her language and explanations in relation to helping students to learn about a new concept
- The possibility that concrete teaching aids may become distractions for students rather than enabling scaffolds for learning
- Jess’ [self-identified] lack of knowledge about alternative approaches [other than telling] to clarify the learning for both the students and for herself.

Jess’s sharing of her dilemma and subsequent interactions with her peers indicates that RR sessions provided opportunities for pre-service teachers to unpack problematic issues and consider alternatives for practice. Pre-service teachers followed the ALACT framework to reflect on their experiences and what became clear in this discussion were the ways in which the pre-service teachers interacted with one another and the multiple alternatives (ALACT, Phase Three) which emerged for Jess as a result of the discussion.

Satisfaction for Diana: Probability and Grade Three

Predominantly, the issues discussed during RR sessions reflected challenges faced by pre-service teachers. However not all of these were negative and frustrating experiences. For example, the following excerpt from RT11 reflects Diana's satisfaction with her attempt to teach probability to a class of Grade Three students. This refers to another aspect of Category One, whereby pre-service teachers identified a problem in their practice but adapted their teaching to achieve a successful outcome. In this excerpt, she identifies the ways in which she questioned the students in order to clarify for her, their levels of understanding. She refers to the previous Roundtable session (RT10) where Jan had spoken about a student's blank expression as a critical moment:

She [Jan] made me look for those little key moments ... they [students] didn't understand it so I kept trying to reiterate to them; "Do you understand it? Is there anything more you want me to explain?" It made me a bit more aware of what to look for ... the blank looks and if they didn't understand it I kept on questioning right throughout. "Do you understand this?" and I kept on asking more questions. After each time they took a counter out of the bag I said, "Now what [colour] has the highest chance? What has the least chance?" and when it got to when there were only two counters left in the bag I asked, "What has the most chance now?" and they said "fifty-fifty" and I was so happy that they realised, that they understood. They understood.

(Diana, Roundtable Eleven, August 2003)

Analysis of this experience within this Roundtable session highlights Diana's sensitivity to introducing the topic of probability to her students as she took her cues about how to proceed with her teaching from the students' physical expressions (in this case, blank looks from the students led her to persist with her questioning).

Through exploring the level of connection and engagement of pre-service teachers during RR sessions, it was interesting to note the intonations and strength of voice when pre-service teachers raised their concerns. This became even more evident to me during the transcription of sessions as I listened again to the dialogue. In some cases sharing experience amongst peers during RR sessions prompted passionate responses. (Affective dimensions related to challenging assumptions are discussed later in this chapter). As much of what had been shared with the group represented challenges for the pre-service teachers in their initial stages of teaching, exploring their learning in a public forum reflected the affective and emotional dimensions evident when revisiting challenging learning and teaching situations.

Julie: "Learning is like Rungs of a Ladder"

Other pre-service teachers, such as Julie, for example, articulated her problems with multi-age classrooms (classrooms which comprise multiple age levels, and in this case, a class of Prep, Year One and Two students).

I have a real problem with [the multi-age classrooms] particularly the Prep-Two area because my personal belief is that preps. are a special breed and they need that year, that whole prep[aratory] year to really establish ... you know, being at home and kinder[garten], into the school system ... [I] would have to separate the preps.

(Julie, Roundtable One, July 2002)

In this reflection, Julie had both identified her problem which related to multi-age classrooms which emerged from her teaching experience in schools, and moved towards articulating her approach to addressing this problem which reflected her philosophy about the ways in which new students should experience the transition into a school system. Julie's view of transition meant a separation from older age groups so that new students could gradually establish their own ways of operating and in this way, the transition process might become less stressful. Julie, in questioning the status-quo in her school, reflected an inquiry stance as she explored alternatives and possibilities for class composition which related not only to the practice of teaching, but also to student learning outcomes, the educational policy of the school and the ethical dimensions of an approach based on this practice.

Guy: "Act It Out"

Often pre-service teachers who chose not to orally participate in the discussion wrote their responses post-session. For example, Guy who had chosen not to contribute orally during the session wrote: "What happens when children show no understanding of a topic? Problem: Children didn't understand takeaway sign/no understanding of subtraction Solution? – drama, real-life situation" (Written evaluation, 2002). My interpretation of Guy's reflection suggests that to aid in the learning of a concept such as subtraction, another approach might be to dramatise a real life situation so that students could participate in a physical activity in order to develop understanding of the concept. It seems that it was within the 'Creating Alternatives' Phase that this reflection proved meaningful for those involved.

The above examples suggest that pre-service teachers were prepared to articulate and write about alternative possibilities for solving problems associated with their own and their peer/s' practice. RR sessions provided opportunities for pre-service teachers to identify and explore problematic situations which arose from practice (Jess, Subtraction); identify satisfactory achievements in teaching concepts (Diana, Probability) and articulate and explore metaphors for learning (Julie, "Rungs of a ladder").

Analysis of the RR sessions provided some evidence to suggest that guided reflection (i.e., by using ALACT as a framework for verbal reflection on teaching) enabled us to focus on a reflective process by identifying particular stages of the

cycle (for example, the Action Phase or the Creating Alternatives Phase) as we participated in the roundtable, so we could maintain a reflective focus based on structure.

ALACT Framework as a Guide for Reflection during Roundtable Sessions

The ALACT framework provided a formal structure for unpacking pre-service teacher problems experienced in practice and was intended to support the development of a deeper understanding of their own developing pedagogy. Following the ‘Creating Alternatives’ phase, for example, some pre-service teachers were able to identify new perspectives and positionings for understanding their problems of practice and possibilities for future teaching. By unpacking their experiences during RR and adopting an inquiry stance to practice, these pre-service teachers were provided with opportunities to develop what Korthagen et al. (2001) refer to as “small t” theories (p. 124) about teaching and learning. These “Small t” theories are examples of phronesis, or practical wisdom, which emerged as a result of analysis of experience and reflect personal philosophies about teaching and learning. Julie provided an example of the development of her “Small t” theory when she articulated her belief following her teaching in a multi-age classroom, that multi-age classrooms were inappropriate for students in their first year of formal schooling.

In taking this learning from and about reflection further, I was challenged to ask of this analysis (as Korthagen et al., 2001 asked of their analysis of data), did [RR] help pre-service teachers? And, was there “an unbridgeable gap between our [teacher educators] words and the students’ experiences?” (p. 22). My response to this question about an “unbridgeable gap” is based on an examination of the way in which teacher educators assume their role within the reflective process. I have some evidence to suggest that some pre-service teachers did indeed attempt to either try new approaches to practice, or modify their own teaching approaches as a result of sharing alternatives during RR. (For example, Diana refers to Jan’s discussion during the previous Roundtable, of a student’s “blank look” and what this meant for her as a teacher. In the transcript of the dialogue, Diana refers to Jan and states that “She [Jan] made me look for those little key moments” (Roundtable Eleven, August, 2003)).

Pre-service teachers interacted with each other during RR sessions. For example, during RR1, there were seven episodes of sustained peer-to-peer dialogue, rather than teacher-to-pre-service teacher dialogue. This dialogue is defined as those episodes of talk without teacher educator voice or input. Perhaps then rather than a gap which Korthagen et al. (2001) suggest that may exist between the words of the teacher educator and the experiences of the pre-service teacher, pre-service teachers were building bridges across issues through their dialogue which had emerged from their experience and which had meaning for them. This understanding then led me to a deeper examination of another key category which

emerged as a result of the examination of the RR data and this refers to the ways in which I needed to re-frame my teacher educator practice within this learning environment.

Re-Framing My Role as Teacher Educator

During LTM units in previous years, pre-service teachers had been recipients of my knowledge about teaching; tutorial sessions were teacher educator input based and minimal dialogue had occurred between pre-service teachers. Consequently pre-service teachers had become increasingly reliant on my input, and on my experiences, as their source of guidance and knowledge about teaching. A key change for me was in my conscious attempts to remain silent or less dominant in the reflective discourse. The analysis of the transcript of roundtable sessions suggests that, even within the initial stages of their introduction to RR, the frequency of pre-service teachers conversing directly with each other increased. Analysis of Roundtable One, for example, indicated that there were seven episodes of pre-service teacher to pre-service teacher sustained interaction (i.e., verbal interactions between pre-service teachers which comprised dialogue without teacher educator input) within a forty-five minute period. These episodes of sustained dialogue between pre-service teachers during Roundtable sessions were notable; the issues were raised and explored by pre-service teachers and hence, emerged from their own experiences as teachers of mathematics, not mine.

My role during RR1, for example, was multifaceted. Many teacher educator competencies are linked to specific phases of the ALACT cycle and it was within Phase Three (Awareness of Essential Aspects) that my role was instrumental in terms of scaffolding pre-service teacher interactions (Palinscar, 1986). My intention was to show empathy, confront, generalise and generally help to make the learning that was being discussed explicit. This is in stark contrast with my previous role of telling pre-service teachers what they should be thinking and doing. For example, in responding to Jess and her dilemma (described above), I questioned her: “So my question would be, is exposure [of concepts] enough?”. And to help in making things explicit, I then synthesised the issues:

There’s some interesting issues aren’t there? There’s some assumptions that you made about where the kids were at; there’s, ‘you’ve been there’ so you’ve seen them and you’ve listened to the teacher expectations so you had some idea of where you thought they might be. They weren’t at the point of where you thought they might have been. You thought about that at the time so you modified, you changed, what you were going to do? You put your felt board away. Then you thought “What am I going to do now? I’m going to expose to them what I think they need to know”. So you actually stood there and you did show them. Is that right?

(Roundtable One, Robyn)

In this excerpt from the Roundtable transcript (above), I synthesise the issues Jess had discussed with the group. This synthesis (ALACT, Phase Three, Awareness of Essential Aspects) included re-stating the issues in my attempt to make the issues

explicit for her and for the group. A key issue that I recognised in Jess's explanation of her problematic situation was that she had made assumptions about her students which had been based on her discussions with the classroom teacher and, in the delivery of her lesson she had been challenged to alter her plan. It was then that she realised she had few options and at this point, reverted to telling the students about the concept of subtraction. A key realisation for me in hearing Jess recount her thinking in this session belonged to the value of the pre-service teachers identifying issues emerging from their own experiences; their experiences provided the basis for discussion and my reframed role included a focus on clarification, synthesis of issues and in this way, one who attempted to make the learning explicit.

Interrupting Our Habitual Routines

Establishing RR sessions as a medium for deconstructing experience required an interruption to our habitual ways of operating as learners (Segall, 2002) because the structure of the sessions forced us to operate in a way that not only challenged our routine habits but also our (often) taken-for-granted assumptions about the ways we had all previously participated in learning environments. Jill's comments (below) suggest that the type of talk, the amount of talk and the content of talk became a focus for all during the RR sessions. This change in vocal routine (i.e., from passive to active contributor) is evident, for example, in Jill's written reflection in which she identifies her initial apprehension about participating in RRs. Her participation eventually led to her identifying that through contributing to Roundtable discussions she was able to combine both her wants and her needs in learning about teaching.

[RR] was so different to anything we had previously experienced at university ... I had never experienced [the format] before. I was a little apprehensive at first about the concept but feel that by making a contribution we've been able to learn about things we wanted to learn about as well as things we needed to learn about.

(Written reflection, Jill, 2003)

In the following section, I examine in detail, an interaction with Sam (Roundtable Eleven) which exemplifies the ways in which my teacher educator routines were interrupted. I also examine the ways in which this particular critical interaction contributed to my deeper understanding of the multiple perspectives of learners, the value of reflection in and on practice and the ways in which we all experienced feelings of vulnerability in coming to know more about ourselves as learners.

Critical Interaction with Sam

Sam was a mature age pre-service teacher completing his first year of the Bachelor of Education and was a frequent contributor during Roundtable sessions. In the

interaction described below, Sam responds to my question posed during RR11 with an unanticipated response.

- Robyn: *Okay now I'll ask you a question about my role. Now I know this is fairly new to you people; you're saying you don't have anything like this in other units, so how do you see my role; how do you see me?*
- Sam: *Annoying. Only because you are too sensitive to it on the flip side - well I reckon (Group gasp, laughter)*
- Robyn: *No tell me because I need to know*
- Sam: *Well!*
- Jen: *Would I do that?!*
- Sam: *No ... I think she's sensitive to our situation and to the way that we learn ... but it's another to harp on it all the time to the point where I'm now getting out of my own natural field of development to keep thinking, "Am I fine with this? Yeh, I'm fine with this". Like I think sometimes you [should] just relax and let it happen.*

(Roundtable Eleven)

At the time I was surprised by Sam's reference to my role as "annoying". I was interested to know more about what he meant, so I invited him to further explain his thinking. I was aware during the interaction (described above) that I was simultaneously attempting to make sense of his comment; respond to his comment, and synthesise the other pre-service teachers' responses. The laughter from the group during this exchange may have indicated surprise and/or discomfort; surprise in that Sam had responded using the term "annoying" and discomfort in that as participants in a group discussion, we did not know how we were meant to deal with the response. I left the Roundtable session that day, feeling perplexed. Two days post this session, Sam sent me an email explaining why he had responded this way. He suggested that he felt he had been misinterpreted and that he did not intend to offend me in any way by his comment.

I had asked the question about my role and when I received a response I had not anticipated, I felt challenged. The following journal entry, completed post-session, reflected my sentiments and represents my attempt to understand and interpret my interaction with Sam:

Perspective is important. Maybe I am too passionate, zealous and this can be interpreted as both imposition and over-sensitivity. The flip to under-sensitivity. Keep the balance. Researching practice in this systematic way and scrutinising practice and implications of practice on learners requires intense self-investment. It means initially identifying and then confronting (especially the unexpected) with a willingness to reflect on alternatives – to view from other perspectives. So in asking about my role as teacher educator, for example, I was opening the conversation to psts [pre-service teachers] in anticipation that they would respond truthfully.

Sam - 'annoying' ... In explaining his reasoning it became clear that his impression had developed from a sense of frustration - of him having to constantly ask "Am I fine with this? Yeh, I am". I saw this from multiple perspectives. Firstly, that Sam felt comfortable in expressing an opinion. This may indicate the characteristics of the environment created as underpinning the roundtable format. Secondly Sam was involved in what could be understood as meta-reflection: an explicit aim of this approach. By constantly asking himself "Am I fine with this? Yeh, I am" then the engagement in this process is (or could be) interpreted as reflection, hence connection. The fact that this was frustrating him is an issue for me. Stating the fact that there is an over-sensitivity to reflection on my behalf was an

insight - hadn't interpreted enthusiasm as over-sensitivity. And this over-sensitivity could then become a learning barrier. There is professional expertise in identifying a balance.

(Journal entry, Wednesday August 27, 2003)

Sam's response to my question about my role in this learning environment challenged me. I had been expecting positive responses about my attempts to integrate reflection within the Learning and Teaching Mathematics units. From my perspective, RR provided an appropriate means by which pre-service teachers could reflect on their experiences and thereby identify their new learning. However, from Sam's perspective, the reflective process was not only "frustrating" but my constant referral to reflection was "annoying" to him. This experience leads me to recognise that in many ways Roundtables had served an effective purpose; Sam felt that he could voice an opinion and felt safe in doing so; Sam was engaging in meta-reflection (reflecting on reflection) by stating his feelings he was emotionally engaged, as demonstrated through his response during the Roundtable. However, this interaction with Sam also revealed the need for me to explicitly consider other perspectives about aspects of learning, and about the impact (and unintended effects) of my approach to reflective practice, particularly.

Multiple Perspectives Tasks

The interaction with Sam led me to consider other ways in which I might better access pre-service teacher thinking about their experiences of learning about reflection in my classes. The interaction provided a stimulus for the development of Multiple Perspectives Tasks (described in Chapter 4). Briefly, I designed these tasks as a means of eliciting multiple perceptions about events, interactions and incidents which occurred during Roundtable sessions. I randomly selected between two and four pre-service teachers and invited them each to complete a retrospective reflection on a critical interaction from the session. (Participation was voluntary, and in both cases, two pre-service teachers completed each task). A brief excerpt from the Roundtable session was provided for each pre-service teacher and they were asked to respond in writing to lines of the transcript about a particular incident (chosen by me). I also completed the task. Our responses were guided by the following questions: What were you thinking at this time? (i.e., time of the incident); What did you want at this time? How were you feeling? The responses were then collated and analysed for meaning. The aim of this process was to elicit multiple perspectives and points of view about the interaction so as to enrich my understanding of a specific roundtable interaction. These insights were then individually shared with the pre-service teachers who had completed the multiple perspectives tasks four months post-session. This task was completed after the semester had concluded and was non-assessable.

Table 6.1 presents a summary of an excerpt from the transcript of RR11.

The MPT responses were provided by Mary, Sophie and me (all participants during Roundtable Eleven) and the focus was the interaction with Sam (described above). The table presents the excerpt from the transcription. Next are three individual responses to that section of the transcript.

Discussion of Multiple Perspectives Task

Roundtable Eleven provided evidence to suggest that we were all confronting new challenges in our roles as learners. We were constantly attempting to negotiate boundaries and feel our way through what was being experienced during RR as uncharted territory. Whilst needing to be respectful of our differences, it could be seen that we were all seeking truthful, honest feedback to help us to move forward in out learning about teaching.

Table 6.1 Excerpt from multiple perspectives task (December 2003)

	Transcript	Robyn	Mary	Sophie
R11.033 Robyn	Okay now I'll ask you a question about my role. Now I know this is fairly new to you people you're saying you don't have anything like this in other units, how do you see my role; how do you see me?	Taking a risk with the open invitation to express opinion; anticipating a comparison with past experience; clarification of my role (the anticipated and the actual – are there contradictions in my modelling, delivery, practices?) Felt I had established a trusting, supportive learning environment.	My thoughts at this stage were: Does she really want to know the answer to this? Shall I say what I think or just what I think she wants to hear?	No response to this section of transcript.
R11.034 Sam	Annoying. Only because you are too sensitive to it on the flip side – well I reckon (Gasp, laughter from the group).	The word 'annoying' – what did he mean by annoying? Was I annoying him or was the process annoying him and why? Shock laughter from the group. I am surprised. This was an instantaneous response.	Well at least he is truthful but it takes courage to really say what you think no matter how much the tutor or lecturer tells you so. I am amazed he talks so.	My thoughts – Bloody hell Sam, that's a bit confronting. I wonder how she will handle it.

In this section, I analyse the responses from the MPT; a task based on researching multiple perspectives associated with the critical interaction with Sam during Roundtable Eleven. My asking of the questions, “How do you see my role, how do you see me?” represented a risk for me as teacher educator because often feedback about effectiveness as a teacher educator is provided in a written (often anonymous) format at the completion of the teaching semester.

Taking a risk with the open invitation to express opinion; anticipating a comparison with past experience; clarification of my role (the anticipated and the actual) – are there contradictions in my modeling, delivery, practices?

(Robyn, MPT, December 2003)

My thinking here shows that I was expecting positive feedback related to my attempts to integrate reflective practice within the Learning and Teaching mathematics units. There was risk also for pre-service teachers as the transcript reveals as they were evaluating the level of risk they were willing to be exposed to within this environment. For example, in response to my initial question, Mary stated that: “My thoughts at this stage were: Does she really want to know the answer to this? Shall I say what I think or just what I think she wants to hear”? Mary’s response is interesting for a number of reasons. First, she expresses her questioning of my intent and responds with what has been reported in research on pre-service teachers as saying what the lecturer wants to hear: “Shall I say what I think or just what I think she wants to hear”. For Sophie, there was also a questioning evident when she wrote “Bloody hell Sam, that’s a bit confronting. I wonder how she will handle it”.

Mary stated:

At least he [Sam] is truthful but it takes courage to really say what you think no matter how much the tutor or lecturer tells you so. I am amazed he talks so. What else can you say but your expression doesn’t change and I felt you really wanted the answer.

(Mary, MPT, December 2003)

The “annoying” remark prompted Mary to acknowledge Sam’s “courage” and to continue to question my intent and she suggests that as my “expression doesn’t change” she is now convinced that I “really wanted the [Sam’s] answer”. I had not previously intentionally analysed the impact of my non verbal expressions within the learning environment, but Mary’s response indicated that she at least was reading my non verbal signals as a means, for example, of evaluating the authenticity of my request to know more about Sam’s response of “annoying”. Pre-service teacher laughter as a response to Sam’s remark also seemed to have been interpreted as nervous laughter. For example, Sophie suggested that the laughter from the group represented nervousness: “People were feeling nervous; I think the laughter was out of nervousness”.

It was at this point that Mary also suggested that she felt Sam was beginning to feel uncomfortable:

Sam was starting to feel a bit uncomfortable now realising that you really did want to know and that you were not just going to brush it off. I agreed with Sam at this stage and felt that

often you encouraged us to discuss with each other how we felt but then there were times when you interrupted the conversations.

(Mary, MPT, December 2003)

The range of perspectives related to this critical roundtable interaction indicated the multiple ways in which the incident had been interpreted, and this led to a deeper understanding for me, of the views of others. It also prompted further self questioning about my ongoing challenges when introducing new practices to cohorts of pre-service teachers and my propensity to view this from a singular and well entrenched lens of questioning. For example, I asked: Was I interrupting? Do pre-service teachers feel comfortable? Do all pre-service teachers feel they have equal access within this forum? Were pre-service teachers connecting with this reflective format? Sam suggested that my constant questioning forced him out of his comfort zone and when I read back through the transcript I recognised this and noted this in my MPT task:

Good. He's uncomfortable in his space - then this is connecting. I feel better - he probably feels worse. He seems agitated and is becoming defensive about his position. Do I need to let things go through to the keeper? No, I need to challenge. If I challenge too hard, do I lose pre-service teacher goodwill - do they then disconnect? How much probing is too much?

(Robyn, MPT, December 2003)

Sam clearly felt that he was being constantly challenged and forced to move “out of [his] own natural field of development”. My response at the time indicates that I was struggling with the tension between challenging pre-service teachers to reflect, and probing constantly which may have led at least some learners to disconnect. The realisation for me was that I needed to balance my approach when reflecting with students and become selective about what to probe, how far, with whom and when.

During RR11, and on reflection, Sam’s comment interrupted our (i.e., mine and the group’s) habitual ways of operating because we needed to find alternative ways to accommodate each others’ needs. In so doing, discomfort was created for some. One outcome to emerge from this critical interaction was that learning about ourselves as learners and teachers not only exposed our vulnerabilities as learners (Berry, 2004a, 2007; Berry & Loughran, 2002) but revealed that reflective approaches such as RR could be an uncomfortable experience and required one to have what Finkel (2000) describes as a developing “faith in indirection” (p. 131). In other words, we need to constantly monitor and adjust our learning and be more prepared to expect the unexpected; deal with challenges and not hold preconceived ideas and expectations about what it means for individuals and groups to learn from reflection in teacher education.

I learnt through this interaction that attending to multiple perspectives matters and by exploring others’ perceptions I realised that the lens attached to understanding learning was as individual as the learner. In order for those different lenses to be examined, the establishment of a learning environment based on trust and support is essential. If the environment functions as one which is based on trust and

support then it may provoke more genuine discussion about issues faced by pre-service teachers/teacher educators in learning about teaching. It might be concluded from this data that the learning environment was under constant construction and reconstruction and as such, represented states of negotiation and flux for all participants.

Summary

The idea of the RR was to help pre-service teachers to identify real problems. These problems were then shared and discussed and through this discussion, assumptions about learning and teaching mathematics were shared. My role in this practice was to identify and clarify these experiences and assumptions and to challenge them. The RR sessions became important in this process as they were intended to be democratic sessions which invited pre-service teacher participation and choice, and hence increased ownership of the reflection process.

Challenging Assumptions as Learners

A key challenge identified as integral to improving my practice was related to understanding and meeting pre-service teachers' needs in terms of identifying and discussing problems. One of the ways of exploring pre-service teacher's needs and concerns was through identifying and challenging various assumptions they held about teaching and learning. This was done (as described previously) through RR sessions. An additional focus for experiences which underpinned practices within these units was an initial identification of assumptions related to the teaching and learning of mathematics, followed by a revisiting of these assumptions at the conclusion of the semester.

Assumption writing was included within the mathematics units as a means of identifying whether or not pre-service teachers' assumptions had been challenged and/or supported during the semester. What contexts, then, led to an exploration of assumptions? And, how did the pre-service teachers respond to the supporting and/or challenging of taken-for-granted assumptions?

Each cohort was required to identify three assumptions during Week Two and reflect (Written Questionnaire) during Week Twelve, on whether their original assumptions had been supported and/or challenged as a result of their experiences throughout the semester. The following data were randomly selected from the cohort who completed the Mathematics Unit TJ792 during Semester One, 2004. Eleven pre-service teachers' Week Twelve responses were tabulated and analysed. Initially the three assumptions from each respondent were identified, then pre-service teacher responses to whether their assumptions had been supported or challenged

were read for themes and coded and following coding of the assumptions responses, five categories emerged from the data.

The five categories related to: (1) the affective dimension of teaching and learning mathematics; (2) mathematics content; (3) the relationship between mathematics and everyday/real-life situations; (4) catering for individual needs; and (5) pre-service teacher beliefs about learning and teaching mathematics. The affective dimension was most frequently referred to in the data (12/37 or 32% of total mentions) and I chose to examine this category particularly as it represented the most dominant category. Category one which reveals pre-service teachers' affective connections with learning and teaching mathematics and a key sub-category which emerged as a result of examining the written assumptions data relates to an exploration of Positive and Negative Assumptions.

Challenging Assumptions: An Affective Experience

Analysis of the assumptions data suggests that approximately one third of pre-service teacher mentions (32%) referred to a typically affective dimension/response when taken-for granted assumptions were challenged. It was interesting to note that pre-service teachers, when reflecting on having their assumptions challenged, referred to their feelings. I did not anticipate the strength of the affective responses provided by some pre-service teachers in both their oral and written responses. For example, in the following written reflection, Sally identifies words such as feeling “overwhelmed” and yet similarly “pleased” when her assumptions are challenged. She states that through having her assumptions challenged she realised that there are multiple interpretations of events and incidents and that as a life-long learner her approach to understanding developing pedagogy is to gain “different insight[s]” about her beliefs about learning and teaching mathematics.

When my assumptions are challenged I feel overwhelmed at first but realise that this is probably a good thing as I am now putting a lot more thought into thinking; I feel pleased when assumptions of mine are being challenged because it proves I am always learning, that I don't have all the answers and when one of my assumptions was first challenged I felt as if I was in some way 'wrong'. But then I realised that there is no right answer and no right way of teaching. From this experience I have gained a different insight into what I believe teaching and learning maths is about.

(Sally, Written Reflection, Semester One, 2004)

The notion of challenging one's assumptions could be reframed as challenging one's ideals about teaching and perhaps roundtables provide a reflective space where pre-service teachers' professional identity is constantly being formed and re-formed through the challenging of their ideals. If assumptions reflect our ideals as learners and teachers of mathematics, then challenging assumptions may provide opportunities for pre-service teachers to constantly reconsider their ideals through

the medium of assumption hunting and challenging. The individual, through systematic reflective discussion about teaching based on experience, might then be prompted to learn more about self through a process of self-filtering, meaning that they consider the actual assumption together with alternative possibilities and through discussion, filter to either confirm or challenge their belief. This process of self-filtering is evident, for example, in Anna's written reflection about the way in which she interprets the experience of assumption challenging: "... rather than reject her [peer Jane's] ideas totally, it made me think more about my assumptions to validate and justify what I believed to be right" (Anna, Written Reflection, Semester One, 2004). Anna suggests that by listening to another's assumptions, she is encouraged to reassess her own assumption which is helpful for her as a means of validation or justification, rather than alteration.

The written assumption data provided by pre-service teachers was also analysed in terms of whether the assumptions reflected positive and/or negative assumptions about learning and teaching mathematics. I now explore the ways in which assumptions were identified by pre-service teachers; whether they reflected a positive and/or negative view of mathematics and whether, according to pre-service teachers, their assumptions had been supported or challenged.

Written Assumptions: Positive and Negative

The nature of the affective dimension was portrayed in pre-service teacher feedback as being both positive and negative. Of the eleven respondents (Week One, Semester One, 2004), four pre-service teachers wrote three positive assumptions about the teaching and learning of mathematics; three pre-service teachers identified three negative assumptions about the teaching and learning of mathematics and the remaining four had identified a combination of assumptions (both positive and negative).

Positive assumptions, for example, reflected a belief that mathematics should be both *engaging* and "fun" and in this way school students would be provided with the maximum opportunities for learning and "the teacher has to enjoy maths. If the teacher lacks enthusiasm for the subject then they can expect the same from their students" (Dan). Negative assumptions related, for example, to the belief that learning mathematics was "boring" for teachers and students and therefore there was a lack of engagement.

At the conclusion of the semester, during Week Twelve, pre-service teachers were required to indicate whether their initial assumptions had been challenged or supported. It was interesting to note that all the positive assumptions the pre-service teachers had identified were supported and all the negative assumptions had been challenged. This provides some evidence to suggest that even within a relatively short time (i.e., one semester) certain experiences can contribute to pre-service teachers reevaluating their assumptions as learners and teachers of mathematics.

The primary, but not exclusive, context for this challenging and/or supporting of assumptions was identified as experiences of teaching in school environments. For example, Al wrote:

When I was teaching time to grade three/four I realised that my assumptions affected my teaching and preparation ... the students were not of the attitude "oh no we're doing maths" but they were engaged, interested and constantly questioning with a buzz about a concept they felt important, real ... this made me realise how wrong my assumptions were.

(Al, Assumption Writing, Week Twelve, 2003)

Al's initial negative assumption (that students would not be engaged with mathematics) was challenged when he taught his time lesson in schools and he highlights that the students were "engaged, interested and constantly questioning with a buzz". The combination of identifying assumptions, teaching in schools and reflecting by way of revisiting written assumptions proved to be an effective means for Al, of learning more about the ways in which pedagogy develops. This correlates with Nicki's reflection on her initial three negative assumptions written during Week Two (Semester One, 2004). Her three assumptions suggested that: (1) mathematics was difficult; (2) mathematics was boring; and (3) it was difficult to cover all the content. She stated in her Week Twelve response that all her assumptions had been challenged and suggested that "maths can be made fun and creative". She wrote:

I had negative assumptions and I was happy when they were challenged as it opened my eyes and allowed me to see that maths is what you make it ... New perspectives keep me constantly thinking.

Conversely, Cassie initially stated three positive assumptions: (1) teachers enjoy teaching maths; (2) maths is related to real-life; and (3) maths is fun and engaging. Her written reflection states that all her assumptions were supported. She wrote:

my maths assumptions have not changed dramatically over the course of this semester ... students need to see the relevance of what they do in maths and how and why it will benefit them ... this assumption has a lot to do with the feeling and wanting on behalf of both the teacher and the students.

Here she refers to the importance of "feeling and wanting" in relation to both the [pre-service] teacher and the students. An important issue for her is identifying some form of congruence or connection with the individuals within the learning environment.

Pre-service teachers who identified a combination of assumptions - both positive and negative - isolated the positive assumptions and stated that they had been supported and identified the negative assumptions, suggesting they had been challenged. For example, Kate's initial assumption was that: (1) mathematics was boring and this assumption had been challenged; her two further assumptions were positive: (2) it [mathematics] related to real-life; and (3) teaching mathematics is affected by teacher engagement. Both positive assumptions were identified as being supported as a result of her experiences during the semester. This may indicate that it is possible to challenge the negative assumptions which often underpin the teaching and learning of mathematics and hence, promote more positive attitudes and approaches through reflecting on teaching experience during RR sessions. Generally, it could be concluded from the data that positive assumptions articulated by pre-service teachers in this group, remained unchallenged.

Summary: Challenging My Assumption

Altering my approach to teacher education practice, by closely integrating the teaching experience with systematic reflection, appears to have had an impact on pre-service teachers' and teacher educator assumptions about learning about mathematics teaching. As one pre-service teacher commented with reference to RR: "it's good because we can really play to it [round tables], because they're our own problems they're not ... they're not a case scenario (James, Written Reflection, Roundtable One, July 2002). Another student, Lia suggested, "I think that I really benefited from the way we were required to critically analyse our beliefs" (Written Reflection, Roundtable Twelve). A combination of RR and assumption writing provided opportunities for pre-service teachers to not only unpack experiences but identify their own underpinning assumptions about learning and teaching mathematics and discover more about the ways in which assumptions influenced learning.

My initial assumption was that RR would provide opportunities for pre-service teachers to verbally deconstruct experiences in a systematic manner and in so doing, challenge taken-for-granted assumptions about teaching and learning mathematics and create alternatives for future practice. It seems evident from the data that roundtables provided opportunities for pre-service teachers to make their concerns explicit, to deconstruct experience, and to consider alternatives which might inform understanding and future action (two examples of this were Jess's Subtraction Problem, RR1 and my critical interaction with Sam, RR11).

Learning about pedagogy was integral to the sessions and several pre-service teachers voiced sentiments similar to the following:

For me the roundtables were the highlight of this unit. They enabled people to voice their opinions, challenge assumptions and discuss concerns. The concept of the roundtable has been really good and would be of benefit to other classes.

(Jane, Written reflection, Semester One, 2004)

Roundtable sessions became spaces where experiences were not only unpacked, but pre-service teachers began to see themselves as developing professionals, conducting and owning the discourse, as Deanna noted: "I was finally in control of my own learning" (Written reflection, Semester One, 2004).

Identifying who we are as learners is imperative as this seems to be prerequisite for potential transformation. (For example, when asked to respond to the question "Were you aware of your assumptions about the teaching and learning of mathematics prior to this unit"? 65% of the pre-service teachers responded with "No" (Written reflection, May 2004). And, in response to the question, "Is it important to identify your assumptions? Why/Why not?", 95% stated "Yes" and identified the following reasons: self-understanding; student insight, as an "opening for critical thinking" (Emma); as a "basis for investigation" (Ursula); to "test against a baseline" (Guy) and "to challenge assumptions" (John).

I conclude from my data that taken-for-granted assumptions, rather than remaining implicit, need to be exposed. Exposure of taken-for-granted assumptions about learning and teaching mathematics does not necessarily imply altered practice for pre-service

teachers, and in many ways, remains unquantifiable. However, the data does provide some information about the ways in which the positive assumptions about teaching and learning mathematics were generally supported and the negative assumptions were typically challenged. This research indicates that assumptions should be identified and challenged within a supportive learning environment, and that RR sessions provide opportunities for pre-service teachers/teacher educators to do so.

Although the focus for RR was to provide pre-service teachers with opportunities to unpack their experiences in a supportive environment, there have been multiple repercussions for me as a teacher educator. First, my initial assumption regarding the inherent value of Roundtables was predominantly supported as evidenced by data collected in multiple ways from pre-service teachers across cohorts. Second, my assumption that my role as teacher educator needed to be reframed was supported, although the challenges associated with reconceptualising and altering my practice were more confronting at times than I had anticipated. Third, my assumption that experience must be *had* (Korthagen et al., 2001, phronesis; Munby & Russell, 1994, authority of experience) in order to develop practical wisdom, was supported. In the next section I discuss the generative nature of Self-Study and the ways in which I learnt more about pedagogy by closely examining and questioning my practice.

The Generative Nature of Self-Study

The interaction with Sam provided a catalyst for examining the effect of reflective practice on pre-service teachers and fore-grounded for me, the generative nature of Self-Study. (Generative within this context is defined as knowledge derived from experience which contributed to my knowing.) As such, it related to me coming to know more as a teacher educator. Coming to know for me was regarded as more than teacher educator knowledge. Knowing implied incremental development (Clarke & Erickson, 2004); it was intrinsic to my way of being and understanding (Dalmau et al., 2002); it was non-static; it evolved over time and was deeply influenced by exploring experience, and critical moments/incidents/interactions within experiences led me to extract learning and new knowledge. It prompted, and cast into relief, the question: “How am I learning as a teacher educator?” My experiences which have been described and analysed above, related to the methodological features of self-study practice which according to Feldman et al. (2004) should incorporate the following features:

1. A self-study would bring to the forefront the importance of self
2. It would make the experience of teacher educators a resource for research
3. It would urge those who engage in self-study to be critical of themselves and their roles as researchers and teacher educators (p. 959).

The ways of knowing (for example, the knowledge acquired as a result of my participation during Roundtable sessions) developed over time and were the result of often “messy and non-linear” pathways (Mitchell, 2002, p. 252).

An important outcome of this process for me was my recognition of the generative nature of self-study. For example, my critical interaction with Sam became a catalyst for further exploration into understanding multiple perspectives of the learners. The development of the multiple perspectives task was a direct response to my desire to know more about pre-service teacher perceptions. In many ways our experiences as learners fore grounded the process by which our knowledge about teaching and learning reflected one of phronesis; phronesis being grounded in perception and a “knowledge of concrete particulars” (Korthagen et al., 2001, p. 25). To develop “practical wisdom” (p. 27) one must have:

enough proper experience. For particulars only become familiar with experience, with a long process of perceiving, assessing situations, judging, choosing courses of action, and being confronted with their consequences ... such insights cannot be transferred (p. 27).

In assessing our learning as a result of RR, in particular, we were involved in a cyclical process of:

- (1) Having an experience (partner teaching; RR)
- (2) Identifying and assessing particular situations (Jess, Subtraction; Sam, Annoying; Diana, Probability)
- (3) Selecting courses of action (creating alternative actions; identifying multiple perspectives)
- (4) Confronting consequences (applicability in new situations).

All of this was underpinned by a belief (and evidenced in practice) that we construct our own realities through these learning experiences and that the development of pedagogy is not based on a transfer of skills and understandings.

Roundtable Reflection: Overview

In this chapter I have explored the ways in which RR sessions assisted in the development of pre-service teacher and teacher educator pedagogy. RR sessions enabled pre-service teachers to deconstruct experience, develop their understanding of experience and consider alternatives; the result being that pre-service teachers were learning about teaching mathematics through their experiences, not mine. RR sessions provided a forum for a pre-service teacher inquiry approach to problem identification and problem solving with relation to teaching and learning about and from mathematics teaching.

Further questions however, arose regarding the practice of explicating assumptions. One comment written by one of the pre-service teachers regarding the support and challenging of assumptions, provided an insight into what could be crucial for me as an educator – that of pre-service teacher censorship of assumptions. Dennis, in his reflection, wrote:

I am surprised that my assumptions haven't been challenged. I believe that I thought about them too long when writing them, and actually censored what I thought at the time, to something that might be desirable to the unit coordinator. This being said, I now believe these assumptions ... have been challenged and changed through this unit.

(Dennis, Written Reflection, Semester One, 2004)

Dennis reveals something more about the nature of learning and the ways in which pre-service teachers respond to requests about identifying their own assumptions. While I presumed that pre-service teachers would respond with their learning in mind, it is obvious from Dennis's response that for him, multiple expectations were in play as he completed this task. His audience included me as teacher educator (and assessor) and him as pre-service teacher learner. His response was to initially filter his responses so that in essence, they would satisfy my expectations. However, he also indicates that even though he had censored his initial response to identifying his assumptions, they had still been "challenged and changed" through his participation in the unit. Although this statement was not representative of the data presented and analysed in this chapter, it suggested caution for me in what way, and raised questions for me such as: What impact did RR and Assumption Writing as assessment tasks have on the authenticity of the data? How much thinking time is too much thinking time in terms of pre-service teachers responding to questions about assumptions?

A key outcome for me of closely examining RR and assumption data became a growth in my understanding about the ways in which conducting research on teaching (when the teacher is also the researcher) creates an ongoing need to recognise incidents and respond to data through reflection in and on practice (Brandenburg, 2005a), thus continually leading to new and richer questions about the nature of learning from reflection in and on practice.

Chapter 7

Understanding the Unsaid: Deconstructing Silence and Reconstructing Self

Assumption Three: Pre-service Teachers Maximise Learning Opportunities by Participating Verbally in Roundtable Reflection Discourse

This chapter examines a third assumption which reflects my belief that pre-service teachers who contributed verbally to the reflective discourse would be maximising their learning opportunities. This third assumption frames the analysis in this chapter. The process of examining this assumption began with my recognition of, and curiosity about, the role of dominant voices during Roundtable Reflection sessions. I begin with a brief summary of the literature related to the ways in which silence has been conceptualised in teacher education. This is followed by an examination of the theme of silence as it emerged in my practice and the ways in which silence was recognised, experienced and interpreted by the pre-service teachers/teacher educator. The examination of silence and of that which remains unsaid explicates more about the (re)construction of self as a teacher educator and raises questions about how an increased awareness of silence can influence our awareness of all learners and contribute to new ways of being a teacher educator.

Understanding Silence

The only wise one, is the one who understands silence (Erik Gustaf Geijer, 1840, cited by Alerby & Elidottir, 2003, p. 41)

It seems almost ironic that to understand more about learning and teaching mathematics, which I considered to be a predominantly verbal and interactive endeavour, I needed to identify and explore that which remained unsaid. Throughout the conduct of this self-study, silence emerged as an issue of interest because of its pervasiveness in my mathematics classrooms. It was initially my concern with dominant voices during forum discussions and Roundtable Reflection sessions which led to a deeper exploration of silence, and that which remained unsaid.

Learning about ourselves as learners can often be found in the unsaid. As Brown and Coupland (2005) suggest, silence within organisations is a “phenomenon that has been largely overlooked by conventional analysis of organisations which focus on them as sites characterised by talk (polyphony) rather than its absence” (p. 2). Studies related to silence have included research about how particular cultural groups utilise silence (Plank, 1994); discourse processes which have focused on turn-taking and on temporal dynamics, and alternative approaches, such as silencing being: “accomplished through processes of social space ... [whereby] participants position themselves and others such that they are more or less privileged or silenced” (Leander, 2002, p. 194). There are also case studies of classroom teachers who, through narrative, explore/examine the ways in which voice as a teacher is found (Gitlin & Russell, 1994). Alerby & Elidottir (2003) suggest that silence can be explained by representing it as “internal silence” and “oppressed silence” (p. 49) in which the internal silence is private and a space where, through reflection, knowledge and meaning making take place. Oppressed silence, on the other hand, relates to force and minimises opportunities for voice, and in this respect, the political/power dimension of silencing is acknowledged (Freire, 1970). Van Manen (1990) speaks of three categories of silence: (1) literal; (2) epistemological; and (3) ontological. Literal silence refers to the “absence of speaking” (p. 112) and within this space a qualitative judgment is made that in this instance, it is more effective to remain silent, to “leave things unsaid” (p. 113). Epistemological silence is the silence created when we face the “unspeakable” (see also, Polanyi, 1958); this being a state where there is a “rich domain of the unspeakable that constantly beckons us” (p. 113) and that oftentimes, what may be unspeakable at that moment, may: “be captured ... in language the next moment” (p. 114). The third category, ontological silence, is the: “silence of Being or Life itself” (p. 114) which states that at some point, we always return to silence (see Dauenhauer, 1980). Leander (2002) suggests that there are three categories of research which provide a useful framework for understanding silence: the first is concerned with the documentation that silence/ing occurs; the second category refers to how silencing occurs and the third category explores why.

However, although the concept of silence has been referred to in the educational literature (for example, van Manen, 1990) it remains largely under-considered and under-theorised in terms of the way it impacts on the day-to-day realities of teacher education classrooms.

My research in this self-study was underpinned by examining the ways in which silence was recognised, enacted and interpreted in my mathematics classroom and as such, was a result of my curiosity about how dominant voices contributed to classroom discussions and particularly reflective discourse. Following an analysis of what was said during these sessions, I became more curious as to what remained unsaid, and why this might be so. In seeking to find out more with respect to that which remained unsaid, I was guided by the following questions: Do pre-service teachers elect to remain silent or is this silence imposed? Would the roundtable approach to reflecting on learning alienate learners and therefore provide a barrier for some? Were pre-service teachers engaged, yet silent? How would dominance be

perceived by pre-service teachers? And, what was my role as teacher educator in managing silence? My discussion and analysis of the data in this chapter has been based on Segall's (2002) belief that our "ways of being are dependent, in part, on student teachers' ways of becoming as they go through and are constructed by the apparatus of teacher education" (p. 7). Examining silence reveals deeper understandings about the complex nature of participation and learning in teacher education classrooms.

Assumptions Underpinning Verbal Classroom Interactions

One of my key assumptions underpinning Roundtable Reflection was that pre-service teachers who were verbally engaged in the reflective discourse would be maximising their opportunities for learning. My colleague and I had numerous conversations regarding pre-service teacher inclusion as represented by engagement with the discourse and, in creating this reflective environment, it was imperative (for us) that all learners were provided with an opportunity to voice an opinion; to verbally engage. These assumptions had perhaps been based on our enculturation as teachers. With reference to teaching, classrooms are primarily represented as places where learning is based on dialogue and verbal interactions and these verbal interactions are often represented by teacher questions and student answers. In this way by interacting in a verbal manner, teachers can make judgments about learners, the knowledge being constructed and hence, the learning. Therefore when teaching, a lack of (verbal) participation/interaction became significant for me, as I believed that it consequently minimised the development of the learner's understanding and therefore, that which could be measured, judged and acknowledged. On the other hand, pre-service teachers who were verbally engaged in the reflective discourse would not only be maximising their opportunities for learning, but provide learning indicators for the teacher educator. The following journal entry reflected an early (in the study) concern of mine related to "conversational fringe dwellers" and of my own and my colleague's direct efforts to encourage pre-service teacher voice and hence, we anticipated, ownership of the discourse:

We have both [colleague] commented on the willingness of students to participate in discussions and we have been aware of the 'conversation fringe dwellers' - will make efforts to include, so that all students have a voice and ownership of the process.

(Robyn, Journal entry, July 2002)

Graeme (pseudonym), my colleague, suggested that: "I still believe that those who verbally contribute gain more from these roundtable sessions" (Personal email communication, July 2003) and again later, "I do feel that the ones who choose to contribute do gain more than the ones who are more reserved" (Personal email communication, January 2004). Our orientations as teacher educators reflected a strong belief in, and commitment to, encouraging learners to engage verbally in classroom discourse as a means of facilitating their learning about teaching.

The Search for Silence

Just as pre-service teachers were challenged to begin rewriting their own script about what it might mean to participate in learning about teaching through their experiences in the Learning and Teaching Mathematics unit, so too was I as their mathematics teacher educator. The notion of teacher educators scripting and rescripting their roles is well supported in the teacher education literature (Russell & Korthagen, 1995; Loughran & Russell, 1997; Mueller, 2003; Berry, 2004a,b). Accounts of teacher educators' induction into, and learning about their role commonly refer to a trial and error approach to the development of pedagogy. As Hamilton suggested, for her, there were: "no class[es] at the university [that] discussed the process of becoming a teacher educator" (Guilfoyle et al., 1995, p. 40). For me, learning about teaching about teaching came through my experiences of teaching at university, and led me to see changes that I needed to make: changes that moved beyond simple external measures such as modifying the curriculum, but instead, required an intrinsically different way of understanding and approaching my practice. One of those changes related to the way I understood classroom discourse.

My initial challenge in examining the verbal/silent continuum was to consciously acknowledge the presence of silence in my mathematics classroom. As Brown and Coupland (2005) have suggested, members of professional organisations [including teacher education], can be seduced by the polyphony of talk. Although I was aware that silence did permeate my classroom, I had not considered the ways in which this silent space was being constantly (re)constructed by pre-service teachers. In conjunction with noticing and acknowledging silence and the silent, I felt compelled to examine the implications of silence as choice, and to modify my practice so that the learning environment represented inclusive, rather than exclusive practices, so that those who were choosing silence might be more equitably accommodated. For me this entailed learning how to remain silent or at least less vocal, so as to provide opportunities for pre-service teachers to voice their opinions and challenge their taken-for-granted assumptions and practices. It also involved my listening much more carefully to the silences that occurred within a session in order to better understand their meaning and so that I might respond more sensitively to them. My experiences of learning about silence are explained in the remainder of this chapter. The primary source of data relates to excerpts from two Roundtable reflection sessions which made explicit reference to silence. In conjunction with the excerpts from Roundtable transcripts, related data sources analysed in this chapter include: pre-service teacher written reflections (Critical Incident Questionnaires: CIQ, completed in May 2004); teacher educator journal entries; and, the Multiple Perspectives Task (MPT) which was completed by the teacher educator and two pre-service teachers (who were Roundtable participants) four months post roundtable session (December 2004).

The Multiple Perspectives Tasks (MPT, described in Chapter 4) and the CIQs enabled me to gain access to multiple viewpoints. The use of multiple sources was

important for my analysis as I acknowledged that, for example, any explicit asking about experience, understanding and enactment of silence during Roundtable sessions might be confronting for some pre-service teachers and as such, silence them as contributors. References to written reflections and the MPT throughout this discussion highlighted those pre-service teacher voices.

Examination of the Data: Learning About Silence

A focus on learning about silence in my mathematics classroom emerged as a result of researching my practice. I did not initially seek to examine silence, per se, but rather my awareness of its presence prompted my curiosity to further investigate its enactment and effects. Therefore, although the analysis presented in this chapter reflects a somewhat structured and sequential analysis of the way I now understand silence, this does not reflect that fact that my learning about silence gradually unfolded over time. Reflecting in retrospect has enabled me to clarify some specific impacts of silence and the multiple ways in which it was enacted in my mathematics classrooms.

I was able to identify four key categories from the examination of the multiple data sources related to silence, as it was experienced within my teacher education classroom. These categories included: (1) Explicit Teacher Educator Questioning about Silence; (2) Responses by Pre-service Teachers about Silence; (3) Learning Styles; (including two sub-categories, (a) Silence as Active Resistance; and (b) Choice; and (4) (Re) developing Identity. Each of these categories represented a specific focus on the ways in which silence was experienced and interpreted by both pre-service mathematics teachers and me.

Explicit Teacher Educator Questioning About Silence

My desire to understand the silent and less vocal contributors to verbal discussions arose as a result of my questioning the more dominant contributors during Roundtable Reflection sessions. My initial prompt occurred as a result of transcribing the audio-tape of the first Roundtable Reflection session, conducted during July, 2002. Examination of this transcript revealed that of the twenty-four participants, twelve had verbally contributed to the dialogue and of that twelve, three were identified as dominant voices (dominant voice in this context refers to one which contributes both in terms of amount of talk and frequency of talk during reflection sessions). Although there was not a predetermined number of contributions per se which then became the threshold for identifying a dominant voice, the definition included a combination of traits which were evident during roundtable sessions. These traits included an eagerness to share experiences within the group; a willingness to contribute suggestions;

as well as (at least) several contributions to the total talk in the sessions. Given these criteria, I too, represented a dominant voice within this group. Whilst at the time, I was more than satisfied with the progress of the discussion, in retrospect I have come to recognise that, my feelings of satisfaction at the time may have been linked to a sense of relief that the pre-service teachers had indeed participated in something which was new and challenging (i.e., roundtables) hence I was less aware of who or how many were contributing compared with my concern for the approach itself, working.

As I became more familiar with the approach during the following year with each subsequent cohort, I began to notice similar patterns of talk in terms of pre-service teacher verbal/non-verbal interaction during RR sessions. As a result of my growing ability to identify patterns of verbal behaviour during RR sessions, one year later I explicitly questioned pre-service teachers during RR11 and RR12 about the ways in which for them, silence was both experienced and interpreted.

Silence is Perplexing

As I began to examine the data more closely I could see that I was developing a strong interest in the notion of silence and that I pursued this interest more and more explicitly with pre-service teachers. In fact, I came to see silence as perplexing. An examination of the comparative data from the Roundtable transcripts indicated that for this part of the Roundtable session, questions about silence and the silences themselves had remained perplexing for me. This perplexity was evident through not only my explicit questioning, but also by the total number of questions I asked related to exploring silence (R11, twelve questions; R12, five questions, Appendix 5). For example, during RR11, I asked three introductory and consecutive questions related specifically to exploring the meaning of silence: “So do you learn from listening and participating in a group?”; “Now I’m aware that some people didn’t make a comment in that roundtable, but I want to know what the silence means?”; “I’ve made some assumptions, but I want to know what that silence means?” (Robyn, R11). Eight lines later, a further question: “What about those that aren’t verbal. Can I put them on the spot?” (Robyn, R11). Similar explicit questions regarding silence were asked during R12: “What does silence in a group like this mean?” (Robyn, R12). During RR11, twelve teacher educator questions were asked about silence, which may indicate, by sheer numbers alone, that although the Roundtables were established to encourage pre-service teacher reflective discourse, the reality was that the agenda had been determined and based on my explicit exploration of silence, because of its perplexing nature for me.

My desire to understand silence was also evident when, as an aspect of the written Multiple Perspectives Task (MPT, completed by two first year pre-service teachers in December 2004) I asked pre-service teachers to specifically address the following questions: “I noticed that you were almost silent during this discussion. Why?” And, “Do you learn when not verbally participating? Do you think others learn when not [verbally] participating?” (MPT, December 2004).

Clearly, then, the meaning of silence had remained puzzling for me, evidenced by my explicit questioning about it, specifically during RR sessions. This ongoing questioning indicated more than a curiosity or inquiry; it indicated a desire to understand more about how the different episodes of silences were being constructed and interpreted. I was concerned to know: Did pre-service teacher constructions and interpretations correlate with my understandings as teacher educator? How could I monitor, assess and judge the effectiveness of roundtable reflection, and the assumed subsequent learning, if some pre-service teachers chose not to participate in the verbal discourse? And if knowledge is socially constructed through interaction, are those who choose not to interact verbally, not constructing knowledge? These questions underpinned the focus on exploring the silences and it was through reflection on the pre-service teachers' responses that my deeper understanding related to these questions of how silences were being constructed and interpreted emerged.

The previous category (Explicit Teacher Educator Questioning about Silence) highlighted for me the ways in which I had identified silence in my teacher education classroom and the ways in which I was attempting to understand more about what silence meant in terms of my teaching and pre-service teacher learning. One key way I gained a deeper insight into silence was through explicit questioning during RR sessions Eleven and Twelve. The second category in my discussion relates to pre-service teacher responses to my questions about silence and in this way, illuminates the ways in which pre-service teachers understood silence during RR sessions.

Pre-service Teachers' Responses About Silence

During both Roundtables Eleven and Twelve, twelve instances of talk were directly related to a consideration and explanation of what silence might indicate during classroom discussions. Pre-service teacher responses to questions combined with the data from CIQs, written reflections and the MPT indicated there were five key reasons for pre-service teacher silence:

1. Fear
2. Flow and pace of the conversation
3. Waiting
4. Contemplation
5. Nothing to contribute.

Fear

One explanation provided by pre-service teachers for not verbalising their thoughts during RR sessions was identified as fear of being "wrong". As one pre-service teacher wrote, "they're [pre-service teachers] are frightened they could be wrong"

(Gen, R12). This sentiment was also reflected by another pre-service teacher, Christie, who stated that although she found the session helpful, she was also daunted by the thought of contributing to the group discussion: “I found the session helpful and interesting but I found the group a bit daunting to talk in front of” (Christie, CIQ, May 2004). Other pre-service teachers also identified that they monitored their contributions to discussions as they were afraid that they could be wrong or that they felt daunted simply by the thought of contributing to discussions.

Flow and Pace of the Conversation

The second explanation identified by pre-service teachers referred to the flow and pace of the conversation and refers to the ways in which the combination of flow and pace in conversations can preclude verbal involvement in the conversation as the possible contribution becomes irrelevant once the ‘moment’ has passed. Lin expresses this dilemma, as she experienced it, in the following way: “it’s just that every time sort of I go to put something in, the conversation ... changes and you move away so it sort of becomes irrelevant pretty quick” (Lin, R11). The reference to pace and missing the moment is mentioned by Hannah who states, “sometimes you get off track and then it gets too late” (Hannah, R12). For these and some other pre-service teachers, the pace of the conversation became a limiting factor when attempting to engage in verbal discussions so that by the time they were prepared to contribute, the conversation had moved onto another topic.

Waiting

A further reason provided by pre-service teachers about why they remained silent during discussions was that they were ‘waiting’. Waiting occurred for several different reasons. For example, a pre-service teacher may wait without intention to contribute; it may mean that there is an intention to contribute but that an opportune moment has not yet arisen; or it may mean that a pre-service teacher is holding back, waiting for the first contribution before s/he speaks. Joe describes silence as a space where one is waiting for another to “jump in” and contribute to the conversation: “it [silence] can mean you are waiting for someone to jump in” (Joe, R12). Joe’s response indicates for me, that there may be multiple interpretations of what it means to “wait” as a pre-service teacher involved in RR sessions. From Joe’s response I can only infer what I think his intentions may have been but considering he used the word “can”, he may be suggesting that this (“waiting for someone to jump in”) is only one possible explanation of silence. The latter notion of the first contribution or as many would understand, the ice-breaker comment, was raised in a recent RR session (2005) whereby pre-service teachers suggested that they

specifically waited for another pre-service teacher to contribute the first comment, as a means of establishing whether their thinking was “on the right track” (Sam, RR session, May 2005). Pre-service teachers would then evaluate whether they would then contribute to the discussion or, in some cases, feel disappointed and withdraw, because someone else had “stolen their thunder” (Jen, RR session, May 2005) by saying what they had intended.

Discussing silence in this way with each cohort of pre-service teachers raised awareness for us all that oftentimes, more is happening in what we do not hear than we may have previously realised as teachers and learners within this context.

Contemplation

A further explanation provided by pre-service teachers in response to the questions about what silence may indicate was the recognition and acknowledgement that silent spaces were times of contemplation. Jim suggests that some pre-service teachers may need to have both physical distance and more time in order to contemplate what has been discussed during RR sessions. Jim states: “they might not want to express [their ideas]; they want to go away and think about it” (Jim, R12). Jim’s suggestions also correlate closely with the reflections provided by Justin (pre-service teacher, 2004). When reflecting on the RR session in his MPT, he stated that he:

tuned out of what was happening after this comment, because my own thoughts were focused on this remark. The roundtable format allowed me to sit in the shadows and have this time to think to myself.

(Justin, R15, December 2004)

Contemplation through “tune-out” was an important practice for Justin. In this sense then, the tuning out and the opportunity to “sit in the shadows” might suggest that this inner thinking might be indicative of a deeper personal exploration of the learning associated with his experience.

Nothing to Contribute

Pre-service teachers also suggest that at times, their silence was because they felt they did not have anything to contribute to a discussion. In the following statement, Don justifies his silence by stating that rather than not understanding the content or experience being discussed, he had nothing to say: “...you don’t always have something to talk about. You might just sit there. You can still ... understand what’s going on ... but you just don’t have anything to contribute to that class ... you know you haven’t had that happen to you at school” (Don, R11). Don’s comment suggests that if the experience discussed connected way in some way with his own experiences, then he may be more likely to contribute.

The pre-service teacher responses discussed above, indicate that the silence experienced in the roundtable sessions was more than Literal Silence (van Manen, 1990, p. 112). It was more than a void, emptiness or an absence of speaking. It was clear that the silent space was rich (in terms of what was happening) and actively constructed by pre-service teachers. Pre-service teachers' responses referred to an activity within the silence; that of multiple layers of constant (re)construction by individuals in multiple ways. Rather than being identified as a deficit or disengaged space, there was both more and less happening than I/we had expected.

This knowledge of the multiple meanings of silence then led to an examination and deeper understanding of the complex nature and impact of individual learning styles within the reflective practice discourse. With reference to my assumption that pre-service teachers who contribute to the verbal discourse would be maximising their learning opportunities, my analysis also reveals more about the ways in which dominant/less verbally dominant contributors were accepted by their peers. It suggested that from some pre-service teachers, dominance was accepted and acceptable; from others, it was tolerated. For example, those less vocal contributors to discussions suggested that dominant voices were essential to group dynamics as they often instigated the talk, and maintained the flow of conversation. Conversely, the dominant voices indicated that less vocal pre-service teachers should be catered for in that they have a different learning style, and that their personal expectations regarding RR sessions should be accommodated. In the following section I examine Learning Styles, the third category. This category examines the ways in which pre-service teacher learning styles reflected the ways in which pre-service teachers contributed to RR sessions.

Learning Styles

Pre-service teachers preferred learning styles affected the ways in which they ultimately contributed to RR sessions. Pre-service teachers in my study suggest that not only was the group differentiated by their variety of learning styles but that this difference in learning style should be accommodated within the roundtable reflective structure. Pre-service teachers also provided evidence to suggest that different learning styles were acknowledged and accepted by pre-service teachers as an integral part of group dynamics. For example, one pre-service teacher acknowledged that a formal and structured roundtable approach "plays to peoples' strengths" (Richard, R11) and another commented "whether people are talkative or not, that still helps the learning" (Emma, R11). Yet another suggested that the structure, by its "cozier" (Jess, R12) nature provided a "more comfortable" (Jess, R12) environment for those who were really quiet as they still had "an opportunity to say things and they're not going to worry" (Jess, R12).

In a number of verbal and written responses, pre-service teachers who themselves were less vocal, elaborated their reasoning for their stance. For example, Adam spoke of what happens for him in terms of the ideas "bubbling around" and

he stated that “although I may not say a lot I think I’ve got a lot of ideas bubbling around in my head and still like when Sophia talks and when other people talk I still think ‘Oh yeah that was like something I had an experience with’” (Adam, R11). Adam referred to Sophia (a dominant contributor) and suggested that by listening, he was able to link others’ experiences with his experiences in similar situations. Justin, in his MPT response indicated that he was naturally a “less vocal learner, [and] from a personal viewpoint, I know that I continue to learn when not verbally participating. Sometimes I feel that I learn more by listening as opposed to trying to have a say myself” (Justin, Written reflection MPT, December 2004). Learning through listening challenged me to further consider the complexity of learning by coming to understand more about the ways in which listeners learn. For example, a number of pre-service teachers mentioned that they were learning, and making sense of their own experiences, by listening to others. In the following comment, Linley explained this connection explicitly and described her abstract learning process, beginning with an initial response of pondering alternatives for them [pre-service teachers] in their situation: “I immediately think what else they could have done ... but it means that when other people share what they have done in certain circumstances then I can remember those and ... all these things pop into my head ... so I am learning from other people’s experience in that I can adjust those to my situation” (Linley, Written reflection, R11). Adam, Justin and Linley stated that their preference for learning about teaching and learning was primarily through listening to experiences raised by their peers during RR sessions.

Dee, a dominant contributor during RR sessions displayed her obvious curiosity about the multiple learning styles of her peers which were represented within these sessions: “I’m sure it’s true that each individual learns in their own way. I’m in awe of those students who are so internally motivated that they can listen and rarely comment or question aloud” (MPT, December 2004). Dee recognised her own preferred learning style (being a vocal contributor to reflective discourse). She not only acknowledged the preferred learning styles of other members of the group but stated that she was “in awe” of internally motivated pre-service teachers who could self monitor to the point where they did not contribute. This response may indicate a tension that Dee felt about her own contributions to verbal discourse. On the one hand, she disclosed that she needed to talk but on the other hand, she considered an alternative, i.e., to be less dominant. But this is one alternative she struggled with in her practice. (In the following section I describe in detail one of Dee’s dominant RR interactions and her attempts to remain less dominant as a result of what she considers to be her guilt she experienced when dominating both the time and the content of the discussion during R15).

Although my data suggests that different individuals displayed a propensity for a particular style of verbal contribution (verbal, less verbal, silent) these styles were also fluid and contextually influenced in that, in particular situations, atypical contributions created surprise for members of the roundtable sessions. This atypical contribution was evident from Trent’s written response when he stated, “a friend of mine was unusually vocal in asking questions and giving comments and what he had to say was really clever. It actually surprised me” (Trent, CIQ, May 2004). This

sense of surprise is again evident in Chele's response where she wrote about her own behaviour, and "how talkative I was first thing in the morning and that maybe it was because no-one else seemed to say much?" (CIQ, May 2004). Chele's response raises yet another issue for me in learning more about not only what silence might represent, but what some forms of talk during roundtable sessions might indicate. Some pre-service teachers may have an aversion to silence and therefore a natural response within this situation is to talk to fill the space, as it were. There was an expectation that discussion would underpin the RR process and when talk did not readily eventuate, some pre-service teachers filled the void with talk. This may have been the result of feeling uncomfortable in the silence, the result being talk for talk's sake, rather than being prompted by genuine need to establish a genuine concern or to contribute to the content of the conversation. Chele provided further insight into her motivation to talk when she suggested that she even surprised herself with regards to her input "first thing in the morning" and her prompt was that her peers, at this early stage, were not inclined to say much.

Just as the less verbal members of the group were acknowledged within the RR sessions, so too it seems were the more dominant voices. Some pre-service teachers suggested that having dominant voices was essential as "they stimulate[d] conversation and discussion" (Mary, R11), and although others recognised these more dominant contributors clearly "felt confident in sharing their experiences" (Jim, R12), it was also suggested by one pre-service teacher that not contributing to the discourse did not "necessarily mean that other people [hadn't] had equally as important experiences" (Amy, R12).

Within the RR context dominant voices were both group and self-identified. For example, Maria, as a member of the group comments that she appreciates the way in which the dominant contributors can self regulate and therefore be explicit about the way that they operate within a conversation, by suggesting that they can, if need be, refrain: "It's good if you've got someone like Sophia who will talk but [who] will also say "you know I don't have to talk because sometimes you get those people who just talk, talk, talk and other people can't get a word in"" (Maria, R11). The dominant contributors also self-identified their propensity to dominate and humorously stated that: "I'll shut up now!" (Mary, R12) and "we have another problem though, we can't shut up!" (Sophia, R11).

Some pre-service teachers were able to explain their vocal contributions in terms of their needs as learners. For example, Emily recognises that for her, talking was a way of thinking: "I verbalise it[my thinking] like I have a verbal concept map and like that's how I put all my concepts out and as I'm saying them and I catch them back sort of thing" (Emily, R12). Emily identifies her verbalising as a reflexive approach to understanding her learning; i.e., verbalising helped her to consolidate her understandings. Dee was also able to articulate that her way of processing her thinking was through talking as well as listening. She commented: "I learn best when communicating. Talking and listening allows my head to clear of everything else – space is made and I can grasp things" (MPT, December 2004). Both Emily and Dee's comments make reference to making their thinking explicit which then clears a space for a re-entry into the conversation or as a way of grasping a new idea.

My examination of the data revealed that Silence can be seen as Active Resistance. Dee, a dominant (and eventually self-regulated voice) monitored her vocal contributions following a RR session where her teaching problem had dominated not only the content of the session, but also the time.

Silence as Active Resistance

It was interesting for me to note that some dominant individuals either imposed self-control or were silenced, and this became obvious at times during RR sessions by the lack of group response and verbal interaction. The group response could be interpreted as an “active silence” (see, for example, Brown & Coupland, 2005) in that it indicated that something intentional was happening in the silent spaces. Pre-service teachers’ lack of responses to Dee’s questioning provided an example of silence as being represented by an active resistance.

During Roundtable 15, Dee discussed an issue she had experienced with a Year Eight male student who had refused to complete Place Value mathematics activities at his desk; instead he chose to complete the task on the floor, under the desk. Dee asked questions of her peers at the RR session about their response to this incident and the pre-service teachers generally remained silent. Some examples of her questions to the group included: “Whose problem is it?” [referring to moderating student behaviour]; “Am I at the beginning of chaos, the middle or the end?” and “How do I get my brain to work on all these areas?”. The lack of pre-service teacher response to her questions caused a degree of frustration for her as she expressed later, in her MPT:

It's me again, stating something different at the discussion table. Real problem here but unsure if my peers relate or even care about this issue. Desperate for the quiet people at the table to share, give me something in return. Two other students talk over the top, others looking down, and two very encouraging. Oh well, I'll keep going and see what happens (bit of a risk- feeling a little nervous). Ahhhh am I revealing too much of my own vulnerability as a PST [pre-service teacher]?

(Dee, MPT, December 2004)

It seems from this comment that Dee was anticipating some verbal response to her questions, and was keen for contributions from those less vocal members, but received only minimal feedback. In spite of this lack of feedback, she continued sharing her problem, even though she was feeling vulnerable.

Stating the obvious, I might shut-up now. Another female giving me body language suggesting she's bored. I look to a quiet student who I know is interested in this topic, but he won't meet my eye, instead stares at his desk. I know from previous chats he's got heaps to offer.

(Dee, MPT, December 2004)

As Dee reconsidered her verbal input into the RR session through her MPT response she also considered the effect of pre-service teachers’ body language. She

identified a female pre-service teacher who, by her actions suggested she was “bored”. Dee turned to another quiet pre-service teacher hoping to receive feedback but he did not “meet [her] eye”. These two gestures prompted Dee to then alter her actions, which meant that for her, she would only contribute once in the next RR session and then refrain from speaking.

This example of the effect of non verbal interaction concurs with research conducted by Swann (1988) who suggests that teachers and students powerfully use nonverbal communication (eye-gaze, gesture, posture) as silencing strategies. (The impact of nonverbal communication and gestures was also highlighted by pre-service teachers during RR sessions; for example, Chapter 6, Interaction with Sam). In this case, the pre-service teachers appear to be silencing Dee in a conscious and active way. Clearly she had experienced some discomfort throughout the session, as a result of the responses she received. Her reflection post-session, suggested that this caused her to later feel some guilt regarding her domination of both time and content during R15. She wrote:

After I left uni [versity] that day I spent some time reflecting on the RT [Roundtable] discussion. Although I felt passionate about the discussion and remained convicted (sic) in my beliefs, I also carried some guilt. My guilt was around having spoken for too greater a length during the discussion. In addition to this I was aware of not overstepping some clear boundaries that had been set by some of the older students in my peer group, in that ‘they’ are the ‘experts’ etc. Part of me wished I could take back a lot of what I had said. I made a decision that the following week I would refrain from commenting more than once in order to lessen some of the potential tensions made by me talking too much.

(Dee, MPT, December 2004)

Dee raised an important issue in her reflection, both for her as a pre-service teacher and me as teacher educator. She clearly recognised that she had dominated the Roundtable conversation with respect to both time and content and felt some “guilt” for doing so. Interestingly, my interpretation of the session, at the time, was vastly different from Dee’s perception. I had encouraged her to elaborate and continued to ask questions of her regarding her situation as I felt it would have application for other pre-service teachers in the group. I was also consciously attempting to de-center myself and encourage pre-service teachers to take the lead in instigating and maintaining a focused discussion about their experiences in schools. To me, her input reflected someone who was truly grappling with a problematic situation which arose in her practice the focus was on her problem which had emerged for her experience and she was the one leading the discussion and questioning her peers.

Dee’s MPT response however prompted a deeper exploration of other levels of learning for me, which revolved around the effects of my encouragement for Dee to speak, i.e., the way/s in which her peers responded to her. Dee stated that she was constantly aware of not “overstepping some clear boundaries” set by older members of the group. These boundaries had not been obvious to me, but were certainly a reality for her. In addition to self-identifying as a dominant voice, Dee made a decision to modify her actions in subsequent RR contributions. In her MPT she wrote that she “would refrain from commenting more than once in order to

lessen some of the potential tensions made by me talking too much” (Dee, MPT, December 2004). A key reference in her reflection is to those pre-service teachers whom she considered had established “clear boundaries” about contributions and verbal participation. She related this to the “older” members of the group, who (she perceived) had achieved in their own eyes the status of “experts”. Clearly, for Dee she experienced some intimidation and perhaps some subtle exercising of pre-service teacher power, which became obvious for her during this RR session. She faced a dilemma of wanting to contribute, but not wanting to dominate and yet at the same time, balance her contributions so that she didn’t overstep boundaries she believed were in place during RR sessions.

The above interaction fore-grounded a dilemma for me which emerged as a result of understanding more about silence and the ways pre-service teachers participate in RR sessions. By decentering myself and encouraging Dee, for example, to take the opportunity to speak, I was encouraging what I believed to be effective practice and this was essentially based on the belief that speaking equalled better learning. When Dee spoke up and received minimal feedback from her peers, she indicated that she felt some guilt about the experience and perhaps this may have compromised her own learning, at the time. However, completing the MPT allowed her to retrospectively reflect and perhaps it was during this retrospective reflection that Dee identified key factors associated with her experience and her learning through roundtable reflection.

One of Dewey’s (1933) three attitudes associated with a reflective orientation is responsibility. I therefore needed to reconsider the complexity of learning as represented by pre-service teacher orientations towards reflecting orally on their experience. Reconsidering my own assumption that speaking maximises learning was perhaps a simplistic understanding of the complexity of the learning process, as exposed by the multiple interpretations of how silence was interpreted and enacted during RR sessions. Silence does not mean that pre-service teachers are not learning; and speaking does not always suggest that pre-service teachers are learning. In essence, learning was occurring differently according to the inclination of the learner and the impact of the context. As a teacher educator, my way of operating required that I needed to hear the talk so as to monitor learning; some pre-service teachers needed to listen to talk and other pre-service teachers need to talk. I also had a responsibility to actively monitor verbal contributions and ensure that pre-service teachers were not constantly exposed and/or vulnerable when participating in RR sessions.

Learning as Choice

Pre-service teacher choice about engaging in the verbal dialogue remained paramount for me – involvement in RR sessions would/could not be forced. Although pre-service teachers were invited to participate, I maintained a belief that they could not and should not be placed under any pressure to do so. When examining choice, there were two aspects to consider. The first related to whether or not pre-service

teachers felt that a genuine choice did exist in terms of participation and second, that personal choice was respected with reference to the extent of one's involvement in the RR dialogue. Emma provided an insight into her thinking about pre-service teacher silence when she suggested that some pre-service teachers, by remaining silent, reflected the ways in which "they choose to operate" (R12). Other Pre-service teachers also indicated that there did exist a real choice in terms of participation. As Lyn suggested, "I think it [choice] is there for sure" (R12). These statements reveal that learners within this environment made choices in terms of whether or not they would contribute to the discussion, and if so, when. Some pre-service teachers elected to generally remain silent; others chose to contribute intermittently to the discussion; others chose to verbalise and constantly responded in this way.

One important outcome of understanding more about choice is the implications of pre-service teacher choice on their learning, and my understanding of their learning. With reference to the pre-service teachers who constantly elected to refrain from contributing to the dialogue I wondered whether I might be avoiding confrontation about this choice by not explicitly inviting individuals to participate. Might my refraining from specifically inviting less vocal pre-service teachers to contribute to reflective conversations be interpreted as protecting them and in doing so, possibly limit opportunities for growth by not encouraging them to move beyond their comfort zones? However, if I chose to encourage particular individuals to contribute by way of direct questioning, am I then modeling a contradiction, since I have made it explicit that it is their choice to whether to contribute? My responsibility as a teacher educator was to promote learning about teaching and my aim was to create a democratic classroom based on pre-service teacher choice. However, choice was more complex than it would ostensibly appear; choice can restrict learning just as it can promote it. My understanding about the ways in which choice was exercised by pre-service teachers in reflective discourse has parallels with my learning related to pre-service teachers' verbal contributions. Underpinning assumptions are constructed as sets of minor assumptions which relate to a prescriptive assumption, for example. Although with each of the assumptions there is the antithesis, there is also a continuum which needs to be considered. The points along this continuum are interestingly complex.

(Re) Developing Identity

The notion that pre-service teachers are both developing and protecting an identity in the process of learning about teaching is consistent with research that suggests that some learners both protect and project a particular identity and that this projection may be self-modified according to the context (Brown & Coupland, 2005). Such identity protection is consistent with comments made by Dee (discussed above) about the way in which pre-service teachers act in their teacher education classes. For example, some may remain quiet as a protective mechanism; others

speak but then suggest that they reveal perhaps too much of their vulnerability as a pre-service teacher. Pre-service teachers identities are forming and reforming and they then choose to either project and/or protect that identity, as seen in the multiple ways that they interact during RR sessions. Perhaps it may be that some pre-service teachers did not feel comfortable within this environment to express an opinion, or share an experience, and so in this sense the silent response may have been imposed by the very structure of the roundtable reflection session. Finkel (2000) suggests that some pre-service teachers may need to initially “come together as a group, deliberate with each other, hear each other, [and] make decisions and act together” (Finkel, 2000, p. 130). Perhaps a more effective way of scaffolding and supporting learners like Dee, for example, might be to make the process and the individual pre-service teacher learning styles explicit. Perhaps I could have spent more time in setting up opportunities for pre-service teachers whereby they could come together to deliberate and work together to discover their own ways of interacting within a group situation. By focusing on developing a community of inquiring learners, the emphasis would then be on a cooperative unpacking and sharing of experience, rather than what has been described by Dee as an individual, and at times competitive, pursuit. As Dee suggests, the RR sessions are a bit like the school issue: “We are all so worried about failing, impressing, out doing ... it’s fake for some of us. Just like students in the class room” (Dee, MPT, December 2004). Her articulation that it is “fake for some of us” indicates that I need to be aware of the ways in which identities are being both projected and protected within the RR sessions and I need to constantly reassess the types and the quality of pre-service teacher contributions.

Summary of Learning About Silence

Silence, and its impact on the development of pedagogy, may remain under-considered due to its pervasiveness and oftentimes, seamless integration into the day-to-day classroom life. An initial step for me was to acknowledge silence. Once identified and examined, silence was shown to be interpreted in multiple ways. For example, silence may be indicative of fear, where pre-service teachers are afraid to speaking for fear of being incorrect; it may be a time of waiting, a time of contemplation; it may represent lost opportunities which are a result of the pace of the conversation; and it may be an acknowledgement that “you don’t always have something to talk about” (Don, R11). These silent spaces, however, can also be interpreted as spaces that were actively constructed and in this sense, represented more than a void, an emptiness or an absence of speaking; “literal silence” (van Manen, 1990, p. 112).

An active construction of silence could indicate a deliberate withholding of pre-service teacher speech, or a resistance to speaking, as that experienced by Dee from her peers, and this type of silence might be experienced in a manner that connected a lack of response to questions with body language, which may have indicated disengagement.

Multiple issues have been raised in terms of my understanding about the construction of silence and I pursue these issues in the following section.

Teacher Educator Learning About Silence

Kosnik (2001) suggests that an often unexpected outcome of pre-service teacher education is teacher educator enrichment and change. She states that, “So often we, in teacher education, see ourselves as agents for our student teachers: motivating them, informing them, guiding them, preparing them. We do not think of it as a process that will also change and enrich us” (p. 65). There were two specific aspects which relate to my learning about silence and these include the ways in which I attempted to be intentionally and strategically silent and the role of wait-time in my teaching.

Actively, Intentionally and Strategically Silent

One key way in which my learning about silence became apparent was through systematically examining my role during RR sessions. An underpinning intention for me during RR sessions was to consciously refrain from dominating the discussion so as to provide opportunities for reflections to both emphasise and foreground the pre-service teachers’ experience. This practice refers to the adaptation of one aspect of the Outer Cycle of the ALACT reflective framework (Korthagen et al., 2001) where it is suggested that the teacher educator maintain a strategic silence. Therefore, in modifying my practice to support the intention of pre-service teacher instigation and exploration of experiences, I attempted to remain purposefully, selectively and actively silent. Evidence of this intention is illustrated below, when, during Roundtable Twelve, the issue of voice and my deliberate withholding was explicitly expressed:

So we get back to that point about having a voice - this is one of the assumptions of the roundtable. ... you are actually saying that and it's not my voice that matters I'm not sure if you are aware but I intentionally withhold from speaking ... to allow you ... to have a voice ... in the past I would come into a group like this and I would have readings, some activities, maybe a video and I'd share ... my experiences and I would be thinking that that was a non-transmissive way of teaching ... I can't do that ... So what this reflective process has done for me is to refine the way I think about my role here ... your experience is most important to you and debriefing and voicing opinions about that experience is imperative for you as learners.

(Robyn, R12)

This excerpt was representative of how the roundtables were intended to operate: as exploratory spaces, whereby the discourse was initiated by pre-service teachers and their concerns, with an inherent position of choice to participate. For some, the

reality was experienced differently. Whilst I intended for this to be the case, one pre-service teacher expressed frustration at my dominance. While this was an atypical response, it warranted consideration as it provided further understanding about the multiplicity of ways teaching and learning can be interpreted. In his response to the question, “At what moment in the class (es) this week did you feel most distanced from what was happening?” (CIQ, Question Two), Jay wrote: “In my first roundtable. Sometimes I think people really want to speak and we can learn from each other but Robyn takes over and talks too much and cuts us off” (Jay, CIQ, May 2004). Although this was the only written response which referred to a level of frustration (1 of a total of 57) it also indicates an experience which was not intended by me as a teacher at the roundtable. In coming to understand more about my role in the RR sessions, the issue of intention and reality surfaces, and this relates to what Whitehead (1993) suggests is indicative of a living contradiction. Altering embedded ways of being a teacher educator takes both acknowledgement and persistence. Although my intention was to remain strategically silent, the reality was that I did not always achieve my aim. In Jay’s criticism of my involvement in RR sessions, he refers to my propensity to not only “take over” but “talk too much” and to cut pre-service teachers off. Jay’s frustrations caution me to continue to monitor my practice and to examine the ways in which my practices impact on pre-service teacher learning.

Teacher Educator Wait-Time

My learning about myself through examining silence also occurred through better understanding silence as wait-time (Rowe, 1974). Rowe’s research is particularly relevant for me in terms of my self-study and the way that I interpreted silence and identified wait-time as an increasingly important teaching tool. Questioning during RR sessions allowed me to both explore learning and teaching issues more deeply and provide some indication for me as to the level of pre-service teacher understanding. As I have previously indicated I continually asked questions and also asked multiple questions, leaving minimal response time. Rowe’s (1974) research indicates that the typical teacher pauses, on the average, between 0.7 and 1.4 seconds after his/her question and the assessment of my question asking indicates that I would represent the norm in terms of the way in which I asked questions.

Loughran (1996) draws on Rowe’s (1974) notion of wait-time whereby, teachers and teacher educators need to provide appropriate time for responses from their students and pre-service teachers, prior to the teacher or teacher educator filling the void. In this sense, wait-time is a conscious strategy to impose silence in order to elicit thoughtful responses. My understanding of wait-time in this teacher education context emerged as a gradual process. The identification and practice of wait-time emerged in conjunction with, and in response to the silences. Wait-time emerged for me, as multi-dimensional practice. There were two aspects associated with my wait-time; the first related to my deliberate attempts to remain silent or less vocal

and the second, to provide more time between asking a question and waiting for the pre-service teacher response.

An examination of the excerpts of transcripts indicates that there was a critical lack of wait-time which became evident during Roundtable One (2002) and this was exemplified by the constant and ongoing stream of questions I asked of the group. An example that illustrates this type of questioning follows:

We spoke before about exposure not being enough We had a question about that – the preps getting lost in the ‘busi-ness’ of the ones and twos. What would you do next time? What, maybe not even next time, what could you have done then? [No wait-time] For me you’ve identified a concern that you’ve had and you had that concern while you were teaching the lesson.

(Robyn, R1)

Allowing time between questions and perhaps asking fewer questions, provides pre-service teachers with greater opportunities to reflect on their thought and formulate responses and therefore contribute to the discussions in more meaningful ways. In recognising the importance of wait-time, I consciously attempted to provide greater lengths of time between asking questions and also asking singular questions. Analysis of the transcripts of later Roundtable sessions, during the following year, feature a somewhat altered approach to my questioning in particular where, although questions instigated by the teacher educator are evident in the data, oftentimes only one question was asked, and there was a more deliberate attempt to ask a question and elicit a response. For example, during R11, I asked:

Robyn: My question is “Do you learn from that?” (pause)
 Jane: yeh
 Robyn: how? (pause)
 Jane: we try
 Robyn: how? (pause)
 Jane: because we’re reflecting on ...
 Emma: well you relate it to your experience ... and then when something like that comes up in the future you might remember what Dina did or what someone else did
 Adam: when someone says something ... I immediately think what else they could have done...but it means that when other people share what they have done in certain circumstances then I can remember those and ... all these things pop into my head ... so I am learning from other people’s experience so that I can adjust those to my situation or for next year
 Robyn: so listening to other peoples’ experiences helps you to think about alternatives ... so as that person is talking, you are thinking what you might be doing. Is that what you are saying?

(R11)

Deliberately asking questions and waiting for responses was evident from the analysis of the data. However, the MPT I completed four months later which was based on the roundtable session above (R11) revealed the struggle I continued to have (and displayed) about silence as unsettling. I wrote in my MPT response: “Do I break the silences? This was not the intention. Am I still uncomfortable with silence – do we learn when we are silent?” Even though silence had been identified,

acknowledged and explicitly pursued as an influential factor in learning for three years it continues to remain perplexing

Summary: Challenging My Assumption

Three key outcomes emerged for me which were related to my assumption about pre-service teacher verbal participation in RR sessions and my practice as a mathematics teacher educator. First, analysis of my data related to verbal interactions indicated that I felt some discomfort within, and about silence. This is evidenced by my ongoing questioning and by my explicit attention to silence and the dominant voices at the roundtables. Changing embedded patterns of behaviour is a slow process; acknowledgement, however, is an initial step.

Second, my assumption that those who verbally participated in reflective discourse are in a privileged position in terms of their growth as learners, has been challenged. Some pre-service teachers who were not verbal indicated they were still learning, engaged and (re)constructing their identities within the reflective space, albeit in another mode. My challenge then is to withhold judgment about those who choose not to verbally participate in roundtable sessions and continually attempt to cater for all learning styles within RR sessions. (Although I still promote pre-service teacher choice, I now require that as each RR session begins, each pre-service teacher must write briefly about an experience they would like to share with their peers; they then articulate this with their group and it is then the group that determines which issue will lead the RR session. This ensures that each pre-service teacher must contribute at least once to the dialogue. This modification also ensures that each pre-service teacher hears their own voice early in the session).

Third, the micro-analysis of the transcripts particularly, exposes the complexities associated with the everyday experiences of learners in the teacher education classroom. Rather than interpreting silence and speech within RR sessions as opposing extremes of a continuum or a dichotomy (Jaworski, 1993) it might be more meaningful to consider more closely the orientations of the learner combined with the compatibility of the reflective approach. In understanding more about the existence of these orientations one can then direct and inform teacher educator practice and understanding. For example, some pre-service teachers may be in harmony and feel comfortable with a RR approach to unpacking experience and therefore may have the confidence to express and discuss their experiences. Hence these pre-service teachers connect verbally within this framework thus making meaning through social discourse (for example, Dee). Others may connect with two dimensions – the experience and the (re)organisation, but not with the verbally based roundtable reflection approach and these learners primarily make meaning through listening (for example, Justin and Adam). Their learning styles require time and space to further develop and the learning might not

yet be explicable; an “epistemological silence” (van Manen, 1990, p. 112). In this sense, what may be unspeakable at that moment, may “be captured ... in language the next moment” (p. 114) and therefore time and timing is an influential factor in learning about learning through an examination of silence. Analysing the role of silence in learning has foregrounded for me that my learning about silence was a process consisting of six phases:

- (1) Identification of silence, commonly through a critical interaction/incident which was perplexing
- (2) Acknowledgement that this silence existed and permeated classroom interactions
- (3) Focused exploration, inquiry into, questioning about and examination of the silences
- (4) Tentative conclusions about silence and its meanings
- (5) Altered practice whereby understandings were continually tested in various related contexts for verification
- (6) Firmer and more refined conclusions.

By identifying and problematising silence in this way, more about the subtleties and tacit complexities associated with learning has been exemplified.

Understanding the Unsaid: Overview

Silence

It is a presence

It has a history, a form

Do not confuse it

With any kind of absence

(Rich, 1979, p. 17)

Rich (1979) cautions us to not confuse silence “with any kind of absence” (p. 17). A focus on silence and what remains unsaid in my mathematics classroom highlights complexities associated with learning as a pre-service teacher and as a teacher educator. By explicitly identifying one’s own and others’ perceptions of silence, it becomes possible to isolate and identify incongruities; the points where there may be misconceptions and multiple interpretations within the teaching and learning experiences. From this point reframing our understandings is possible. It is through identifying the interconnectedness, the interactions and the constant recursive cycle of reflecting on and (re)interpreting the events and interactions that a deeper understanding of the impact of silence, and the how and the why of silence, particularly during roundtable reflections, has emerged for me.

The unremarkable and taken-for-granted assumption is that silence is a feature of, and permeates organisations. A remarkable outcome of researching and under-

standing silence in the day-to-day communication of teacher education classrooms might be an illumination of “the complex nature of social relations” (Clair, 1998, p. 20) and through a reflexive approach, prompt transformation in teaching and learning about teaching. Perhaps it might be that as teacher educators, we may need to look beyond the ‘polyphony’ (Brown & Coupland, 2005) and explore the silent spaces, for it is the research about and within these spaces that deeper insights into teaching and learning might emerge.

Chapter 8

Developing our Authority of Experience: Pre-service Teachers and Teacher Educator as Co-learners

Assumption Four: Individual Authority of Experience Will be Enhanced when Pre-Service Teachers and Teacher Educators are Reconceptualised as Co-Learners

What does it mean to reconceptualise ourselves as co-learners? The preceding chapters have highlighted the ways in which my assumptions as a teacher educator have been both challenged and supported in my teaching and learning mathematics context. I now return to my initial impetus for interrupting our routine pedagogical practices; that being my desire to devolve my authority as teacher educator and encourage what I considered to be a shared power base in learning about teaching. I wanted to teach so that pre-service teachers learnt about teaching through their own experiences, and not mine. I wanted pre-service teachers to experience a democratic approach to determining their learning, and hence encourage a deeper sense of pre-service teacher ownership of their learning. This approach to power sharing required us to operate differently; to negotiate with one another; to consider our needs and wants and to identify ways to achieve these negotiated goals. In this chapter, I examine our collective learning about negotiation, power and the development of “authority of experience” (Munby & Russell, 1994; Segall, 2002; Shor 1997).

Introduction

In situ and retrospective reflection is crucial in coming to understand more about the ways in which the “authority of experience” (Munby & Russell, 1994, p. 92) is acknowledged and developed in pre-service teacher education. In my self-study research, the process of understanding authority and the complexities associated with how I might facilitate the development of an authority of experience was non-linear and entailed constant retro-reflection on events, interactions and data provided from classroom learning and teaching mathematics sessions. My assumption that we could be co-learners however, was based on my desire to share ownership of the mathematics

unit construction, and in this sense, I envisaged that co-authorship of the unit might lead to co-ownership and thereby create an environment where pre-service teachers felt empowered so that they might develop an authority of experience, through reflecting on experiences related to *their* learning about teaching. The term “authority of experience” is defined by Munby & Russell (1994) as the sense of authority which results from pre-service teachers being able to distil the essence of learning which emerges from reflecting on their own experiences. Developing one’s authority of experience requires more than simply having experience, it reflects an approach to learning from experience which is less reliant on propositional knowledge or the need for “tips and tricks” (Loughran, 2004b) from experienced others. When pre-service teachers move beyond the need for propositional knowledge (supplied by those in an authority of position) they may then come to understand the “unique nature of *learning from experience*” (p. 93, emphasis in original).

This chapter explores issues of authority and power. I have presented my learning in four sections. The first section highlights and examines a pivotal interaction that occurred early in the study which raised issues associated with negotiation, power and authority of experience. The second section is my retrospective analysis of talk during RR sessions and attempts to clarify more about the connection between talk and the development of pre-service teacher authority of experience. The third section I discuss relates to teacher educator talk and examines my talk over time, and establishes the challenges for me in deciphering the intended from the actual in terms of my practice. The final section of my discussion summarises my learning and what it means for me to hold the assumption that pre-service teachers and their teacher educator can be reconceptualised as co-learners.

In my introduction I refer to my initial attempts to negotiate the LTM unit with a cohort of pre-service teachers. I begin by describing a critical interaction which provided the stimulus for researching the ways in which power and authority were being interpreted, constructed and understood by both the pre-service teachers and me, through the vehicle of unit negotiation.

The Learning and Teaching Mathematics Context

During Week One, of Semester Two, 2002, I did not distribute a prescribed Learning and Teaching Mathematics II (LTM) course outline, as I had in previous years. Rather, I attempted to negotiate with the Third Year Bachelor of Education cohort the structure, assessment and learning tasks, and content of LTM. I had an already established teaching and learning framework and this framework included some possible options for the structure of the unit. Explanation of my genuine desire to negotiate the curriculum with the group and discussions related to the LTM unit continued during the initial information session and during the tutorial sessions throughout Week One. I sought to challenge the status-quo by encouraging pre-service teacher voice and promoting democratic practice with pre-service teachers in creating opportunities for them to share the development of a curriculum for learning about

teaching mathematics. Collaboration therefore was an essential component of my approach so that pre-service teachers were encouraged to participate in negotiations about their learning. Just like Shor (1997), I wanted to establish a “power-sharing community” (p. 62) amongst ourselves. We met weekly as a cohort in the Open Space (a flexible teaching space which was conducive to group work as it offered structural flexibility). Positioning for me within this space was important – there was no front of room, and I wandered as I addressed the cohort.

Chelsea’s Address to the Cohort

Chelsea was a member of the Third Year Bachelor of Education pre-service teacher cohort participating in the second forum session of the LTM in July, 2002. (Chelsea, and the remainder of the cohort, had previously completed two units of Mathematics together throughout the Bachelor of Education course). She was a frequent and regular participant during discussions and appeared to enjoy contributing to reflective discussions related to her learning. At the conclusion of the Week Two forum negotiations (which were related to the assessment tasks of the unit), pre-service teachers were asked if there were any further questions relating to the outcomes of the negotiations. I sat in a vacant seat, in the middle of a group of pre-service teachers, not too distant from Chelsea. With little hesitation following my question Chelsea rose to her feet and addressed the group of ninety-two pre-service teachers. Generally Chelsea’s contention during her address to the cohort was that we all had negotiated a task for assessment which she believed was unfair in terms of the effort required to complete the task. What follows is Chelsea’s written reflection, completed the night following the session, of her participation in this forum.

I was not very knowledgeable in the area of authentic negotiation. I expected that it would give me a sense of power and ownership over my learning, as I would have input into the assessment tasks, their weighting and possibly some unit content. One proposed assessment task was a portfolio, which should contain notes and reflections from our tutorials and lectures, plus reflections of ten journal articles. Although I am an assertive person, I was also apprehensive about challenging Robyn, the unit coordinator, on this.

At the negotiation meeting, Robyn made it very clear that this was the time to discuss our thoughts and concerns. Peers seated near me and I quietly commented to each other that we had concerns with it. Robyn requested input, but no one commented. I reluctantly stood up and said, “So everyone is happy with this task?” No one answered. I went on and said, “Doesn’t anyone think that there are too many articles to have to read and write about? We know how long it takes and it is not weighted very high.” I looked around the room. There was silence. I was appreciative that Robyn was silent, allowing me to have my say and give other students some time to speak. Still no one commented. I felt rather embarrassed and uncomfortable. I pressed on and said “so no one is going to walk out of this room and complain about this task because it will be too late then!”

[At this point Chelsea organised a vote, conducted the vote with the cohort by a show of hands to support her proposal and resolved the issue for her by effectively reducing the total number of articles from ten to five]

The negotiated alterations were pleasing because I had participated in what I believed to be a team approach to making beneficial changes for all concerned. I felt proud of myself for having the courage to be actively involved. I felt positive about having the opportunity in a non threatening environment to express myself, knowing that 'the boss' would not in turn display negative behaviour or attitude toward me. My expectations of negotiating the unit were met.

I questioned why these people did not speak up. I came to the conclusion that negotiating the curriculum was new to a lot of us and that it is at times difficult to alter the way we think. Challenging or negotiating with people in positions of power can be daunting in many institutions, not just in universities. I personally believe that primary and secondary schools, along with universities are not conducting enough authentic negotiation with students and hope that more students in the future are empowered through this process as I was.

(Chelsea, Bachelor of Education pre-service teacher, Written reflection, Forum Session 2, July 2002)

I considered Chelsea's interaction with the group as representative of two phases: Phase One describes what happened in terms of Chelsea's involvement during the forum, my involvement as mathematics teacher educator and the cohort's general lack of participation in the discussion; and Phase Two represents our reflections on the event and the multiple layers of meaning related to the construction of authority which emerged some time afterward as a result of reflecting on our negotiations.

Phase One: The Interaction

This pivotal interaction illuminated some key tensions which were evident (although not completely understood at the time) during our negotiation. My intention was to negotiate the teaching and the learning outcomes for this mathematics unit; pre-service teachers most likely held expectations which were based on their previous experiences as learners, and part of this expectation included a deference to my authority (by way of my position). This may explain the silence and the lack of verbal challenges from the cohort in general regarding the number and type of tasks. In many ways we were limited by our lack of experience in identifying and using the skills required for effective negotiation.

Phase Two: Multiple Interpretations

The second phase of the interaction relates to the multiple ways in which the interaction was interpreted. Underpinning our understandings were the notions of authority and how authority emerged as a key issue in understanding more about our changing roles. One interesting point about Chelsea's reflection on her address to the cohort was the ways in which her perceptions of power (and her perceived lack of authority as a learner to hold and use power) influenced the nature of her negotiations. Simply put, the outcome of her negotiation meant that the number of journal articles to be selected, read and summarised was reduced from ten to five.

In hindsight, however, this pivotal interaction also exemplifies the complexities associated with pre-service teacher/teacher educator negotiation. Chelsea questions her peers' lack of involvement in the initial and ongoing negotiations: "I questioned why these people did not speak up. I came to the conclusion that negotiating the curriculum was new to a lot of us and that it is at times difficult to alter the way we think". She highlights the new role for her and her peers and how operating as a negotiator was indeed a process with which the cohort had had minimal, if any, prior experience in their pre-service teacher education. In this sense, Chelsea's statement concurs with extensive research findings about the effects of pre-service teachers' extended apprenticeships of observation (Lortie, 1975), and that as a result of consistent exposure to teacher-directed approaches to learning, pre-service teachers exhibit a predominantly passive learning style. They do not expect, neither are they prepared for, opportunities to be genuinely involved in negotiations about the curriculum. Passivity in learning emerges as a result of ongoing experiences which traditionally exemplify a transmission of knowledge (or banking) approach to teaching and learning (Freire, 1970). Clearly, our Week Two, LTM negotiation experience challenged such notions and presented a vastly different scenario for the pre-service teachers and me, one that in hindsight, I had not prepared them for adequately. I simply assumed they were capable, willing and interested to accept a role as co-collaborators in the design of their teacher education curriculum.

Teacher Educator as "the Boss"

The question of teacher educator power arose in this interaction. Underpinning our interaction was what Chelsea had perceived as her reduced opportunities to effectively negotiate due to her position as a pre-service teacher and my position as a teacher educator. This is evident in her reference to me as an authority figure, "the boss". Chelsea provides further clues related to her thinking about power and its impact on her negotiation when she refers to her limited opportunities for practicing this type of negotiation; the difficulties associated with altering embedded assumptions about learning and teaching and the "courage" it takes to challenge "people in positions of power". Our interaction reflects a power structure that pre-service teachers have been acculturated into and that they will probably unthinkingly recreate with their students unless there is some kind of challenge (or interruption) to their thinking about how or why change to this structure might be desirable. My aim in encouraging negotiation within the LTM units concurs with that of Shor (1997) who states that,

The democratic disturbance of the teacher-centred classroom confirms a primary goal of shared authority: to restructure education into something done by and with students rather than by the teacher for and over them (1997, p. 148).

At the conclusion of this session, Judy addressed the class in the following way: "You know, she is trying to do something different with us and we should support her". Judy's comment provided for me, a sense of support from at least some of the cohort.

My Struggle with the Outcome

At the same time my stated intention was to create opportunities for acculturated beliefs and practices to be challenged, yet clearly *I* was still struggling with the notion of how this might work in reality. This struggle was evident in my post-session journal reflection when I wrote:

Almost had the unit negotiations completed when Chelsea said “Hey, as a group are we really happy with the portfolio? (silence) You know, it’s going to be a lot of work, the ten journals and it’s only worth five percent” Reply: “I think we should swap the self-directed activity which is 10%” (mumbings, then motion put to class by Chelsea - Very difficult at this point to refrain from talking). I really felt like I needed to re - explain and justify the self-directed concept - the ownership, the opportunity to take learning further, to pursue an area of interest. And I did try, however, this was not generally accepted and the motion, put by the pre-service teacher [Chelsea] voted on and passed. I left this session feeling as though I had been attacked; I was tired, I had tried and they still want for something different. A new learning for me: negotiation is so much easier when the negotiated outcome relates closely to personal [teacher educator] choices.

(Wednesday July 31, 2002, Journal entry, Post-Forum Session)

My reflection uncovers a tension I felt in this situation between on the one hand my expressed goal of negotiation about tasks, and on the other the sense of being personally challenged when the negotiated outcomes were outside the boundaries of what I had anticipated. My focus during the early negotiation sessions was to co-author and thereby co-own the learning tasks and assessments with the pre-service teachers. However, in conducting the negotiations, unanticipated issues for me, about authority related to my position, and power, surfaced.

The extract from my reflection (above) reflects my ongoing assessment of my professional role as a teacher educator. The interaction with Chelsea shows that she had taken seriously the responsibility of negotiation and had attempted to push past the barriers of my “authority of position” (Munby & Russell, 1994), openly questioning my authority in a public forum. I wrote that I felt as though I had been “attacked” and yet wasn’t negotiation meant to underpin my new approach to practice? Shouldn’t I have been prepared for, even welcomed such an outcome? Examining this interaction has now exposed further questions for me about my authority of position: For instance, what structures were in place so that pre-service teachers felt that they could truly negotiate. After all, what were their options? This was Week Two of their first semester with me as their teacher educator. Why should they trust me and my intentions when in reality they had known me in this learning and teaching mathematics context for only one week?

Different Perspectives

Clearly, both Chelsea and I approached the task of negotiation from different perspectives, and underpinning the negotiation was our attempts at negotiating from a

base of power, as it were. Although Chelsea felt daunted by speaking out, she was concomitantly proud for having the “courage to be actively involved” in negotiating the unit as she refers to her sense of “power and ownership of [her] learning”. She also articulated the difficulty generally, associated with challenging those in positions of power: “Challenging or negotiating with people in positions of power can be daunting in many institutions, not just in universities”. In hindsight, I realise that the cohort had received minimal preparation during class about why negotiation and ownership of the unit was seen (by me) as essential to the LTM unit. In this sense, few formal negotiation tools that they might use had been directly introduced. Key qualities underpin successful negotiation. These include: (1) being articulate; (2) being able to identify a purpose and sequence in an argument; (3) being able to justify a modified proposition; (4) being confident; and (5), having a relationship with me (as teacher educator) and pre-service teacher peers. When I review the interaction with Chelsea with these negotiation tools in mind, I see multiple ways of interpreting the learning from the interaction. For example, Chelsea was confident (4) articulate (1) and had an already established working relationship with me and her peers (5). Her argument although sound, sequential and with justification (2) however, bothered me to a degree. My belief about her intention in this negotiation was to reduce the workload from ten articles to five. Was I compromising my teaching standards by allowing this negotiation to be voted on and passed? As my reflection indicates I was frustrated and I felt I hadn’t convinced the cohort of my idea that ‘this is important for your learning’ (i.e., to self-select ten articles and pursue an area of interest in mathematics learning and teaching). Where did my responsibility as a teacher educator begin and end in terms of directing the LTM curriculum? The process of negotiation was complex and I felt as though the ground kept shifting. My experience resonates with research reported by Fecho, Commeyras, Bouchereau Bauer and Font (2000) who experienced a similar situation with graduate students in critical literacy classes when they as educators, attempted to disturb their regular practices, to share authority with their students. For these educators “shifting of roles and purposes blurs and challenges lines of authority creating new relationships in the classroom dynamic” (p. 474). However, in contrast to the experiences reported by Fecho et al. (2000), I did not initially, deliberately and/or systematically consider in advance the influence of power, nor the authority of my position in terms of how this might impact pre-service teacher involvement in negotiating the principles and practices of the learning and teaching mathematics unit. And, I had assumed (and expected) that pre-service teachers would already possess and be prepared to use, skills of/for negotiation.

Post-session Conversation

An informal phone conversation with Chelsea one year after our pivotal interaction during the mathematics forum, helped me to discern more about the impact of the experience on Chelsea and gain further insights into some underpinning foundations

which need to be available if pre-service teachers are to be encouraged and feel more empowered to negotiate aspects of their learning about teaching mathematics. A summary of our conversation (I noted key points and gained her permission to use these) is described below:

The person, the main operator has to be passionate and committed and the students need to understand that, with negotiation, there would not be repercussions ... The relationship was important and knowing you helped as I knew you would be impartial and that you would listen ... The participants in this process need to feel comfortable or they won't have the courage, and they need to be self-confident (Chelsea, Personal Conversation, July 2003)

Chelsea provides some pertinent clues about the necessary conditions for her to feel that she could effectively (albeit with hesitation) negotiate learning outcomes, which involved a direct challenge to the person in authority. She indicates some dispositions required of the “main operator” (i.e., teacher educator) that include personal skills such as enthusiasm, passion and a genuine willingness to negotiate. Perhaps, most importantly, Chelsea had an already established relationship with me which allowed her to feel as though she could take the risk to put forward her ideas (“knowing you helped as I knew you would be impartial and that you would listen”). Chelsea also raises the issue associated with repercussion. She needed to believe that by challenging the person in authority, she would not suffer consequences. This view concurs with Shor’s (1997) research in which he suggests that his students also needed to be able to “speak their minds without the fear of reprisal” (p. 148). A further key factor related to successful negotiation is raised in Finkel’s (2000) research that is relevant to this interaction in that students need to be provided with opportunities to discover new ways of operating as a group and new ways of dealing with one another when developing a community of (reflective) practice which is underpinned by a shared power base.

In summarising the learning from this pivotal interaction with Chelsea, three key points emerged for me. These related to (1) negotiation tools, (2) the ability to genuinely create a shared power base with pre-service teachers, and (3) the need for exercising professional judgement when negotiating.

My first point here, relates to the particular tools required for negotiation within our context. These include self-confidence; a relationship with the teacher educator and peers; the ability to articulate an idea and/or challenge, the ability to sequence an argument, and being able to justify a new proposal. Not all pre-service teachers possess these skills neither do all pre-service teachers choose to openly participate in the negotiation process.

A second key point relates to my struggle to genuinely share authority and the emerging contradictions between what I say and do as a teacher educator. I learnt that it is easy to talk and read about negotiating with pre-service teachers and establishing a shared power base. It is much more difficult to enact these ideas in practice. Understanding the difficulties in transferring ideas into practice illuminates the complexities associated with not only having co-learning as an ideal, but understanding some of the ways that authority of position, for example, can create barriers to establishing a co-learning community in practice. While I was silent during

the interaction with Chelsea, I was experiencing feelings of doubt (over my handling of the situation); anxiety (will this negotiation erupt and implode?) and a sense of defeat (they did not go with what I thought we had agreed upon). Crucially, I had not at the time, considered or questioned the pre-service teachers' motivation for the negotiation. In retrospect, this is perhaps why I also felt vulnerable. Was Chelsea negotiating purely to ease the workload and if so, surely for most of the group this would be a reasonable outcome? Did pre-service teachers really need to read and evaluate ten articles and would five serve a similar purpose? This is where teacher educator professional judgement becomes important: Which negotiations do I agree to? Which negotiations do I overrule?

To summarise, analysing this interaction with Chelsea led me to understand more about pre-service teachers' authority of experience, my authority of position and the ways in which our individual authorities develop in multiple ways shaped by our past experiences and present contexts. In the following section I discuss the nature of the authority of position and the authority of experience and how my understanding of these concepts developed through examining the nature of the talk in RR sessions.

Teacher Educator Authority of Position

The interaction with Chelsea allowed a *sleepers* issue (i.e., an issue which has an impact on learning but has not yet been specifically identified) to surface in my practice. The sleeper relates to the ways in which my power and the authority of position might influence not only the style and the impact of negotiation on our learning, but also, participation in RR sessions. The critical interaction with Chelsea became the impetus to examine other practices and beliefs in my teaching related to the sharing of authority and the use of power. I wanted to challenge the status-quo in terms of traditional teacher directed and transmissive approaches to teaching and to shift the power base so as to devolve teacher educator authority (of position) and thereby shift the "centre of gravity" (Shor, 1997, p. 104). In so doing, I anticipated that there would be some development of pre-service teachers' sense of authority, for example, through participating in discussions related directly to their own experiences during RR sessions I assumed they would be developing their authority of experience. Having identified the sleeper issue of the impact of my authority of position, I became more focused towards the development of pre-service teacher authority of experience through their participation in RR sessions. I anticipated that pre-service teachers could then experience what it might be like to interrupt some of their taken-for-granted practices; evaluate what doing so meant for them in their learning about teaching and then begin to incorporate the RR practice in their teaching. The RR sessions had the hallmarks of what I felt represented a democratic, two-way reflective discussion based on my assumption that pre-service teachers develop an authority of experience through sharing experience.

Talk illuminates a deeper understanding about the ways in which power and authority were interpreted and enacted in pre-service teacher classrooms. I deliberately tried to build pre-service teacher authority through RR sessions. My assumption about developing pre-service teacher authority of experience through participation in RR sessions was based on the view that sharing (partner teaching) experiences would facilitate the development of pre-service teachers' individual authority of experience. Underpinning this assumption was that co-learning (pre-service teacher/teacher educator) would be a direct outcome of encouraging a focus on pre-service teacher experience to develop an authority of experience as the authority base would be shared. I refer to excerpts of transcripts from Roundtables Eleven/Twelve in my discussion of talk. I was curious about the nature of talk and the ways in which pre-service teachers/teacher educator constructed dialogue. In other words, who was talking during RR sessions and what were they saying? Following an analysis of my data seven sub-categories were identified: Self (S); Peers (P); Pre-service teachers to teacher educator (PTE); Pre-service teachers about teacher educator (PAT); Teacher educator to pre-service teachers (TTP); School experience (SE); and, the University experience (UE). I wanted to know more about the 'who' and 'what' of the talk during RR sessions. My analysis focused on questions such as: Did the discussion related to experience refer to self; was the intention to address the peer group; did pre-service teachers talk to or about the teacher educator; and did the teacher educator speak to and question the pre-service teachers? The school experience and the university experience categories refer to the what, or the context, of the discussion. Broadly, I wanted to analyse the nature of the talk at a closer level and by doing so, I hoped to gain a deeper understanding of the ways in which pre-service teachers were articulating their learning and in what ways I was involved in these conversations.

Talk: Self, Peer and Teacher Educator to Pre-service Teachers

Self

An underlying expectation I had about RR sessions was that pre-service teachers would be provided with opportunities to raise issues related to their teaching experiences. In this RR context the teacher educator's role is to participate in, rather than dominate, the discussion. Pre-service teacher voice is encouraged and the creation of a supportive and trusting environment is integral. Therefore, I anticipated there would be a focus on pre-service teacher talk about 'self' (in this data 'self' talk is coded from "I" statements) during both R11 and R12. The analysis of Category One (Self) data provides interesting insights into the ways in which pre-service teachers framed themselves within their learning. Self talk expressions accounted for 29% of the total instances of talk in R11 and 12% of the talk in Roundtable Twelve. For example, when addressing the class, Lin referred to ways of perceiving aspects of her learning that relate to age, problem-solving and perspectives. She stated: "for me who's older I think along a different line" and "it [sharing experience] gives me a very different perspective on how to cope with the problems that students ... have in classes" (R11). She suggested that RR discussion

provided alternative perspectives for her and that maybe her age had an impact on her propensity to interpret her own experience from a singular perspective. Another student, Jane, commented on the comfort and reassurance provided by her peers when problems were discussed during RR sessions. She commented that: "I'll probably deal with it [the problem] better because ... I know that it happens to everyone else [and] I can fix those mistakes" (R12). This sentiment is also reflected in Tim's statement where he suggested that credibility was an important aspect for him when learning about teaching, and through listening to the experiences had by others he was "learning from other people's experience in that I can adjust those to my situation I think there is more credibility ... if you hear it from somebody else who has actually done it" (R11). These comments indicate that pre-service teachers were building their understanding of experience through sharing experience and that the practice of sharing contributed to the creation of their authority of experience. As pre-service teachers unpack their learning, they examine its impact in a supportive learning environment; a learning environment constructed deliberately for this purpose.

Sal identified that the notion of comfort matters when sharing aspects of problems with her peers. She also mentioned her feelings about the ways she saw our (pre-service teacher/teacher educator) roles in the RR sessions as balancing out, or heading towards equality: "I feel like more of an equal to you [Robyn] than if you were up the front telling. It makes me feel more comfortable and that my opinion is valid" (R11). Sal alluded to the physical positioning of the RR sessions which being conducted in a circular structure, meant there was no physical 'head of table', only participants. She also associated being up the front with "telling" so one might assume that telling might not be her experience of me during roundtable sessions. Having her opinions validated was also important for Sal. Many pre-service teachers mentioned that sharing problems during Roundtable sessions became a means of reassurance, as more often than not, their peers were experiencing similar difficulties as they were.

Self expressions (or "I" talk) were evident during both R11 and R12 discussions. Using "I" suggests some degree of revelation about self in learning. Self was revealed in the value of articulating and sharing experiences, and also by the ways that reassurance provided by peers when their experiences connected in some way with their own experiences. Pre-service teachers show that they are willing to discuss self, and own their declarations which might indicate a level of development of an authority, based on the examination of experience. However, if Munby and Russell's (1994) definition of authority of experience relating to extracting the essence of learning is applied to this analysis, then the evidence is not quite so clear as I do not have data to suggest that at this point, the pre-service teachers were doing anything more than sharing experiences.

Peer

The second category I identified in the categorisation of roundtable talk from R11 and R12 (Peers) refers to the ways in which the incidences of talk represent pre-service teachers directly addressing a peer (17% of the total number of instances recorded in

Roundtable Eleven and 17% recorded for Roundtable Twelve). During Roundtable Eleven, for example, nine of the total of seventeen instances when pre-service teachers directly addressed their peers specifically concerned pre-service teachers' experiences in schools. This may indicate something about where authority as a pre-service teacher may begin to emerge. Being in a school context provides opportunities for pre-service teachers to plan, implement and evaluate their learning. In this sense, the territory is theirs, as it were. Perhaps pre-service teachers first, feel more familiar in the school context (as all have attended these institutions for many years) and second, feel they can relate and share their experiences with their peers at university about these first hand experiences of teaching. In this sense, although the experience is unique to their context, they feel authorised by way of experience to unpack their learning during RR sessions. In addition to this, I was not part of their experiences of being in schools and therefore, as a group, I can participate on more equal terms.

One of the most interesting contributions related to feelings of personal authority as a teacher was provided by Ellen. Following a discussion with a peer about the value of being in schools, she stated: "Mainly when I'm with kids at school I don't have any authority either so now I know that everyone's in that boat" (R11). Ellen specifically raises the notion of her perceived lack of authority as a pre-service teacher when partner teaching in schools. In this sense, although she felt that she did not have "any authority" in schools as a pre-service teacher, she was reassured by the fact that this also had been the experience of her peers. She then states: that "you'll feel it's not just me, this is perhaps what we go through" (R11). Ellen identifies that she is seen by the students as not having any authority of position as a pre-service teacher. Understanding more about her comment leads me to consider the role of experience in developing not only an authority of experience, which might be developed as a result of having experience, but also the ways in which the authority of position develops in pre-service teacher education. In developing their professional identity, pre-service teachers might need to explicitly consider the ways in which personal perceptions about a lack of authority of position impacts their learning, and explore ways in which experience might contribute to challenging this perception.

Examining the authority of position as a pre-service teacher leads me to consider factors which might contribute to pre-service teacher's emerging professional identity and the ways in which partners can assist in developing deeper understanding about their experiences, through interacting with a partner. For instance Emma's statement (below) suggests that having a partner with whom to debrief enables multiple perspectives on teaching to be unpacked in informal ways and provides opportunities for pre-service teachers to develop feelings of authority through engaging with peer teaching partners who are at the same level in their practice.

And you don't realise it at the time ... and as we were coming back from Bendigo we were talking about it and we could see it, you know, like all the different things ... we found all the things as we were going ... through the process 'cause she was in the room at the same time and so she could point out different things that I hadn't picked up on ... and I could tell her my reasoning.

(Emma, R12)

Emma then continues by stating that, in relation to the value of having a peer partner working with and alongside her in the classroom, “they[peers] can see things differently ... they’re making an outside connection ... some other experience they bring to it ... another source” (R12). The practice of partner teaching may well be encouraging the development of individual authority related to experiences had in both informal (discussions) and formal (RR sessions).

Teacher Educator Talk

The third key category which emerged from the RR data refers to the ‘what’ or the substance of my talk during RR sessions. During the RR sessions, I used the Outer Circle of the ALACT framework (Korthagen et al., 2001) as a guide for my participation. I was aware of not dominating the discussion but of still maintaining a presence; of facilitating without selecting all actions/experiences for comment; of not being in a foregrounded position but still operating from *a* position; of challenging but not always confronting. Considering that this modified approach to my role was a deliberate effort to adhere to the practices mentioned above, I was surprised to find from the data that during Roundtable Twelve, particularly, the highest number of instances of talk identified within this excerpt of the session related to me, the teacher educator, addressing the pre-service teachers (34 instances or 24%); almost one quarter of the instances.

Analysis of R12 in terms of instances of talk indicates that the function of my talk was as an evaluative tool, to find out about the impact of Roundtables on pre-service teacher thinking and how my role within the RR was being interpreted by these pre-service teachers. For example, I asked the following questions during R12: “Should they [roundtables] continue as a learning approach?”; “Do you learn from that [RR]?”; “So how does that make you feel?”; “Do you like learning in a group like this?”; “Do you like the actual process?”; “How do you see my role as teacher educator?”; “What else about my role?”; “So is exposure to different types of reflective practice important?”. In fact, much of my talk is framed as questions in order to elicit more from pre-service teachers about how they were experiencing my role during RR sessions. My questions also modelled a process whereby pre-service teachers were exposed to my vulnerabilities associated with practicing teacher education in innovative ways. However, returning to my initial statement in this section (using the ALACT as a guide for my participation) I notice that for these selected roundtables at least, my intended practice did not always mirror the actual, or indeed that which was experienced. Rather than prompting, challenging and guiding pre-service teacher learning (ALACT), I was explicitly questioning my role and the process of RR. In this way, I was using the RR sessions as an evaluative tool to inform my understanding of the ways in which my role was interpreted, more than practising the ALACT skills to support pre-service teacher learning. This was not a practice I had considered to be a roundtable function yet it contributed more to my knowing, as a teacher educator. In many ways I felt vulnerable asking these questions aloud (previously I would have asked pre-service teachers to write responses to explore the effectiveness of a teaching practice). By asking questions

during RR sessions about my role, the verbal feedback was in the moment and face-to-face, which also meant any number and types of responses might be provided by pre-service teachers. Perhaps in hindsight, by asking these questions, I was directly exposing the ways in which my authority of position was being altered as I participated in a different manner during RR sessions.

School Experience and Roundtable Reflection

With reference to talk relating to the category of school experience, analysis of the RR session data suggests that the pre-service teachers' views of the most relevant context for their learning through experience was within the school context. (The combined total of instances of talk for R11 and R12 referred to school experience was 20%). Interestingly there were minimal, spontaneous, explicit references to the relevance or value of university experience/s. (Generally the main references to the university experience were as a result of questions instigated by me). These results may suggest that pre-service teachers, in valuing school experience (and showing this valuing through unpacking their learning) will have the need to understand more about the ways in which they learn within this context as it will have immediate repercussions in their practice.

A number of pre-service teacher responses refer to the roundtable sessions and their value. For example: "I like the small group; you can't be distracted really easily so you have to focus" (Jen, R12). Pre-service teachers generally acknowledged that RR sessions were a means whereby they could effectively unpack their learning in a trusting and supportive environment. Perhaps then, the RR context is where their authority of experience may be developed as it encourages pre-service teachers to critically select learning and/or teaching experiences and unpack the experience as a means of determining learning? It might be also that RR sessions provide pre-service teachers with a means to identify the essence of their learning, as it is in identifying the essence that the authority of experience might develop. In this way, pre-service teachers are less reliant on propositional knowledge and more reliant on extracting meaning from their own experiences as pre-service teachers. Their experiences are validated and contribute to their growth as learners.

Studying Teacher Educator Talk over Time: Intended and Actual

Earlier in this chapter I noted that the numbers of instances of my talk were considerably higher than I had anticipated. Understanding what and how I contributed was important for me in determining whether I was offering shared and equitable access to dialogue. One aspect of my attempt to share the power base with pre-service teachers in our RR sessions was through shared and equitable access to dialogue, so understanding more about my talk became important to me as I needed to distinguish the intended from the actual, in instances of my talk. Did I speak less over time? If pre-service teacher talk was an important practice in establishing their authority

of experience as new teachers, then was I allowing this growth to happen by not dominating the talk? The results from a comparative RR analysis were surprising to me. My belief was that my contributions to the RR dialogue had decreased over the years of this self-study. I selected two roundtable sessions, at random, which were conducted one year apart. I chose the first session and one session mid-way through the study to compare. Following is a comparative analysis of two RR sessions (R1, 2002 and R11, 2003).

Analysing this data raised some pertinent issues for me about evidence of change in practice. The same number of pre-service teachers verbally participated in each excerpt from the RR discussion (9) and by analysing the percentage of total words, it was evident that there were the same number of dominant voices in each session.; These were: Sandi (23.8%), Shonia (15.9%) and Robyn (i.e., me) (37.4%) in R1, and Mal (27.5%), Mary (18.9%) and Robyn (35.6%) in R11. In both excerpts, I had not only been a dominant contributor to the discussion, but in fact, I had dominated the talk; approximately one third of the total RR session time was talk directed by me. One key difference between the two roundtables which became evident as a result of my analysis was that the average number of words per instance of my talk decreased from 52 (R1) to 25 (R11). I still was a dominant voice during RR sessions in terms of frequency of contributions, but using fewer words.

This was a revelation for me as I had believed that through time, I had reshaped my role so that I did not dominate the talk. I then became curious about my talk and the ways in which I structured my talk. Had the structure changed over time? During R1 I asked six questions; provided three transitions to further discussions; one explanation and three summaries of talk. During R11, I asked five questions, provided three transitions to further discussions; three explanations; and one exploration of the role of the teacher educator. Surprisingly, not only had my total percentage of talk remained the same, but my style of talk had also remained the same. I had not changed the frequency or the pattern of my contributions, even though my perception was that I was behaving differently.

The comparative analysis of my talk over time is interesting for many reasons. Even though I had acknowledged and identified that I wanted to establish a shared power base through more equal distribution of talk; even though I had adopted a formal structure to assist this aspect in my practice (i.e., ALACT); even though I had introduced new structures to enable a fore grounding of pre-service teacher experience (Roundtables; Commuting partner teaching in schools), I still was a dominant voice in discussions, and my style had scarcely altered. This indicates for me that although changing practice is difficult, researching the attempts and the outcomes will remain integral to my practice.

Summary: Challenging My Assumption

By examining both a snapshot of practice (Chelsea) and ongoing regular practices (such as RR sessions) I have come to understand more about the ways in which developing one's authority of experience is dependent not only on *having* experience

but is also influenced by such factors as: (1) one's authority of position; (2) the why and what of negotiation; and (3) the need to extract and make explicit the essence of learning. Individual authority of experience is enhanced if pre-service teachers and teacher educators are reconceptualised in the learning and teaching context as co-learners. Reconceptualisation, although necessary, needs to be accompanied by researching practice if genuine change is to eventuate. My reflection on my learning exposes my initial assumption as somewhat idealistic and considerably more complex in its enactment than I had envisaged. In other words, researching my practice has highlighted for me that modifying routine, beliefs and behaviours (with reference to pre-service teachers and me) particularly in relation to the more equitable distribution of power is a more challenging task than it ostensibly appears.

Authority of Position

My authority of position as teacher educator and indeed the impact of my authority of position needed to be acknowledged. As much as I intended to co-share the power base with my pre-service teachers, my intentions were at times thwarted by my position. (This was clearly articulated by Chelsea in her reflection on the Forum session where she was hesitant about challenging the negotiated outcomes of the LTM unit.) However, RR sessions provide some insight into the ways in which pre-service teachers had begun to work around their views of my authority of position, for instance, in foregrounding issues emanating from their experiences, rather than deferring to me and my experiences. Their approach might suggest that they were becoming less dependent on working from more formal propositional knowledge, or theories about teaching, in an attempt to develop their own authority, acknowledging the value of their experiences in informing their learning about teaching. Teacher educators need to acknowledge the authority of position that they have and understand that pre-service teachers need to be exposed to opportunities to find new ways of dealing with (Finkel, 2000) the person in the authority of position (Munby & Russell, 1994, p. 92). One new way might be the introduction of RR sessions.

I had taken for granted my authority of position so much so, that I did not initially recognise its effects on the ways that pre-service teachers negotiate and/or participate in RR sessions. When the impact of my position of authority did become apparent I needed to encourage pre-service teachers to understand that genuine attempts were being made by me to focus on sharing this power with them and developing their authority of experience through valuing and exploring their experiences of learning about teaching.

The Why and What of Negotiation

Negotiation not only requires learner consent (as this consent cannot be forced) but also the acquisition of particular personal and professional tools or skills. These

tools include the provision of explicit ways of how to negotiate in conjunction with why negotiate (or contribute to dialogue). An important issue raised by Chelsea and reflected in power and authority research (for example, Shor, 1997) is that of repercussion or reprisal which might result from a pre-service teacher attempting to negotiate and/or challenge the power status-quo. Therefore, in responding to calls for negotiation, for example, pre-service teachers need to feel that by taking risks and challenging the taken-for-granted, that they have some degree of protection. This is identified by Chelsea when she suggests that she "... felt positive about having the opportunity in a non threatening environment to express myself, knowing that 'the boss' would not in turn display negative behaviour or attitude toward me" (Forum, Week Two, 2002) and "the students need to understand that, with negotiation, there would not be repercussions" (Personal communication, July 2003). Shor (1997) states that the desire to promote a shared-authority base in education requires that teacher [educators] often need to "teach by the seat of their pants" in transferring some "momentum to the students" (p. 104). In order to transfer momentum, pre-service teachers need to know and practice skills of negotiation, and believe that there will not be reprisal. As previously stated in this chapter, although I did indeed intend to share the power base with the pre-service teachers in both negotiating and unpacking their teaching and learning, I did not intentionally consider the negotiation skills required of both pre-service teachers and me in order to share a power base effectively. Tools for negotiation need to be addressed and made explicit and it also needs to be acknowledged that some pre-service teachers may be more inclined to accept and use tools of negotiation for negotiation than others.

Teacher educators also require negotiation tools. My negotiation tools were developed as a result of teaching primary school students for many years. As self-study scholars have reported in research of their teaching there simply is no script for teacher educators' work (see, for example, Mueller, 2003), and coming to understand more about what is required for negotiation became an integral part of my script. As Maturana and Varela (1998) suggest we "lay down a path while walking" (p. 11) and in this way, much of what we come to know as educators is not only the result of experience but of reflecting on experience and reframing experience so that it informs future practice. For me these negotiation tools included the ability to listen; to understand more about intent and motivation; to remain strategically silent (by this I mean the ability to use professional judgement about knowing what to negotiate and when) and to acknowledge my responsibility to develop relationships with the pre-service teachers.

Understanding More About the Nature of Co-learning

A key question for me arising from my examination of the assumption which underpins this chapter is: Can we (pre-service teachers and teacher educator) ever be truly regarded as co-learners with so much underlying tension related to the

teacher educator authority of position? My research leads me to make a cautioned response of, yes. Initially, I had not considered myself a co-learner; rather a facilitator, a modeller and/or an animator of learning. Co-learning within this environment however, required an examination of experience and a constant questioning of accepted values and practices. One means of achieving the aim of teacher educator/pre-service teacher co-learner through this research has been through establishing and carefully monitoring the talk during RR sessions.

I have come to recognise through the experience of this research that co-learning is an important role in learning more about teaching and learning in teacher education. However, the role of co-learner may not necessarily mean equal access to dialogue, for example, and/or an equally shared power base. It might mean that we (co-learners) learn alongside one another and in this sense, and in extracting our own core learning we are contributing to our own authority of experience; these learnings then become personal outcomes. Perhaps the authority of position as a teacher educator needs to be acknowledged as such and it is in making the impact of this position explicit, that all learners can then explore ways to deal differently with the ways on which this perceived authority might impact learning.

However, just because pre-service teachers have an experience, it does not necessarily follow that they have gained/developed their authority of experience. Some key understandings emerge in terms of co-learning and they include a need to make new learning explicit; establish a trusting environment; make explicit the possible impact of my authority of position; establish ways in which we can effectively negotiate using skills; become aware of contradictions in practice and finally, offer legitimate choices so that pre-service teachers feel that they have some choice, and therefore increased control and ownership over the direction of their learning.

In terms of my research, it is apparent that, as Munby and Russell (1994) suggest, experience must be *had*, in order that authority of experience might be developed. Pre-service teachers' experiences in schools and their experience of reflecting at the roundtable provided opportunities for the having of the experience. For pre-service teachers, different kinds of experience contribute to different forms of authority for them. What they see as legitimate really matters. The analysis of my data also suggests that their experiences as pre-service teachers provided the stimulus for reflection and hence the ownership of the learning that emanated from that experience. Where experience and reflection intersect there were opportunities for their authority of experience to develop. As a teacher educator I continue to ask: What might this look like? Sound like? One way that has been revealed through this research is in pre-service teachers' regular references to interactions, and the way these interactions impacted on their learning and how this made them feel: thus highlighting a connection between the affective dimensions of learning and the development of an authority of experience.

The authority of position as a teacher educator needs to be acknowledged before it can be manipulated. It is through having and analysing experience (partner teaching and RR sessions) that individual authority of experience can begin to develop. Co-learning may not necessarily mean equal access to dialogue but may be interpreted in multiple ways in a teaching and learning environment and one of the interpretations of co-learning might mean learning alongside one another.

Developing an “Authority of Experience”: Overview

In this chapter I have examined the notions of negotiation, authority of experience and authority of position and the possibilities of pre-service teachers and teacher educators being reconceptualised as co-learners.

Negotiation (both as a pre-service teacher and a teacher educator) requires particular skills and tools. The tools required for effective negotiation need to be made explicit; they cannot be assumed. Co-learning is an ideal I held for our practice in learning about teaching and for co-learning to be authentic and be mutually rewarding a shared power base is required. A shared power base for us, in this context, meant equitable access to dialogue, particularly during RR sessions, as it was anticipated that during the session pre-service teachers would unpack *their* learning associated with *their* experiences, not mine. To enable pre-service teacher growth in their individual authority of experience, I needed to devolve authority and allow this unpacking to occur. Although I assumed that this was the case, examination of the data suggested that in practice, little had altered in terms of me being a dominant contributor and often, dominating RR sessions. I continue to work with this aspect of my practice.

Part III

Powerful Pedagogy

Conducting self-study research has highlighted the ways in which examining everyday classroom interactions can lead to powerful new learning and enhance a pedagogy of teacher education. In the final section of this book, I (re) examine my assumption about the role of self-study in learning about teaching and establish the importance of using assumption interrogation as a lens through which to examine my practice. Self-study demands a reconceptualisation of teacher educators' and pre-service teachers' roles in learning. It emphasises not only the development of self but others, and aims for improvement in teaching and learning about teaching. It is an evolutionary and responsive process and is underpinned by inherent political dimensions. It alters personal and professional perceptions about teaching and also requires enactment of new learning in teaching. Self-study researchers theorise their learning and as such examine the underbelly or the drivers of their beliefs and practices.

Chapter 9

Learning Through Self-Study

Assumption Five: Self-Study of Teacher Educator Practices Provides a Means for Enhancing a Pedagogy of Teacher Education

Learning through self-study is the focus for the discussion within this chapter as it captures for me the salient aspects of ‘coming to know’ as a teacher educator. Identifying and challenging taken-for-granted assumptions about teaching and learning provided a lens for me to examine my practice. This chapter reveals the ways in which exploring assumptions has contributed to the development of my pedagogy as a teacher educator.

Introduction

Learning through self-study (using assumptions as a lens to scrutinise my practice) has revealed much about the embeddedness of assumptions and the ways in which they need to be surfaced. In this chapter I offer a synthesis of my learning and illustrate the ways in which I needed to, first identify and describe my assumptions about learning and teaching, then explore the ways in which these assumptions underpinned and shaped my practice. I also examine the sub-assumptions which became evident through this analysis of my practice. Finally, I illustrate the ways in which new understandings about my learning and teaching have been woven into my teacher education practice.

Revisiting my initial ideas of this research has been an important means of coming to understand more about the ways that my pedagogy has developed over time. Initially, the focus of my research (and the intention which underpinned assumption identification) was to find ways in which I could assist pre-service teachers to learn more effectively about teaching and learning mathematics. However, more recently I have come to see the ways in which my understanding of myself has influenced not only my view of pedagogy, but also how it has tangibly influenced my practice. In defining more about my pedagogy, I note the work of Loughran (2006) who

states that pedagogy “is about the relationship between teaching and learning and how together they lead to growth in knowledge and understanding through meaningful practice” (p. 2). As a means of explaining my learning through this self-study, I draw on the work of Senese (2002) who identified axioms as a way of explaining how he learnt about himself and the impact of that on his teaching. His axioms included: “go slow to go fast”; and, “be tight to be loose” (p. 47). In retrospect, I see now the value of contemplation to discern the essence of my practice and the impact of practice on learners. For me, learning to stand back to see ways forward adequately describes the ways in which reflecting on my work over the past five years has created new understandings, challenged existing and deeply embedded assumptions about learning and teaching and provided a changed framework from which to operate as a teacher educator.

The following section is introduced by way of a discussion related to the role of ‘ideals’ in teacher education and I use ideals as a base to foreground the implementation and sustainability of change in teacher education.

Ideals in Teacher Education

Much has been written about ideals in education (for example, Brookfield, 1995; Korthagen et al., 2001) and the ways in which ideals can influence practice. In my context ideals relate to big picture aspirations and reflect an ultimate objective which I consider necessary for successful teaching and learning. With reference to Brookfield’s (1995) categories of assumptions, ideals correspond with the level of the paradigmatic; that is, assumptions which are the most difficult to uncover, and often, the most difficult to alter.

As a precursor to unpacking my ideals for teacher education, I believe it is important to understand the forces which work against transforming ideals into tangible and sustainable outcomes in teacher education. The following offers one way of thinking about this situation. Many ideals remain as ideals as they get lost in the process of workshoping; a term employed as a means of explaining why there might be a lack of imagination and creativity in teacher education. For example, a creative idea is *had*. It is spoken about with another and in this sharing it becomes reshaped and some provisos and ‘what ifs’ become caveats to the ideal. It is then taken to another collective and this collective works through the foundations and possibilities and it is further reframed. The idea finally arrives at its end point, looking and feeling quite different from the original (and perhaps radical) ideal. It is now far more palatable for the majority, less controversial and more within a regular mould; less ingenious. What began as an ideal which perhaps pushed comfort zones has been remodeled and reframed to resemble that which perhaps already existed. Therefore, there need to be opportunities in learning and teaching contexts where ideals can take root and challenge the status-quo in education. For example, a collective needs to begin with an ideal and imagine pathways (rather than barriers) to its achievement. Considered in this light, the framework for working towards

ideals was in place for me. This framework consisted of a course structure which was flexible; a broader university culture that encouraged and supported innovative practice; pre-service teachers and staff who were prepared to take professional risks and challenge the status-quo and teachers in schools who were prepared to provide a different style of mentorship for pre-service teachers.

In retrospect, I can see that as a consequence of understanding the nature of ideals and the change process, generally, it seems that top-down or externally driven changes can be destined to fail due to the very nature of the external impetus. Imposing change is a less effective means of achieving sustainable and meaningful change in teacher education as often the change process is one that is reactive and responsive rather than proactive and authentic. Therefore, ownership (and thereby carriage) of the ideal is imperative. Alongside ownership is the requirement for, and recognition of, one's professional autonomy. Professional autonomy is integral to self-study research as the research focus cannot be held fixed in one time and place. The learning is constantly in motion. Teacher educator responses to learning and teaching situations need to be in the moment. Decisions about alternative future plans for practice reflect professional judgment. Hence the value of self-study research. Self-study research gives voice to teacher educators, pre-service teachers and most importantly, in my context, connects with the learners in schools. The issues that are dealt with arise from authentic contexts. Assumption hunting, identification and challenging offers rich ways in to unpacking deeper understandings of learning and teaching – not only about the choices made in our teaching and learning contexts but in the ways that we might use new understandings to inform and alter practice/s.

In summary, pursuing ideals matters. It was important for me, that I (and others) did not workshop the life and/or potential out of the ideas. Professional judgment is paramount but professional judgment is not an insurance policy against failure, mistakes and disillusion. These aspects of creating a living ideal need to be embraced, and self-study provides the support mechanism for embracing such a challenge.

In the following section, I discuss the multiple lenses that self-study researchers have used to examine their practice. My lens is the assumption lens. I then consider my learning through referring to Brookfield's (1995) three categories of assumptions (commonsense, or causal; prescriptive; and, paradigmatic). For each category, I identify the assumption and the practices related to the assumption; I reflect on the ways in which I have come to understand more about my learning and I state the ways in which my practice has altered.

Assumptions as a Lens for Learning About Practice

As mentioned, self-study researchers have implemented various lenses for researching and understanding their practice. These lenses include "tensions" (Berry, 2004b); "anecdotes" (Loughran, 2006); "assertions" (Loughran & Northfield, 1996); and

“axioms” (Senese, 2002; Austin & Senese, 2004). Assumptions are another form of lens (Brandenburg, 2004a). As a collection of beliefs about ourselves, they make us who we are; influence the ways in which we operate and become filters for the ways in which we see and understand the world. It was through framing my learning about teaching through assumptions that I could identify and examine the ways in which my beliefs about teaching and learning both underpinned and influenced my practice as a mathematics teacher educator. By using Brookfield’s (1995) categorisation of assumptions – paradigmatic, prescriptive and causal – I have learnt more about my assumption base and the complexities surrounding the very notion of assumption hunting, identification and understanding.

What becomes paramount in understanding more about the ways in which examining assumptions can lead to deeper understandings of pedagogy however, is not only the identification of the “causal” (and commonsense) assumptions, but an examination and backtracking through to more deeply embedded “prescriptive” and “paradigmatic” assumptions (Brookfield, 1995, p. 3). Much can be extrapolated about the ways in which the most deeply embedded assumptions (the paradigmatic) can be interpreted as commonsense assumptions, and yet to alter any form of assumption and/or belief remains at the least a challenge, and at most, according to some researchers (e.g., Pajares, 1992) almost impossible.

Commonsense Teaching from a Commonsense Base

In retrospect, much of my modified approach to learning and teaching mathematics was based on what I believed to be commonsense practice based on commonsense assumptions (for example, reflecting in and on practice; teaching practice in schools; engaging pre-service teachers in taking responsibility for their learning; involving pre-service teachers in the negotiation of content). However, it was not until I began to unpack how each of these commonsense assumptions influenced my approach to implementing commonsense practices that I began to understand more about my own thinking and how that influenced my approach to teaching. I now illustrate this new understanding by referring to the example of partner teaching.

Partner Teaching

I had supervised and mentored pre-service teachers when I was a teacher in primary schools, a practice that began in my second year of teaching. Then when the opportunity to reconceptualise the university mathematics units arose, I explored the value of partner teaching (the “commuting model” as per Korthagen et al., 2001) because my previous experiences of working with student teachers in schools led me to see the inherent value of a shared approach to planning, teaching, evaluation and reflection.

Many sub-assumptions underpinned this practice. For example, I assumed that shared learning in an unknown teaching environment would provide a supportive structure; that peer feedback was valuable; that many teachers, pre-service teachers, assistants work together in a classroom at one time (a practice which is now the norm, so experience with the norm is important); that pre-service teachers like to be active as learners and that pre-service teachers need to learn about compromise. Many of these sub-assumptions were embedded in my initial thinking. Therefore, for me, these sub-assumptions did not require challenging – they simply were. However, it was through pre-service teachers using multiple modes of reflection (both oral and written) that I came to see that even the simplest (and for me, least complex) of my assumptions had an impact on pre-service teacher learning and needed to be questioned and reshaped.

Not all pre-service teachers were comfortable with partner teaching. As has been discussed in Chapter 5, although many pre-service teachers indicated that a teaching partnership was a positive learning experience, some negative feedback raised further questions for me about the nature of the partner teaching arrangement. For example, who should establish the partnership? Should the partnership be friendship based? As some pre-service teachers stated, it can be difficult for friends to give feedback to each other since they may hold back from offering a response that might be perceived as critical of that person in order to preserve their friendship, or conversely, may offer feedback that is perceived as personally critical or hurtful and in the process, sever a friendship. I had not considered the impact of the ways in which teaching partnerships were constructed. What was commonsense for me was not commonsense for others.

Changed Practices

Bringing this new knowledge about pre-service teacher partnerships to the LTM classes extends both my own and pre-service teacher learning about teaching as it identifies options related to the construction, implementation and value of teaching partnerships. With reference to my current role, I continue to encourage pre-service teachers to establish their own partnerships but prior to the pairing, I make explicit the multiple ways in which a partnership might be constructed.

We discuss the benefits and drawbacks of partnerships based on established friendships; the multiple ways in which the partnership might function in practice; and the ways in which partnerships might extend to critical partnerships (i.e., the feedback on teaching provided is a means of promoting further growth as a teacher and learner about teaching). Prior to studying the nature of my assumptions related to partner teaching, my emphasis was on the logistics of the partnership; the schools; the timing of visits and the connections with school personnel. I recognise that, in many ways, the nature of my concerns were similar to the kinds of concerns that, in their initial experiences of teaching, preoccupy pre-service teachers about management and organisation. Hence a parallel is drawn between our experiences, and I can better appreciate how and why they may become caught up with these.

In order to direct my pedagogy more purposefully towards the nature of the partnership, my focus now is on the ways in which teaching partnerships operate so that pre-service teachers can be encouraged to provide support and critical feedback on teaching and learning about teaching.

Understanding more about the sub-assumptions related to partner teaching has also enabled me to prepare pre-service teachers more adequately for their partner teaching by making explicit the ways in which they can critique a person in a teaching situation and be less critical of the person. The structure I have incorporated into my LTM units is that of peer assessment of tutorial presentations, whereby teams of pre-service teachers research and present a shadow topic to the remainder of the class. (A shadow topic is a content area in mathematics whereby pre-service teachers have identified specific gaps in their understanding, for example, decimals; where they struggle to identify the key learning stages; and generally, where they feel they have minimal understanding). In this way pre-service teachers are encouraged to take some risks, move away from their own content comfort zones and explore possibilities with content areas they find challenging.

A requisite for all pre-service teachers is to peer critique each of the presentations, and at the conclusion of the session, the discussion revolves around pre-set criteria. Each pre-service teacher is required to write a reflection (which is returned to each of the team members presenting) and discuss their opinions and suggestions with the presenting team. The assessment for the unit also becomes a shared responsibility. Ultimately, I see this as modeled critique where the impetus for the discussion emerges from an authentic experiential base, but can also be guided by me in terms of structure, synthesis and support. It was through identifying my own assumptions about teaching and learning that I have come to see how I might begin to more purposefully shape my teaching towards my ideals.

Prescriptive Assumptions in Learning About Teaching

Assumption hunting and identification has been a difficult process. It has also been messy. As I have indicated in the above section, examining the assumptions which underpinned my teaching revealed the ways in which even the simplest or commonsense assumptions comprise multiple sub-assumptions and shaped my approach. When I map out my assumptions I note that there is a propensity for me to state my beliefs about learning and teaching as prescriptive assumptions (i.e., those which reflect what a good educational process should look like) as ways in which pre-service teacher learning might be enhanced. I speak of multiple reflective practices being a conduit for pre-service teacher critical reflection; Roundtable Reflection being an effective means to challenge pre-service teachers' taken-for-granted assumptions; the value of verbal participation; and, I reveal my beliefs about the importance of co-learning in teacher education.

All of these combine to reflect a platter of assumptions, and all within a particular category. Many of these assumptions have been challenged as a result of studying

my practice. It has also been interesting for me in the process of this self-study to note that all of the four key assumptions which were identified as the focus for the analysis chapters refer to the ways in which I envisaged that pre-service teachers might be encouraged to connect in deeper ways with their learning by reflecting on their experience. I had not consciously considered the ways in which reflecting in and on my practice would affect the ways in which I now understand the how and why of my pedagogy as a mathematics teacher educator. This identification marks an important shift in recognising the importance of acknowledging my own learning.

One prescriptive assumption I had was that multiple reflective tools would contribute to pre-service teacher critical reflection. In the next section I examine the nature of my (prescriptive) assumption about using a range of reflective tools. I look at the ways in which the multiple facets of this assumption revealed not only my intentions related to reflective practices but also my expectations about pre-service teacher learning. It was not until I had reflected in greater depth on the feedback from pre-service teachers that I began to see the ways in which their reflections on their learning ultimately impacted me and my learning.

Using Multiple Reflective Tools

Reflection is a generic skill, encouraged in teacher education to enable pre-service teachers to examine their experiences in deep and meaningful ways. Initially, when I began my study, I did not question the validity of this claim or the practice of using multiple tools to enhance reflection. To me, it was commonsense practice. As Gore (1993, p. 149) suggested, it “would be virtually inconceivable to find a teacher educator who would advocate *unreflective* teaching”. Commonsense, yes: Prescriptive for me, yes. In retrospect, some of my key assumptions combined the elements of being both commonsense and prescriptive (reflecting what I believed a good educational practice might look like). By encouraging the use of multiple reflective tools, I foresaw that skills would be developed to help unpack learning.

Once again, it became evident that my prescriptive assumption about the use of reflective tools was underpinned by many sub-assumptions. What does a commonsense practice (perhaps masquerading in my self-study as a prescriptive assumption) look like? How does it feel for us (pre-service teacher/teacher educator) to be involved in multiple types of reflection in and on practice? Through examining the impact on pre-service teachers of using reflective multiple tools, I have come to see that a structured approach can guide reflection so that it does not become a (re)telling of experiences *had* (Munby & Russell, 1994). Through using, for example, ALACT, as a framework, pre-service teachers (through critically selecting issues that mattered to them to reflect on) revealed to me more about the kinds of choices that they made about what to reflect on.

I have also come to see that a framework, such as ALACT, provided me with the means by which to monitor my own practice as a teacher educator within this

remodeled learning environment. Although ALACT was integral to the RR sessions, as a guide it has application in various contexts. Much of the ALACT cycle has transferable qualities and I now use the framework as a guide especially during critical conversations, incidents and events. For example, during one-on-one conversations, it is possible to identify the issue and through working through an ALACT cycle, an individual might identify their problem (for example) and explore alternative ways of both viewing the problem and exploring alternatives.

My deeper understandings about the use of models by which to frame reflective practice has contributed to my pedagogy by way of helping me understand more about the prescriptive nature of the assumption. (In this case, that assumption being that pre-service teachers, and teacher educators, can benefit by using a framework for reflection; therefore reflective frameworks are useful tools for teacher education.) Importantly, new understandings emerged from our experiences of these tools and from systematically examining data gathered from day-to-day interactions, and written reflections.

Modified Practices

By identifying and evaluating the assumptions that underpinned my altered practices in the LTM units, I have come to see that prescriptive assumptions remained in motion. By motion I mean that in many ways they remained in a state of fluidity and the reason I see for this is that they were not as entrenched or embedded as were paradigmatic assumptions. They were created to meet a need to work towards an ideal and for my need to know more; therefore had not experienced a long life preceding this study. Although the ownership of the assumptions (and sub-assumptions) was evident, I was aware of, and prepared to modify my practices based on these prescriptive assumptions. Perhaps my practices changed because I anticipated that they would. Some of these changed practices relate to the ways in which RR sessions are conducted; the introduction of peer critique in LTM classes; the modification of written reflections and the retraction of assigning marks for reflection.

Paradigmatic Assumptions in Learning About Teaching

Through this self-study, I have come to recognise that assumption hunting can lead one to uncover those assumptions which are paradigmatic, and therefore direct our teaching from a deeper level. These assumptions can be challenged and the challenging requires a continuing focus on the ways that the assumption plays out in teaching and learning. First, the assumption needs to be identified and the ways in which the assumption influences practice needs to be established. (For me, the

practices or experiences which led me to change my assumption were structures such as Roundtable Reflection, partner teaching and introducing multiple ways of reflecting on practice). Then the practices need to be scrutinised by way of data collection and ongoing analysis. Finally for me, after three years, I can now look back to see not only that my paradigmatic assumptions have been challenged but also that particular processes have been instrumental for me in working through and meeting this challenge.

The Role of Experience in Exploring Assumptions

Understanding more about the way in which my pedagogy has developed did not just happen; it was the result of focused inquiry on experience as both a teacher and a learner. One key paradigmatic assumption (Brookfield, 1995) which pervaded this self-study was that the role of experience is crucial in developing understanding of teaching and learning. Therefore, if this assumption is viewed as part of a learning continuum, then at the opposing end of the spectrum might be the transmission model of teaching. This model assumes that knowledge can be packaged and transferred unproblematically to another individual. Identifying this paradigmatic assumption has been most informative for me as a teacher/researcher.

Exploring this point more deeply, I see that as Brookfield suggests, paradigmatic assumptions “are examined critically only after a great deal of resistance in doing so, and it takes a considerable amount of contrary evidence ... to change them” (1995, p. 3). My lead up to this self-study helped me to see that even though I thought I operated from a constructivist base, in reality, I modelled a type of teaching which reflected more of a transmissive approach to teaching and learning. Pre-service teachers were satisfied with this as they wanted to be supplied with tips and tricks for classroom success and therefore became reliant on me as supplier of answers to their perceived learning needs. I needed their affirmation and, as at that time as a beginning teacher educator, I was unsure about my role. However, a challenge to my learning came by way of a sense of personal and professional dissatisfaction, when I began to recognise the contradictions in my practice; Whitehead’s (1993) “living contradiction”. It was by working through these contradictions that I came to see the value of pre-service teacher and teacher educator learning being more thoroughly explored through a focus on pre-service teachers’ experiences, and not mine.

For me, this realisation represents a major shift in one of my key paradigmatic assumptions. This shift is towards a belief that learning experiences must not only be had by an individual, but that: (1) pre-service teacher and teacher educator expectations about learning matter; and (2) changed practice can be the result of extracting the ‘essence of learning’ (acknowledging and valuing the authority of experience). Each of these new understandings, which have been developed through reflecting on my experience, could represent new prescriptive assumptions (and hence contribute to new ways of understanding and enacting

paradigmatic assumptions) which I have developed, which in turn have influenced my pedagogy.

Expectations About Learning Matter

Learning about teaching in teacher education is complex. More often than not, my research has provided evidence to suggest that engaging in activity (such as teaching, presenting tutorial sessions, Roundtable Reflection sessions and actively constructing teaching aids, for example) is preferred by pre-service teachers in their mathematics units. Therefore, my assumptions about activity based learning and the pre-service teacher assumptions (generally) about the value of such an active approach to learning about and through teaching, in many ways connected. In this way, our simple and perhaps commonsense assumptions linked.

What did become obvious throughout the study of my practice was that I had quite different expectations about the outcomes of the experiences, and it was through the challenging of these expectations that I was led to see the ways in which some assumptions needed to alter. I refer, for example, to my prescriptive assumption about Roundtable Reflection and the inherent value for pre-service teachers in being provided with structured opportunities to unpack their experiences in a supportive environment. One sub-assumption related to Roundtable Reflection was that those who verbally participated in the discourse were maximising their opportunities for learning. My learning from an interrogation of this sub-assumption shows how I have been challenged to recognise the power of silence and the ways in which silence (during RR sessions) represented more than an absence of talk. My initial response to the less verbal contributors was to judge them as being disengaged or disinterested. In conjunction with this initial judgment, I was therefore unable to determine the ways in which they were connecting with, or unpacking, their learning as I had few verbal clues. Their silence was frustrating for me, and limiting, in that my understanding about their learning was minimal.

Exploring silence has enhanced not only my pedagogy, but altered my beliefs and impacted my practice as a teacher educator. Silence might indicate a multiplicity of responses (such as fear; the inability to keep up with the pace and flow of the conversation; nothing new to add; and/or an active resistance). Some pre-service teachers have a propensity for a particular learning style. This became most evident during RR sessions. Not all learners felt the desire to unpack their learning in this environment. Studying my practice has shown that not all learners reflect on their experiences 'just like me', and that I need to be aware of the less verbal contributors so that they have opportunities and others (such as me) do not limit those opportunities.

Two key understandings have emerged through examining the assumptions and the sub-assumptions related to RR. The first is that by being less (verbally) dominant I could focus on other ways of learning about teaching and second, that learning

is happening in silence. I examine each of these understandings below and discuss how each has impacted my understanding of pedagogy.

A Less Dominant Voice as Teacher Educator

In reviewing this assumption about maximising learning through verbal participation in RR sessions, it seems that in fact, I was maximising my learning by *not* participating verbally in roundtable sessions. By limiting or monitoring my participation, I was free to observe the interactions and evaluate learning with a more critical focus. For example, I considered carefully the ‘what’ of pre-service teacher reflection, and the types of concerns which became important for them in their learning. I was also able to notice more about their participation. This noticing instigated my search for understanding more about pre-service teachers who were either silent during the discussion, or who were less vocal. My intention was to take a less dominant verbal role in the discourse and encourage pre-service teachers to unpack learning based on their experiences and not mine. I learnt more about my learning and their learning via a combination of speaking less and reflecting on the RR sessions, over time.

Changed Practices

Understanding more about my assumption (related to learning through talk/learning in the silence) does not always lead to altered practice. For example, I still organise RR sessions so that they centre on pre-service teachers’ experiences, they are still conducted weekly and they still follow partner teaching in schools. They remain an integral practice in the LTM units. I now understand that not everything needs to change. If a practice has value, it should be maintained and my responsibility is to work towards maximising the possibilities for learning with each new group.

An altered practice relates to the beginning point of RR sessions, whereby each pre-service teacher identifies one critical incident which emerged from their teaching, and they write and/or reflect on this for one to two minutes. They briefly share this incident with the group (and in this way, each pre-service teacher has a voice and hears their voice early in the session). My role remains that of synthesiser, challenger and facilitator (as opposed to the deliverer of the correct information or the right way to respond to different teaching and learning situations as deemed appropriate from my teaching experience).

A new understanding for me is that it is easier to alter structure than the thinking behind the structure. Even knowing more about the thinking and understanding more deeply does not ensure a follow on to changes in practice. An example of this is my knowledge that I dominated discussions. Assumption hunting helped me to identify what underpinned my practice (and sub-assumptions were revealed such as

an expectation that I would be a major contributor and my need to evaluate learning through listening to discourse). Through formally examining my practice through data gathering and analysis and as much as I wanted to change (and obviously had the desire) the reality is that it still remains a challenge for me. This then leads to me to consider what it is that I can realistically expect of myself as a teacher educator and how that influences my expectations for my pre-service teachers.

For me, the assumption lens was beneficial in multiple ways. It allowed me to focus on my learning. I was constantly reframing my learning through examining my practice, examining my assumptions and altering practices; as I was able. But, when asking pre-service teachers ‘to do as I do’, what is reasonable and fair? In the following section, I examine the impact on pre-service teachers of assumption hunting, assumption identification and subsequent challenging of assumptions.

Pre-service Teachers and Assumption Hunting

Assumptions are compounds of sub-assumptions; they are not simple and they are incredibly interconnected. I know this now, but I did not know this when I embarked on my self-study. It has been through reframing critical incidents, interactions and events that I have been able to see how some critical collisions with pre-service teachers became the catalyst for my deeper understanding of pedagogy. In working with pre-service teachers, using assumption hunting as a lens to reflect on learning, a number of parallels between my learning and theirs became obvious. These parallels include: (1) an understanding that assumptions become naturalised or embedded (65% of pre-service teachers stated they were not aware of their assumptions); (2) that assumptions are difficult to identify; and (3) that there is an affective response when assumptions are challenged. While I felt I understood the difficulties pre-service teachers encountered in identifying (and then challenging) their own assumptions about learning and teaching mathematics, I am not sure that I anticipated the affective implications for them as learners in this context.

Through using assumption hunting with pre-service teachers, I noted that they initially confronted very similar apprehensions and challenges as I did. The first question I was asked when introducing writing about assumptions was: “What are assumptions?” In most instances, a healthy and clarifying discussion followed. As one pre-service teacher stated during one class, “they are the mother of all – ups”. When I asked him to explain, he suggested that assumptions are based on beliefs, rather than evidence and therefore can lead you in directions different than those intended.

Raising Awareness of Embedded Assumptions

Retrospective reflection on how the impact of authority was identified exposed the understanding for me that perhaps power and authority had become naturalised

in my ways of teaching; so much so that the effect of the authority of position had been under-considered to a point where it remained “invisible” (Kincheloe et al., 1999, p. 180). By making the invisible visible, it then became possible for me to deal with how these notions of power were being interpreted by the learners. Self-study researchers have identified the pervasive role of teacher educator power and its concomitant professional privilege (Bodone et al., 2004; LaBoskey, 2004; Loughran, 2004b). Some even suggest that the ongoing “misuse of power, social justice and discrimination are culturally and systematically generated” (Bodone et al., 2004, p. 775). Therefore, this research has explicated the need for me as a teacher educator to recognise and acknowledge the embeddedness of my authority of position and the ways in which my power shapes what is and is not acceptable as learning from the position of teacher educator.

Prior to any examination of the ways in which individual authority of experience develops, I needed to understand more about the ways in which my position as a teacher educator was being interpreted by my pre-service teachers. Whilst my intention was to share and negotiate power with pre-service teachers (and hence promote ownership of the process of learning) the reality was that my position impacted the ways in which pre-service teachers felt that they could legitimately negotiate these outcomes. An initial research finding highlighted the ways in which, for me, my power, or authority *by* my position, had become a sleeper (or naturalised), as part of my practice. Therefore, in any attempt to negotiate learning, I needed to consider the impact of this sleeper in my practice. In considering this issue now, perhaps the most effective way is to make the new learning about the impact of teacher educator power explicit for pre-service teachers.

Assumptions About Self-Study

Assumption hunting (Brookfield, 1995) is a powerful lens for unpacking pre-service teacher and teacher educator learning. For me, it was an important tool in my self-study as it allowed me to examine my practice in deeper ways. It allowed me to move through the different layers of assumptions from the causal (or outer) to the innermost layers. Within the innermost layers I was challenged to reveal the least conscious parts of my practice, and it was these deeper and less conscious parts of practice which had the most powerful influence in directing my practice.

What assumptions underpin the processes associated with self-study and teacher education? Interrogating my study I see that self-study represents for me, a paradigmatic assumption, as it reflects the “basic structuring axioms [I] used to order [my learning and teaching] world into fundamental categories” (Brookfield, 1995, p. 3). This study is the result of my interrogation of assumptions related to self-study. I now understand that: (1) assumptions are comprised of multiple sub-assumptions; (2) understanding categories of assumptions is important as those most resistant to change (paradigmatic) need to be identified, examined and exposed and this process is time consuming and difficult; (3) my commonsense assumptions may not necessarily

be shared by pre-service teachers; and (4) prescriptive assumptions underpinned the ways in which the modified practices were designed and implemented.

However, when seen as a paradigmatic assumption, self-study also reflects a deeper understanding for me of: (1) the position of the researcher within the research process; (2) the role of self and others; and (3) the pervasiveness of the political. In the following section I will address each of these new understandings which can also be understood as sub-assumptions.

The Position of the Researcher Within the Research Process

My positioning as researcher within this self-study has been crucial in coming to understand more about the impact and conflict of multiple roles (i.e., teacher, participant researcher). Key understandings were exposed as a result of studying practice related to the importance of distancing and balance; ethical and moral responsibilities and, the impact of the context on the outcomes of the research.

The Importance of Distancing

This self-study research has operated from an *insider* perspective and therefore, in working from the inside-out (Loughran, 2004), it was anticipated that the focus of the research would not only be relevant as it emerged from an authentic, naturalistic context, but additionally, would contribute to the body of teacher education literature and provide substantive knowledge relating to the pedagogical development of teacher educators and teacher education. The self-study approach facilitated the researching of practice from the inside – out and enabled me to understand more about my *modus operandi*. However, it was not until I could actively distance myself from the daily-ness of my practice (Hamilton, 2002; Kuzmic, 2002; Stenhouse, 1978) that my learning about learning became evident. Distancing provided a space between the activity and the reflection and therefore provided a different lens from which to view the learning. In many cases, the learning from examining my practice emerged as a gradual process. As Cochran-Smith & Lytle (1993) suggested, teacher [educators] are:

in the position as privileged natives who are immersed in the data yet who can at the same time, stand back and employ self-critical techniques. Using these strategies, teachers make explicit for themselves the assumptions and expectations underlying their classes. (p. 45)

A salient example of the impact of this distancing, combined with retrospective reflection, was evident in the construction and completion of the multiple perspectives tasks. It was through standing back and critically reflecting on the interaction (for example, Sam, Chapter 6; Roundtable Reflection) which provided the stimulus for developing the multiple perspectives task. The analysis of the results of these tasks exemplified individual interpretations and experience of critical events and

interactions and provided a detailed insight into perspectives. Dealing with critical interactions from a distance has been crucial in understanding more about my developing pedagogy as a mathematics teacher educator.

The Importance of Balance

Throughout my study I was constantly challenged by the need for balance. There was a continual juggling of needs: my needs as teacher educator/participant researcher conducting a self-study to enhance my understanding of my practice, and pre-service teachers' needs as learners of, and about, teaching.

Initially, the needs of the pre-service teachers were representative of the extensive research which has suggested that expectations about learning to teach are underpinned by: activity and action, i.e., the learning of how and what about teaching; and, participation in professional experience within school contexts. The reframing and subsequent refocusing within these units required a systematic focus on inquiry: on asking questions; about using experiences as springboards for discussion; about reflecting on learning and making the learning explicit; and, about challenging taken-for-granted assumptions about learning and teaching. There was an increased emphasis on asking *why*. This represented my way of trying to shift and challenge their needs as a result of identifying my needs for their learning.

This approach contrasted directly to that which had been experienced by pre-service teachers in previous units and indeed for many, as learners within their own school contexts. Maintaining a balanced approach to the needs of pre-service teachers was challenging. Although the changed practices that I introduced were based on sound intentions, I could not conclude that that balance (in apprehending and responding to their needs) was maintained at all times. The over zealotry with which I approached reflection on practice became frustrating and irritating for some pre-service teachers. Balance requires considered and ongoing attempts to meet the needs of pre-service teachers and me as a teacher educator researcher. This entails making my research about my practice explicit and modeling the ways in which studying practice as a teacher can enhance learning and teaching in schools. It means I need to know their needs and my needs and understand the fact that these can be (and oftentimes are) different. Sensitivity is important when identifying how these needs are revealed in practice. Therefore, a key learning for me through self-study of my practice has been the acknowledgement of the need to be sensitive and this sensitivity informs my subsequent practices.

Ethical and Moral Considerations

A third key understanding which arose as a result of examining my assumption that self-study provides a means for me to enhance my pedagogy as a teacher educator, is the multiple ways in which ethical and moral considerations underpin self-study

research. One key example relates to pre-service teacher participation in the research. Participation in the learning and teaching mathematics components of the Bachelor of Education was compulsory and a pass in the units was a prerequisite for the successful completion of the Bachelor of Education Degree. Although the pre-service teachers volunteered to be involved in the research (and were at liberty to withdraw from the study at any time), questions arose for me about the way in which a withdrawal from this study may have indeed been executed and experienced. Although all pre-service teachers remained a part of this study, a key ethical and moral consideration would have been realised if a pre-service teacher did request to be exempt from the study as this would pose a serious question for the researcher: “How could the pre-service teacher then complete the academic requirements for the satisfactory completion of the unit? Would this person therefore, be disadvantaged in the completion of the degree?”

Reflecting more about the consequences of such a scenario prompts me to ask first, who does the self-study serve? If the response is that it serves to improve teacher educator practice and therefore teacher educator knowing within this context, then pre-service teachers would only need to be aware of the practice (of self-study) and be informed of the new learning. If the self-study involves pre-service teachers (by way of altered practice, data collection and analysis and additional work requirements) then consent must be provided. In providing consent, pre-service teachers need to be made aware of specific and non-discriminatory options available to them if they withdraw from the study and these are not always known in advance as much that occurs in self-study is a response to unfolding insights from data.

The Role of Self and Others in Self-Study

This self-study highlights for me that teacher educators do learn alongside pre-service teachers and by understanding learning in this way, meaning-making and knowledge construction are interdependent learning relationships. Acknowledging and challenging taken-for-granted assumptions enabled me to gain a deeper understanding of the ways in which I was learning as a teacher educator, and a great deal of this learning was as a result of focusing on daily interactions with others. Much has been reported in the education and self-study literature relating to participants who share the learning setting (Loughran, 2004; Pereira, 2000; Tidwell & Fitzgerald, 2004); but as Bullough and Pinnegar (2001) caution “there is always a tension between those two elements, self and the arena of practice, between self in relation to practice and the others who share the setting” (p. 15). This tension became obvious in this self-study through the questions which continued to permeate the research: “What selves were developing?”; “What selves were being projected?”

My self was constantly and actively being reshaped and remodeled as a result of a focus on the learners, and learner interactions. For example, while I was genuinely attempting to refrain from dominating RR sessions, I realised I was also initially and

predominantly a vocal learner and engaged primarily with the vocal learners. Identifying and understanding wait-time influenced my practice within the roundtable sessions. Establishing and modifying learning structures and approaches enabled me to gain a deeper understanding not only of the ways in which the pre-service teachers were operating and constructing their knowledge, but the ways in which I was learning, and the ways in which I needed to modify my practice to enhance pre-service teacher learning.

The Pervasiveness of the Political

Teaching, and understanding the complexities of learning in teaching through a lens of assumption hunting reveals the political nature of practice. Establishing the impact of the ways in which the authority, linked to my position as a teacher educator, raised the focus for me to (retrospectively) examine the pervasiveness of the political in my classroom. It was particularly during the participation and subsequent analysis of the roundtable sessions that the political nature of teacher education classrooms emerged for me in ways that may not have been apparent had I been in a 'teacher only' role. What had previously remained invisible was cast into stark relief by systematically reflecting on the classroom discourse. This insight is illustrated in terms of my beliefs about learning which underpin my approach to learning from researching my practice:

1. That the construction and maintenance of democratic teacher education classrooms requires the devolution of teacher educator authority.
2. That a democratic teacher education classroom should provide opportunities for the expression of each individual learner's voice.
3. That learning in a democratic way can create vulnerabilities, challenges and tensions for learners.

Each of the above beliefs is now discussed in the final section of this chapter with reference to critical incidents, interactions and events which precipitated deeper understanding about the explicit and implicit role of the political in teaching and learning about teaching through self-study.

The Construction and Maintenance of Democratic Teacher Education Classrooms Requires the Devolution of Teacher Educator Authority

My learning about the political as it was represented in my attempts to decenter myself suggested that as a teacher educator, I am required to be explicit about the classroom operations and provide open discussion about aspects of learning,

learner characteristics and expectations of the discourse. In retrospect, much of my explicit teaching was about the structure and the framework for reflecting on experience. Future teaching will be informed by increased attempts to be explicit so as to create an awareness of, and attention to, the liberating effect of inclusive classroom discourse. It must be acknowledged that the outcomes of this learning had different meanings for all participants. For some, it could be concluded, as Brookfield (1995) suggested, that:

students will wonder how the teacher thinks they're doing and will be observing ... closely for any clues to approval or censure. Students' awareness of the power relationship that exists between themselves and their teachers is such that it pervades nearly all interactions between them. (p. 11)

In my study, this understanding was evidenced by the ways in which individuals explored the various ways to deal with me as the authority figure (Finkel, 2000). This challenge was initially underestimated and underconsidered by me. As reported in the self-study literature, being a teacher educator brings with it an authority of position (Munby & Russell, 1994) which is represented in teaching as "knowledge in action" (p. 92). However, the expression of that knowledge in action might also inadvertently place pre-service teachers "under authority" (p. 93). In my learning about my practice, by consciously emphasising pre-service teachers' experiences, pre-service teacher opportunities for developing an authority of experience, based on their experience, is more likely to develop.

That a Democratic Teacher Education Classroom Should Provide Opportunities for the Expression of Each Individual Learner's Voice

Opportunities for articulation and examination of experience became integral to the approach to teaching and learning about teaching. As I came to further understand the classroom dynamics, a number of new understandings emerged. First, pre-service teachers were creating and recreating the self within this process. The presented self varied according to the context, the individual, the level of personal comfort, or the connection and/or engagement with the topic. Second, regardless of attempts to devolve authority, in order to enhance democratic processes and foreground the learning and experiences of pre-service teachers, there was a reality that I had carriage for the assessment within these mathematics units. Although the assessment process included a combination of self, peer and teacher educator input, ultimately the learning would be assessed by me. This raised questions for me regarding the self and how the self was being either projected or protected. Although processes were negotiated and pre-service teachers provided input with relation to content selection, tutorial presentations, and roundtable discussions, for example, a greater emphasis needs to be focused on the why of assessment and which approaches maximise both the learning and the outcomes for the learners. In my teaching

I need to explore alternative assessments whereby peer assessment, self-assessment and lecturer assessment combine to create a shared assessment base.

That Learning in a Democratic Way Can Create Vulnerabilities, Challenges and Tensions for Learners

Self-study is based on inquiry which leads to challenging of assumptions and to further questions. Alteration and adaptation of practices and beliefs is an outcome of this process. Self-study therefore has as its aim an emphasis on transformational rather than transactional learning.

Schulte (2002) defined the transformation process as:

the continuous evolution of one's own understanding and perspectives in order to better meet the needs of all students. It is marked by the disruption of values or cultural beliefs through critical reflection ... Transformation requires teachers to think critically and challenge ideas of how power and control are constructed. (p. 101)

Explicitly challenging pre-service teachers' and a teacher educator's assumptions can be (and was) experienced as confronting, and for some such challenging created a state of disequilibrium and/or discomfort. Although as the teacher educator I was aware, and to a degree prepared for this possibility, pre-service teachers were not so well prepared. For example, I decided to restructure the unit completely and the students were expected to participate in the reconstruction but had little (if any) experience in doing this. They had few requisite skills and no particular reason to trust (at this point) that this new approach offered real benefits for their learning.

Reflecting on this introductory time, represented by the ongoing myriad of their questions, enabled me to distil the tangible nature of the changes in my beliefs, practices and understandings about learning. In this sense, my learning responded to Loughran's (2006) argument that behaviour and practice must demonstrate how it is altered as a result of the self-study. Structural questions have largely been resolved by the combination of experience, reflection and time. It was the focusing on, and questioning about the structural and transactional elements (roundtable reflection, partner teaching written and oral reflection on practice, guiding frameworks, multiple data gathering) which became the foundation for transformation in respect to my learning as a teacher educator. In terms of my own understandings of my vulnerabilities as a teacher educator, I have learnt now to have "faith in indirection" (Finkel, 2000). I am more comfortable with the indeterminable, the uncertainties and the complexities associated with learning about teaching. I understand that challenges can be inspirational and can lead to an exploration of alternatives to achieve learning and teaching aims. I understand that what might be conceived as failure can become fertile ground for reflection; and I understand that it is okay to feel comfortable with a lack of closure. Reviewing the multiple interpretations of this interaction raises the complexities of the learning environment and how this learning has different meanings for all participants.

Learning Through Self-Study: Overview

This self-study reveals that using assumptions as a lens to further understand practice incorporates multiple challenges. These include: (1) the challenge of looking for/hunting assumptions; (2) the challenge of making understandings about teaching and learning embedded in assumptions explicit; and (3) the process of challenging the assumptions once they have been located and made explicit. Assumption hunting is a powerful tool to interrogate practice, and using a framework (such as Brookfield's categories) has allowed me to see more deeply into the ways in which assumptions impact pedagogy.

Chapter 10

From Personal Pedagogy to the Broader Teacher Education Context

The discussion in this final chapter focuses on a key imperative associated with self-study of teacher education practices: that of moving from personal, contextual and localised learning about the development of teacher educator pedagogy, to one which considers possible implications and recommendations for a broader educational/professional context. As such, this chapter represents possibilities for ways forward in teacher education. These possibilities have arisen from the close scrutiny and critical reflection of, and in my practice as, a mathematics teacher educator. I begin this chapter with a discussion of the key areas of connection to learning about teaching and conclude with six recommendations which emerged as a result of my self-study.

Introduction

As a way of positioning my discussion, which in essence relates my learning to a broader professional context by way of implications and recommendations, I return to the research of prominent self-study scholars (Feldman et al., 2004; Hamilton, 2004; Hamilton & Pinnegar, 1998; LaBoskey, 2004; Loughran, 2004) who advocate ongoing connection with the educational community as an essential requirement of self-study research. Learning about pedagogy which remains individualised, and is contextualised holds bounded benefits – largely, for those who participate in the study in a localised context. Such research conducted by teachers and teacher educators remains unavailable to the broader educational community. One of the key characteristics of self-study research is the “construction, testing, sharing and re-testing of exemplars of teaching practice” (LaBoskey, 2004, p. 175) and making “the experience of teacher educators a resource for research” (Feldman et al., 2004, p. 959). As Brown (2004) proposes, “strides may be made by sharing the questions and knowledge from the point of practice that, ultimately, serve to support other educators, to contribute to developing theory and to enhance the knowledge base of teacher education” (p. 548). This implies the importance of examining and sharing ways of coming to know as a teacher educator rather than ways of doing teacher education.

By examining the day-to-day interactions within my mathematics pre-service teacher education classrooms I have identified some of the complexities associated with coming to know about teaching, learning and learning about teaching. An initial acknowledgement which can be elicited from this self-study is that not only do pre-service teachers enter teacher education with embedded preconceptions about what it is to teach and learn about teaching, so too do teacher educators. Although my initial intention in conducting this research was to understand more about pre-service teachers and their learning, through self-study I have come to understand more about myself both as a teacher and a learner.

In many ways, my self-study responds to criticisms leveled at teacher education research which suggest that there is a “lack of close study of what teachers [bring] to the programs” (Zeichner & Conklin, 2005, p. 698). In this chapter, I identify aspects of my learning which may have implications for other teacher educators also seeking to develop their pedagogy; who are coming to know through examining their practice. I begin by identifying the implications for me of having conducted self-study and identify the new insights and knowledge I have gained from this process.

Implications

Conducting this self-study has contributed to my knowledge about teaching, learning and learning about teaching in pre-service teacher education. A number of implications for teacher education practice have emerged through studying my practice as a mathematics teacher educator. These implications are based around the following areas: (1) Growing into and through Self-Study; (2) Prompting change as a Teacher Educator; (3) Problem-Setting; and (4) Multiple Perspectives.

Growing Into and Through Self-Study

My initial intention for this research was to monitor the ways in which pre-service teachers developed their understanding of skills and concepts required to teach mathematics in Prep-Year Ten teaching contexts. The reality however, as presented in this self-study, represents something quite different. Through systematically reflecting in and on my practice and through identifying and exploring critical incidents, events and interactions, I became more deeply aware of the importance of scrutinising my own practice in order to learn more about prospective teachers’ learning about their practice. I have also come to learn more about the process of engaging in self-study which for me has been framed by the following seven assertions. These assertions include an understanding for me that self-study:

1. Is underpinned by an obligation to utilise one’s professional autonomy
2. Is an evolutionary process; alters perceptions about practice

3. Challenges taken-for-granted assumptions about learning and teaching
4. Requires a commitment to be a teacher/researcher
5. Demands an interruption to habitual and routine practice
6. Requires specific personal qualities.

The first of these assertions relates to the requirement for teacher educators to be afforded professional autonomy in making judgments about the findings from research based on their experience and their practice. These judgements emerge from the inside-out, and from a complex interplay of context, affective responses within learning and teaching situations, experience, and crucially, the systematic collection and analysis of data. The integration of reflective practices provides the tools by which teacher educators can examine learning (of all participants), respond to learners' needs and plan for appropriate turnaround in relation to beliefs and practices.

Self-study is an Evolutionary Process

Although I began the research with a broad research aim, conducting the research as a self-study required that I continually monitored my learning by way of reflection and responded to incidents and events as they arose in my practice. Through conducting ongoing analysis of data I was therefore able to refine the research questions related to the learning and teaching. In this way, self-study represents an approach to research which reflects an inbuilt mechanism for identifying and dealing with issues related to practice as they arise *in situ*. Being flexible and aware of the increased sensitivities I needed to develop while learning more about my teaching and pre-service teacher learning was also crucial.

Self-study Alters Perceptions About Practice

In May 2002, I was told to “practice what you preach” by a pre-service teacher in the evaluation of the teaching in the LTM unit. This comment prompted me to investigate my practice more deeply and prompted me to ask the question: “Could it be that others’ perceptions of me were different from my own?” Through studying my practice, I have come to see how the intended and the actual in teaching mathematics did not align as closely as I had envisaged. An initial step for me in my research was to identify whether I was a “living contradiction” (Whitehead, 1993) and if so, how could the contradiction(s) be addressed in practice.

Self-study requires teacher educators to identify and challenge their taken-for-granted assumptions about learning and teaching. It is helpful for learners to see themselves as being shaped by their assumptions and a way of understanding this shaping is by reference to Brookfield’s (1995) research on the role of assumption

hunting. By identifying and examining our taken-for-granted assumptions there was (not surprisingly) recognition that the ways in which these assumptions had been constructed were dependent on individual culture, history and previous experience. Identifying and articulating our assumptions requires a focus on that which provides the platform for our beliefs as teachers and learners. It is within this articulation that we come to see the ways in which others construct meaning and in doing so, highlights multiple perspectives on events, interactions and experience. Although at times, this process is confronting and uncomfortable, it does become a means by which deeper learning about teaching and learning is facilitated.

Self-study Researchers See Themselves as Teacher-Researchers

Reconceptualising my role required me to acknowledge that being a teacher educator is multifaceted. Reframing my role required a blending of roles when teaching and a commitment to researching my learning, in conjunction with understanding pre-service teachers and the ways in which they were learning. Parallel learning (a new learning which emerged as a result of researching my practice) meant that I needed to move away from what was known (for me) into situations where I became a learner alongside pre-service teachers. Maintaining balance in terms of teaching and researching teaching was difficult, but essential.

Self-study Requires an Interruption to the Habitual

Self-study requires an interruption to the habitual and a degree of living with the discomfort and uncertainty of not predetermining learning outcomes. Engaging in new practices can be challenging especially for teacher/educator(s) who have devised and controlled learning environments for years and who have developed patterns of behaviour and expectations based on these long standing experiences. Self-study researchers and pre-service teachers participating in such research need to develop the capacity to embrace complexity and uncertainty and have faith in indirection (Finkel, 2000).

Self-study Demands Specific Personal Qualities

As a teacher educator I needed to have the confidence to challenge the status-quo as it existed in my mathematics teacher education classroom and be willing to attempt something very different to that which we (pre-service teachers and me) had traditionally experienced. I wanted to move away from a transmission approach to teaching to one where pre-service teachers were encouraged to value their own experiences and learn by reflecting on their experiences, not mine. This meant that

pre-service teachers were being provided with opportunities to discover the essence of their learning and develop their own authority of experience. In this way they may become less dependent on the supply of propositional knowledge about teaching and the tips and tricks commonly associated with learning about teaching. However, learning about teaching within this context demanded a predisposition to be flexible and respond to unexpected situations with sensitivity and careful judgment. In exposing oneself as a learner alongside pre-service teachers, I needed to be prepared for pre-service teachers to understand that at times, I experienced feelings of vulnerability and indecisiveness. Pre-service teachers needed to understand that I experienced these feelings and I needed to acknowledge that it was reasonable to feel these feelings. In fact reconceptualising and reframing the role of the teacher educator as one that embraces uncertainty and experiences vulnerability is perhaps a hallmark of a new pedagogy of teacher education.

Prompting Change as a Teacher Educator

A second implication that arose from this research is my deeper understanding of the ways in which researching practice might become a self-fulfilling prophecy. By that I mean that some changes might eventuate because you think or know that they should. By establishing changed approaches and modified practices in learning and teaching about mathematics, it would seem appropriate to assume that new knowledge would eventuate and inform practice. However, not all new knowledge generated from research transfers to alterations in practice. In asking the question, “In what ways have I altered my practice as a teacher educator?” I am confronted with evaluating the ways in which new understandings about teaching and learning have impacted the way that I do, and understand, teacher education. Early in the research, my initial need was to have my modified approach accepted by my pre-service teachers. My research emphasis was primarily focused on monitoring the ways in which changes to my teaching impacted pre-service teachers’ learning. In this way I hoped to both rationalise and justify the changes I had made to my Learning and Teaching Mathematics units. What became obvious for me as time progressed was that change did not just happen; it needed to be nudged, or consciously driven and interrogated.

Problem-Setting

A third implication growing from my research relates to the notion of problem-setting. While problem-solving underpinned much of our reflective approach, in retrospect, the practice of problem-setting became an essential aspect of my practice. As well as reacting to problems encountered as a result of examining practice, I need to frame (or set) problems too, as a means of developing my knowledge of practice. When teacher education is understood within the frame of problem-setting no complete blueprint can ever

be constructed for teacher education in terms of an ultimate method for lectures, tutorials and roundtable sessions, forums and pre-service teacher partner teaching in schools. This is because the needs of pre-service teachers and teacher educators vary. Each program requires a base whereby professional judgments and responses to needs must underpin practice. Whilst I believe the emphasis for pre-service teachers within the context of this study represented more a problem-solving approach to learning, a future goal for my teaching could include establishing an explicit connection between problem-solving with pre-service teachers and problem-setting. In my teacher education practice, pre-service teachers might then learn to become problem-setters and seek to explore solutions to their own problems. In this sense, their solutions will take on a greater significance as they emerge from questions pivotal to their own experiences. Learning about teaching then becomes a proactive (rather than reactive) exercise as learning can be prompted from the perspective of a ‘need-to-learn about and from’ experience.

Multiple Perspectives

Understanding more about the ways in which others construct and view their world has been imperative in this study. Identifying assumptions not only became an effective means of clarifying our perspectives as teachers and learners (and therefore of framing the ways in which we thought teachers should teach and learners should learn) but also, in challenging taken-for-granted assumptions tangible ways of exploring alternatives for practice became available.

In the final section of this chapter I identify and discuss six recommendations which represent possibilities for teacher educators who similarly aspire to challenging not only their own status-quo/world view of teacher education, but also the status-quo/conceptions of teacher education more generally.

Recommendations

Within educational research there has long been criticism of educators’ inability to implement and sustain meaningful educational change. The recommendations that follow exemplify how a conjunction of planned change connected to an interruption to the habitual can lead to valuable and sustainable change in teacher education.

Teacher education continually comes under criticism in the media, as is demonstrated by the following article written by David Rodd and reflecting the Minister of Education’s opinion (Rodd, *The Saturday Age*, December 3, 2005, News, p. 3):

- Teacher training out of touch
- Graduate teachers are entering classrooms under-prepared largely because their university lecturers have lost touch with everyday teaching; lecturers need to be familiar with new approaches

- You can't get it [learning about teaching] out of a textbook
- Lecturers need to be up to date with the current knowledge and thinking and the best way to get that is actually spending some time in schools. It's not reading theoretical books
- There is significant disquiet over the quality and relevance of teacher education
- There is a mismatch or disjunction between universities and school classrooms.

Assertions such as these reflect the way that teacher education is perceived by some as out of touch, theoretical, inadequate and, in its current form, an irrelevant enterprise. While such perceptions are not new to the teacher education debate, the ongoing challenge for the profession is how to address them – and what action to take that will have meaning and impact. Teacher educators are professionals who know about teaching and learning; they understand the complexities associated with teaching, learning, and teaching about teaching and learning. Underpinning this challenge is the right (and the responsibility) of teacher educators to exercise professional judgment by using their professional autonomy. One means by which teacher educators' professional autonomy can be exercised is by way of modifying their pre-service teacher courses. In many contexts, reflective practice is increasingly being incorporated in these programs as a means of assisting pre-service teachers (and teacher educators) to examine their practice and contribute to pedagogical understanding. Systematic and integrated reflection in and on learning provides a means for further understanding the complexities of teaching and learning. Self-study offers one way of pursuing the development of knowledge of teacher education and creates possibilities for teacher educators to respond in informed ways and as vocal advocates for the profession.

The following are six recommendations to further the knowledge and practices of teacher education. I propose that teacher educators:

1. Conduct self-study research
2. Reframe themselves as teacher-researchers
3. Provide for pre-service teachers, systematic, reflective approaches to learning about teaching, using multiple reflective tools
4. Challenge their own and pre-service teachers' taken-for-granted assumptions about teaching and learning
5. Trial Roundtable Reflection
6. Theorise their Learning.

Teacher Educators Conduct Self-study Research

Self-study requires systematic inquiry into practice. Loughran (2002) suggests that teacher-researchers combine their knowledge, skills and understandings of “practice *in* their research of *their* practice” (p. 3, italics in original). Therefore, self-study requires an interruption to the habitual and the ability to live with the discomfort and uncertainty of not predetermining their learning outcomes. (Some predetermination is necessary and much of this relates to structures and process.) Although living with uncertainty about the outcomes of learning and teaching (and the ambiguities which present themselves within these contexts) may be challenging,

new approaches to teaching and learning can unearth fertile new ground for learning. Teacher educators and pre-service teachers participating in self-study research need to develop the capacity to embrace the complexities and ambiguities of learning about teaching, and preparation needs to be thorough and ongoing to allow the embracing to occur. Self-study requires that participants will have the confidence to display the vulnerabilities that underpin teaching and learning and to be prepared to expose these in their own practice, and sometimes at the most unexpected and unanticipated times. By making research outcomes available to the broader educational community, the scholarship of teaching and learning about teaching is enhanced as new knowledge and understandings provide an ever extending knowledge base for teacher education.

Teacher Educators Reframe Themselves as Teacher-Researchers

Researching teaching and learning in authentic contexts and based on genuine pedagogical concerns provides research outcomes which can contribute to the broader debate about meaningful and sustainable reform in teacher education. A insider research approach, although contextualised, can contribute to a deeper understanding about the ways in which a pedagogy of teacher education develops.

Teacher Educators Provide for Pre-service Teachers Systematic, Reflective Approaches to Learning About Teaching, Using Multiple Reflective Tools

Integrating reflective practice using multiple reflective tools and processes provides a means to learn more about learning and teaching in teacher education. In providing an eclectic range of tools (for example, ALACT framework; Critical Incident Questionnaires; Freewrites) and practices (Roundtable Reflection; partner teaching in schools) opportunities exist to assist pre-service teachers to connect with the reflective process in a way that is meaningful for each individual. Pre-service teachers can select a mode and/or tools of reflection which create some type of reflective traction, or a grip on the process of reflection. The ultimate aim of selecting the most appropriate form of reflecting in and on practice is that pre-service teachers will be encouraged to understand the benefits of reflecting in and on practice in their own school teaching environments, in an ongoing way, hence directing their own professional learning processes.

Much of that which is learnt through reflecting on practice may at least initially, remain invisible and tacit. There are inherent difficulties in measuring change in understanding and learning; or with a new insight, or in relation to a revised assumption. However, just because a new learning, understanding or insight hasn't been named, then it doesn't necessarily imply that it does not exist. So a new learn-

ing as a result of researching reflective practice is that new learning needs to be made clearer, i.e., that new learning doesn't always (and/or often) emerge immediately. Pre-service teachers need to learn a language of learning to be able to name and describe it. Therefore ongoing research is important to bring to light different facets of existing learning. One of the tools is the tool of language to talk about learning in new ways.

Teacher Educators Challenge their Own and Pre-service Teachers' Taken-for-Granted Assumptions About Teaching and Learning

It is helpful for learners to see themselves as being shaped by their assumptions. One way of understanding this shaping is by reference to Brookfield's (1995) assumption hunting and the development of critical reflective practice. Identifying and articulating our assumptions requires a focus on that which provides the platform for our beliefs as teachers and learners. It is within this articulation that we come to see the ways in which others construct meaning and in so doing, highlight multiple perceptions on events, interactions and experience that we may not have considered. Although at times, this process is confronting and uncomfortable, it does become a means by which deeper learning about teaching and learning is facilitated.

There is little doubt that developing a professional identity that challenges traditional notions of teacher and learner creates tensions for both teacher educators and pre-service teachers. These tensions need to be understood and managed. Systematic attention to eliciting and understanding multiple perceptions (as demonstrated through this study) provides insights into the ways in which learning is experienced and perceived by all participants in the educative process.

Teacher Educators Trial Roundtable Reflection

Although this self-study refers to a specific and localised context, some of the learning from this study may take a form of generalisability in terms of 'ringing true' for other's practice. Roundtable Reflection sessions provide opportunities for pre-service teachers to unpack their experiences in a structured and supportive learning environment. Such sessions are underpinned by a particular physical and discourse structure so that tendencies for 'talk-fests' and random conversations are minimised. Roundtable reflection sessions demand the reconceptualisation of a teacher educator's role and, as such, require consistent efforts not only for the teacher educator to refrain from dominating the discourse. Teacher educators need to consider more deeply when to interject; when to synthesise, when to redirect and when to challenge. This role relates to the ways in which teacher educators utilise

their professional judgments. Roundtable Reflection, therefore, contributes knowledge about learning in multiple contexts (including the school context) as was evident in this self-study. With regard to teaching and learning, these practices ring true in ways that other educators might well relate to and therefore adjust, adapt and apply to their contexts because of the inherent value of the practices.

Trialing Roundtable Reflection might become a structure for teacher educators to examine pre-service teachers' learning; the issues they define as being problematic and promote discussions about alternative possibilities for future practice.

Teacher Educators Theorise Their Learning

This self-study has exemplified for me new understandings of the ways in which individual and socially constructed knowledge is developed through reflection on experience. Exponents of the impact of reflection in and post-action (for example, Schön, 1983, 1987) suggest that this process leads to the transformation of experience into knowledge. Throughout this study it was evident that pre-service teachers were endeavouring to construct their own personal understandings of their actions in an individual and collective manner, hence producing individual and shared knowledge about teaching. This shared knowledge is developed through negotiation in the learning environment. For example, new knowledge about teaching about teaching and learning about teaching became evident to me during roundtable discourse through the deliberate and systematic challenging of assumptions, and in the individual written reflections about experience. In this way, my role as a teacher educator was one of facilitator or "animator" (Boud & Miller, 1996) of learning, and the ALACT framework provided guidelines for me to act in this role. Through this recursive approach we were continuously adapting as we incorporated new experiences into our learning through practice. My experience relates to the notion of phronesis (Korthagen et al., 2001) whereby one gains knowledge through experience and a foundational concept of phronesis is that enough of the right experiences must be had (Munby & Russell, 1994).

An obvious implication of using theory to (re)inform practice was the recognition that teaching is not telling or simply transmitting information. If knowledge about teaching is to be lasting and meaningful then being derived by the individual is advantageous. The process of knowledge production is enhanced when one's own experience is being reflected on rather than the treatment of theory unrelated to practice. However, at the same time this knowledge as phronesis needs to be made accessible to others, which is where developing generalisations (theorising experience) to share with others is helpful.

Understanding more about learner motivation and preferences for teaching and learning styles however, has also exemplified for me a tension associated with a reflective constructivist approach: "Is the concept of reflecting on experience as a basis for understanding the construction of knowledge (as Britzman, 1998, for example, maintains), simplistic and reductionist?" My research would suggest that

an awareness of the possible limiting structures of reflective practice is paramount.

Reflection can be interpreted and experienced by pre-service teachers as just another imposition of their teacher education program and in this sense the reflective processes can become what Kelchtermans (2005, p. 21) described as, yet another form of “technical reductionism”. As a teacher educator I am now more aware of the impact of motivation and desire in learning to teach and have been exposed to reflective resistance. However, rather than acknowledging that critical reflection is a limited means of coming to self-knowledge, it can be understood as one means of assisting in the construction of knowledge from experience. Experience alone is not the best teacher and often without guided analysis experience can reinforce traditional stereotypes, or preconceived notions.

Conclusion

Understanding my developing pedagogy as a teacher educator as well as pre-service teachers’ learning about teaching has been based on a research process which has evolved from the inside-out. By systematically researching a reconceptualised approach to learning and teaching mathematics, more has been exposed about how examining the ordinary can lead to extra-ordinary insights about teaching; and learning about teaching. The outcomes of my research suggest that if teaching is problematised and learners’ assumptions identified and examined, then possibilities for meaningful, systematic and sustainable educational change might well be enhanced.

A natural and ongoing focus for future research flowing from the results of this research would be to encourage pre-service teachers to be researchers of their own practice and to build an impetus for a corpus of pre-service teachers’ learning about teaching through self-study. By conducting self-studies underpinned by reflection on, and in, practice (either individually or collectively) pre-service teachers’ agency might be further enhanced and, importantly, inform processes, practices, organisation and structure of teacher education programs. In this way these emerging teaching professionals could enhance their learning about teaching and positively impact educational reform.

Self-study as a Circuit-Breaker in Teacher Education

Finally, I refer to Fenstermacher’s (1994a) suggestion that teacher research (and in my case, self-study) provides a legitimate contribution to research and theory production as it permits “explanations, [and] perhaps even predictions, that are at a level of abstraction and generalisation sufficient to provide for the construction of robust theory and an expanding, increasingly sound body of knowledge” (p. 44). Throughout my self-study I have attempted to explain, predict and (re)construct my

theoretical underpinnings as they related to my understanding of why I taught and understood things in the ways I did. By examining simple everyday interactions, extra-ordinary understandings about the complexity of the teaching and learning process have been exposed. This new knowledge about teaching and learning contributes to the ever-broadening knowledge base for teacher education. However, reflecting in, on and about teaching can be experienced as a paradox – how does one develop an ability to extract the essence of learning, while learning, and then combine this “of the moment” reflection with retrospective reflection as a means to more deeply understand learning? For me, working through this paradox, using self-study of my practice, has revealed more about what can be understood as *Powerful Pedagogy*.

Appendix 1:

Overview of Research Design/Data Gathering Tools

Table 1.1 (below) provides an overview of the tools I used in my study. Included in this overview is an identification of the data source, type and number of participants, the date the data was collected, the time allocated for the completion of each task, and a rationale for collecting specific data. The data sources described in the table represent the data which has been analysed. Roundtable sessions in particular provided data for multiple interpretations of the reflective discourse which was viewed through a variety of lenses.

Included in the overview is an identification of the data source, type and number of participants, the date the data was collected, the time allocated for the completion of each task, and my rationale for collecting specific data.

Table 1.1 Overview of research design/data gathering tools

Data Source	Participants	Number of participants	Date	Time allocated for completion of task	Why?
Audio-taping of roundtable session	Roundtable 1	24	July 2002	Approximately one hour	To provide data which could be accessed retrospectively and in multiple ways
	Roundtable 11	12	August 2003	Approximately one hour	
	Roundtable 12	12	August 2003	Approximately one hour	
Multiple perceptions task	Task 1 (Roundtable 11)	2 Third year pre-service teachers Teacher educator (3 in total)	November 2003	One hour	The multiple perceptions task was developed as a means of further understanding critical incidents/interactions/events from multiple perspectives
	Task 2 (Roundtable 15)	2 Third year pre-service teachers; teacher educator (3 in total)	December 2004	One hour	

(continued)

Table 1.1 (continued)

Data Source	Participants	Number of participants	Date	Time allocated for completion of task	Why?
Pre-service teacher written reflections	Pre-service teachers following roundtable sessions	Each member from each cohort	Following each round-table session throughout the semester (average number of 6 responses per pre-service teacher)	10–15 minutes per week	Reflection, summarisation of key points of discussion; to extrapolate the learning
Teacher educator journal	Teacher educator	1 (self)	Ongoing throughout each semester From 2002–2004	Time spent on task varied according to need, average two hours/week	Reflect on teaching and learning; implementation of program; identify 'key moments' in teaching and learning
Teacher educator field notes	Roundtable 2 Roundtable 13 Roundtable 15	Teacher educator for each roundtable		One hour One hour One hour	Data collection about key events, interactions and incidents Retrospective reflection

Appendix 2:

Transcription of Roundtable Data

The transcription, organisation and analysis of roundtable data were undertaken as a four stage process. Following the audio-taping of a roundtable session, the initial stage was the transcribing and organisation of the data. For example:

- Teacher Educator: So you rely on these people to get things started (discussion).
A starter, a middle person and a non-contributor.
- Emma: ... I verbalise it ... like I have a verbal concept map and ... like that's
how I put out all my concepts and as I'm saying them and I catch
them back sort [of] thing and ...
- Ken: You could start talking,
- Mike: You could use the yellow cards
- Sal: You could listen – you have your say
- Excerpt 4.1: Stage One – Transcript Excerpt from Roundtable 11, August 2003

Included during this initial stage were notes written in brackets which highlighted an issue or added meaning or contextual information of the conversation that were apparent in listening to the audio-tapes and which helped to add meaning to the written text. These notes in brackets also refer to the emphasis in terms of the dialogue; the mood, facial expressions; tone, in terms of agitation, defensiveness; agreement which was noted by pre-service teachers nodding; my interpretation of the level of emotion displayed in representing that dialogue.

The second stage involved a form of tabulation whereby the transcript was then allocated a reference and a line number. An example of this follows in Table 2.1.

Table 2.1 Stage Two: Excerpt from Roundtable Eleven, August 2003

Roundtable	Participant	Transcript of dialogue
R11.033	Robyn	Okay now I'll ask you a question about my role. Now I know this is fairly new to you people you're saying you don't have anything like this in other units, how do you see my role; how do you see me?
R11.034	Sam	Annoying. Only because you are too sensitive to it on the flip side – well I reckon (Gasp, laughter)
R11.035	Robyn	No tell me 'cause I need to know
R11.036	Sam	Well (Laughter)
R11.037	Jen	Would I do that?!

Table 2.2 Categorisation and coding, excerpt, Roundtable Eleven, 2003

Category 1 – nature of the role of the teacher educator	Category 2 – roundtable reflection as problem identification and problem solving	Category 3 – the learning environment	Category 4 – learning and learning styles
RTE-P-prompter	PS-Problem identification	LE-F-feedback	LS-V-voice
RTE-F-facilitator		LE-T-teaching	LS-VD-dominant
RTE-Q-questioner	PS-COM-Commonality of experiences	LE-S-support	LS-S-silent
RTE-G-guide			LS-ALT-alternative perspectives
RTE-EXP-explicit connections			
RTE-RE-reassurance			
RTE-SUP-support			
RTE-SYN-synthesiser			
RTE-MFL-maintain flow of discussion			

Table 2.3 Coded excerpt from Roundtable Eleven, 2003

R11.017	Tony	I think it plays to peoples' strengths and you know some people aren't very verbal, they're not very talkative, that's fine and other people are, and that still helps the learning	Learning styles Silence Verbal Affirming-positive	LS LS-S LS-V
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Stage Three involved coding whereby the transcript was coded and categorised. For example, the excerpt (Table 2.2) illustrates the organisation of the transcribed data related to Roundtable Eleven. Analysis of the transcribed data provided the key categories which were evident in the data collected from Roundtable Eleven, August 2003. The data was read and coded and over all of the entries the following categories emerged: Problem Identification and Problem Solving; the Learning Environment; Learning and Learning Styles; and, the Nature of the role of the Teacher Educator.

An example of how this coding and categorisation appears in textual data follows in Table 2.3.

The excerpt above refers to Roundtable Eleven, line seventeen of the transcript; the statement; and the coding: Learning styles (LS); Learning Styles-Silence (LS-S); and Learning Styles-Voice (LS-V).

Stage Four involved the categorical analysis where each transcript was read to identify “relationships between data items” (Lankshear & Knobel, 2004, p. 271) which then were refined to a number of categories. The four categories which were identified were: (1) nature of the role of the teacher educator; (2) roundtable reflection as problem identification and problem-solving; (3) the learning environment; and (4) learning and learning styles.

Appendix 3:

Organisation and Analysis of the Critical Incident Questionnaire Data

The critical incident written responses were collated and read and the frequency of instances related to each category was tallied for each question. Table 3.1 is an example of the categorising and the tallying of the responses for question one: “At what moment in the class(es) this week did you feel most engaged with what was happening?”

In the excerpt below, and in response to question one of the Critical Incident Questionnaire, four key categories were evident and these emerged from a tallying of the responses provided by the pre-service teachers. The four categories related to roundtable sessions, the information session, general positive statements and tutorial presentations conducted by pre-service teachers. The number of instances was tallied and the percentage of the total instances was calculated. Included in the presentation of the data is an illustrative pre-service teacher response for each category.

Table 3.1 Sample Analysis of Question 1: “At what moment in the class(es) this week did you feel most engaged with what was happening?”

Categories	Number of instances	Percentage of total instances	Illustrative example
Roundtable session	23	51	During the roundtable because you feel more involved and you also have the opportunity to influence what is discussed
Information session activity	11	24	When we were asked (at the information session) to complete reflective questions ... this required me to really analyse how I think and what I think when doing maths
Not a moment, general positive yes	3	7	Most of the time because I find it interesting to learn how to teach maths; how children learn and the different ideas and strategies that will be valuable for my effective teaching future
Tutorial presentations	8	18	Actually presenting assessment tutorial presentation to the class; talking and discovering myself made clear in my mind the gaps in my own knowledge and that I have to plan for it – I thought it would just happen
Total number of instances	45	100	

Appendix 4:

Pre-service Teachers' Reflections on Assumptions

Table 4.1 Categories: Pre-service teachers' reflections on assumptions, Week Twelve, 2004

Categories	Number of mentions	Percentage of total number of mentions	Illustrative example
Affective dimension	12	32	Learning maths is boring for students
Content	5	13.5	Maths lessons should be fun and engaging Multiplication is a very important part of maths content
Related to real-life	9	24	Many technical aspects of mathematics have very little purpose in everyday life
Individual learning needs	6	16	The teaching must cater for all students in the classroom
Statements	5	13.5	Parents must be supportive of their students' Learning You either have it with maths or you don't
Total	37	99	

Appendix 5:

Data Organisation: “Exploring Silence/Dominant Voices”

Table 5.1 Teacher educator questions exploring silence/dominant voices: Roundtables Eleven and Twelve

Teacher Educator Questions	R11	R12	Example question	Illustrative response
Total Teacher Educator Questions	14	5	So do you learn from listening and participating in a group? (R11.009)	Well the opportunity is there whether we want to do that or not is a different view (R11.010)
Questions exploring the non-verbal/silent (Number of instances)	7	10	What does silence in a group like this mean? (R12.047)	It can mean you are waiting for someone to jump in (R12.048)
Questions exploring voice/dominance (Number of instances)	9	4	What happens in a group when Sophie [dominant voice] talks? (R11.022)	... stimulates conversation and discussion and if everybody sat here and just didn't talk and offer their opinion, we'd all be sitting here staring at each other (R11.023)

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