Being Explicit about Modeling: A First Person Study in India

by

Rohit Boggarm Setty

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Educational Studies)
in the University of Michigan
2013

Doctoral Committee:

Professor Deborah Loewenberg Ball, Chair
Professor David K. Cohen
Professor Nita Kumar, Claremont-McKenna College
Assistant Professor Matthew Stephen Ronfeldt

“If your method reaches only the attentive student, then you must either invent new methods or call yourself a failure. ”

- Reynolds Price, *Feasting of the Heart*

Acknowledgements

Writing a dissertation is a luxury in many ways. The process affords a student a chance to commit time and energy to think about one thing in a sustained focused manner over a long stretch of time. Although some readers may view this as a drawback, for me it was a source of joy. As a result of my indulgence, I likely imposed more on others than I should have. My family, friends, and colleagues have been unconditionally generous. To them, I express my gratitude here.

Amanda, a remarkable teacher in her own right, has shared this entire journey with me. Our conversations about the teaching-learning interaction, and the children that sit at its heart, taught me a great deal. Questions that overwhelmed me were easy for her, and her perceptiveness helped me find my way. In my eyes, this is a joint production. Being able to share this dissertation with my best friend was a luxury.

Writing a dissertation demands some clarity of thought, and the ability to express those thoughts to others. No keener interrogator exists than Shalini, who as an 8 year old distilled down what I was doing in more certain terms than I could at the time: " So, you basically teach teachers about teaching. Why didn't you just say that?" Gayatri took it upon herself to make me smile every day of this journey. She never failed. Her winsome exuberance is unparalleled, and she has been an anchor that grounds me in the joy of family. Both Shalini and Gayatri continue to be remarkable reminders for me about what it means to be confronted with the prospects of learning, accept the challenge, and thrive. To them both, I say thank you.

To step back a bit in time, I thank my parents, to whom I owe my work ethic and determination. They gave me the freedom to explore the world on my terms, and the tools to achieve the tasks I set for myself. Their thoughtful guidance and support has meant a great deal to me. To my brother, Raj, I will always be grateful that you prodded me and challenged me to read more as a young child and watch TV less. Thank you.

I turn now to my teachers, and the committee that guided this project. During the early years of my doctoral career, I was blessed to work with remarkable academics, who were superlative teachers, and I also received a great deal of support from the staff at the School of Education. I owe everyone in the building a debt of gratitude, but undeniably Donald Freeman, Pamela Moss, Mary Schleppegrell, Addison Stone, Magdalene Lampert,

Kathleen Graves, Amita Chudgar, Joan McCoy, Mary Delano, and Bob Bain all helped me to make the strides I have taken in this dissertation.

I also had the luxury of working with a committee that was dedicated to helping me succeed, and were the utmost professionals throughout our yearlong conversation. Each one of them pushed me to be better, and their suggestions and thoughtful guidance moved me well beyond the initial territory I laid out for this research. Deborah Loewenberg Ball, David K. Cohen, Nita Kumar, and Matthew Ronfeldt pressed me to find the currency of my ideas, but did so without asking me to surrender my own intellectual voice. All of their tenacious questioning caused me to pause over my own assumptions, which I feel is an invaluable necessity of social science research, but the flavor of it was always cordial, professional, and supportive. Their encouragement was remarkable. And, a special thank you to my colleague and friend Matthew Ronfeldt. You were a knight, your support immeasurable.

I often said throughout this process that there was no better person to do a study of modeling with than Deborah Ball. As a model, and through our conversations, Deborah taught me about teaching, teacher education, modeling, mentoring, advising, managing organizations, writing clearly, speaking cleanly, listening, and putting family above all else. Deborah's impeccable ability to discern and synthesize ideas, willingness to play with data, and commitment to my success was truly a luxury. I am humbled and honored to have worked with her, and I look forward to continuing the conversation.

Many other friends supported me in this process. To Ander Erickson, Mandy Benedict-Chambers, Justin Dimmel, Tim Whittemore, Shweta Naik, Florencia Gomez, Kelly McMahon, and Michaela O'Neill I owe a great debt.

Also, I thank the University of Michigan, the U.S. State Department and the USIEF, which administers the Fulbright grant, the National Council of Educational Research and Training, and the Regional Institute of Education in Mysore for their generous support. Finally, all of what I was able to accomplish in India is due to H. Kumaraswami, V.D. Bhat, Ms. Bindiya Somaiah, Audrey and Dolly, Vasudeva Murthy, and the teachers that worked with me during this study. Their candor, guidance, and facilitation was the linchpin for this work. It was an honor to work with them.

Table of Contents

Acknowledgements ii
List of Tables vii
List of Figures viii
List of Boxes ix
List of Appendices x
Abstract xi

Chapter 1: Introduction 1
Introduction 1
Fueled by beliefs, rather than systematic study 3
Beliefs in Teacher Educator Modeling I: Common Faith in Learning from Sensory Experience 4
Beliefs in Teacher Educator Modeling II: Uncomplicated Views of Teaching 9
Beliefs in Teacher Educator Modeling III: Convictions Privileging Technique over Principled Practice 13
Research Questions 21
Prerequisites 21
Why "Dialogic" Modeling? 22
Why A First-person Study? 23
Why India? 24
Overview of Dissertation Chapters 29

Chapter 2: Foundations in the Literature for the Work of Explicit Modeling in Teacher Education 32
Modeling 32
Modeling in Teacher Education 34
Explicit Modeling in Teacher Education 36
Donald Schön's Three Modeling Strategies 38
Examples of Explicit Modeling Practices: "Thinking Aloud," "Meta-Commentary," and "Professional Critique" 43
"Self-conscious Narrative" 47
"Professional Critique" 49
An Illustration of Dialogic Modeling 54
From Narrating to Analyzing 63

Chapter 3: Methodology of Data Construction and Methods of Analysis 65
Introduction 65
Background 65
Why I Studied Explicit Modeling 66
Personal and Professional Interest 66
Emerging Questions 67
Research Design 68
The Phenomenon of Interest 68
Methodological Approach: First-Person Research 68
Research Questions and Rationale 72
Sources of Information 75
Data Construction 88
Pilot Studies 89
Video Recording 91
Stimulated Recall Interviews 93

Teacher Educator Journal 95
Limitations of the Data 96
The Evolution of Tentative Assertions (Methods of Analysis) 98
Proto-Analytic Work 99
Analytic Work 102
Negotiating Work 115
A Note on Language 116
Summary 118

Chapter 4: Characterizing Dialogic Modeling 120
Introduction 120
Three Processes and their Sub-processes of Dialogic Modeling 126
Garnering Attention 130
Steering Questions 130
Physicalizations 132
Semantic Repetition 134
Encoding 136
Deriving Conceptual Structure of an Instructional Practice 136
Naming Practice 139
Cueing to the Positive and Negative Consequences 143
Discussion 147
Noticing 148
Decomposing 150
Analogic Reasoning 154

Chapter 5: Methods of Analysis 161
Introduction 161
A Dialectical Approach with Literary Theory 161
Analytic Process 165
Limitations of this approach 169
Summary 173

Chapter 6: The Symmetrical Structure of Dialogic Modeling 175
Introduction 175
Symmetrical Chiastic Structures: An Example 184
Symmetrical Chiastic Structures: Across the Data Corpus 191
Discussion: From Experiencing to Recomposing 193
Experiencing and Noticing 194
The "Pedagogical Point" 198
Recomposing 209

Chapter 7: Insights and Implications 218
Summary of Interpretations 219
The Synoptic View 219
The Micro-Analytic View 220
Coordinating the Micro-analytic and the Synoptic Views 222
Implications 225
Fitting explicit modeling in practice-based teacher education 225
Common language for teacher educator modeling 227
Towards Designs for Explicit Modeling 229
Revisiting the Notion of "Exportability" 233
Future Directions 236

Appendices **239**
Appendix 1 - Details and Materials from Professional Development Setting **240**
Appendix 2: Sample Teacher Educator Journal Entry **251**
Appendix 3: Sample Coding Matrix **253**
Appendix 4: Background Information for 29 Episodes **258**
Appendix 5: Sample Coding Matrices from Two Time Points **261**
References **262**

List of Tables

Table 1: School Sites and Number of Teacher-Learner Participants 79
Table 2: Numerical Comparison Between Mysore and San Francisco 80
Table 3: Excerpt of Conversational Analysis Codes 106
Table 4: Example of Facial Action Coding System Used with Data 108
Table 5: Categorical Coding Matrix – Processes and Means 128
Table 6: Initial Steering Questions by Episode 133
Table 7: Coding Matrix for Episode 4.1.2_Cauvery_Session 1_Modeling 2_ Calling on Students 185
Table 8: Symmetrical Chiastic Structures Across the 29 Episodes 192
Table 9: Coding Matrix for Episode 2.2.1_Medar's Block GHPS_Session 2_ Modeling 1_Exploring Materials 204
Table 10: Interpretations of Opportunities to Learn in Explicit Modeling from Chapter 6 217
Table 11: Interpretations of Opportunities to Learn in Explicit Modeling from Chapter 4 220
Table 12: Coordinated Interpretation of Work Involved and Opportunities to Learn in Dialogic Modeling 223
Table 13: Modeled Instructional Practices 230

List of Figures

Figure 1: Representation of "Cascade" System for Teacher Education 26
Figure 2: Arrangement of Dissertation Chapters and Thread of Argument 30
Figure 3: Generating the Empirical Packages 101
Figure 4: Example of a coding process in Dedoose platform 102
Figure 5: Brow Lowerer Function in Facial Action Coding System 107
Figure 6: Subprocesses Governing Observational Learning 111
Figure 7: Processes and Sub-processes of Dialogic Modeling 125
Figure 8: Symmetrical Chiastic Structure 162
Figure 9: Symmetrical Chiastic Structure of Dialogic Modeling of Wait-time 184
Figure 10: Symmetrical Chiastic Structure of Dialogic Modeling of Calling on Students 190
Figure 11: Symmetrical Chiastic Structure of Dialogic Modeling of Exploring Materials 208
Figure 12: Representation of the Work Involved in Dialogic Modeling and the Opportunities to Learn 232

List of Boxes

Box 1: Episode 4.2.1_Cauvery Session 2_Modeling 1_Greetings 57
Box 2: Episode 1.3.3_Metagalli GHPS_Session 3_Modeling 3_Listening 121
Box 3: Episode 3.2.2_Kumbarkoppallu GHPS_Session 2_
Modeling 2_Wait-time 176

List of Appendices

Appendix 1: Details and Materials from Professional Development Setting 240
Appendix 2: Sample Teacher Educator Journal Entry 251
Appendix 3: Sample Coding Matrix 253
Appendix 4: Background Information for 29 Episodes 258
Appendix 5: Sample Coding Matrices from Two Time Points 261

Abstract

In this dissertation, I examine the work involved in teacher educator modeling. In particular, the study is concerned with modeling that aims to explicitly make teaching practices visible, learnable, and that does so in particularly demonstrative ways. One form of this type of modeling is what I term "dialogic modeling." The study examines what is involved in carrying out dialogic modeling, including how teacher-learners take it up during enactment, and how their uptake and learning shape the effort to model. The study's central goal is to explore what it takes to enact this and similar types of explicit modeling in teacher education. In order to study this specific form of explicit modeling, I carried out my investigation in the context of my own efforts to model specific instructional practices in a professional development context in India.

The study does not seek to make generalizations, or causal claims about the effectiveness of dialogic modeling on teachers' ability to enact the modeled practices. Instead, I focus on the enactment of the modeling itself, and what it takes to leverage productive dialogue and systematic analysis about the modeled practices. A set of what I call "principled practices" comprise the curriculum.

Two main research questions orient this dissertation: (1) What is the work involved in enacting explicit modeling of teaching practices?; and (2) What kinds of opportunities to learn might dialogic modeling present for teacher-learners? I explore these questions by investigating the enactment of 29 cases of dialogic modeling at four higher primary schools in India. I carried out two analyses: the first was a customary qualitative analysis to characterize the work involved in dialogic modeling, which provided a micro-analytic view. For the second, I drew on literary theory to explicate a synoptic view of the opportunities to learn that dialogic modeling provided. Through both of these views I show how teacher-learners and the teacher educator worked together to study instructional practices, and how that study consisted of coordinating specific teaching tasks with broader intellectual aims and social responsibilities, as well as considering whether what was modeled was exportable or not.

Chapter 1:
Introduction

Introduction

Investigating teacher education research in the United States, Hilda Borko and her colleagues synthesized six major research reports[1] on contemporary approaches to professional development (Borko, Jacobs, and Koellner, 2010). They found that all six reports argued teacher educator modeling should be an integral part of professional development programs. Modeling, the reports argue, provides teachers the opportunity to experience strategies they can use, and is necessary in times of reform, since teachers are frequently asked to deviate from how they are teaching, how they were taught, or how they learned to teach. Those who focus on university based teacher education programs in the United States convey a similar argument. In a report sponsored by the National Academy of Education, and crafted by the Committee on Teacher Education, scholars argued that effective teacher education programs should especially include "modeling and demonstration, scaffolding, [and] making thinking visible" (Darling-Hammond, Hammerness, Grossman, Rust, & Shulman, 2005, p. 400). Commentaries, such as these, illustrate that not only is there on-going conversation about what to teach in teacher education, but increasingly there is more conversation about how to teach it.

In a recent review on how to teach teaching, Pamela Grossman conducted an extensive appraisal of the empirical research on teacher educators' instructional practices between the years of 1985 and 2001 (Grossman, 2005).[2] Grossman found five approaches to be prevalent in U.S. teacher education: laboratory experiences, case methods, video and hypermedia materials, portfolios, and practitioner research. Grossman points out that her review could not include three prevalent approaches in teacher education, because too few empirical studies on these practices met the criteria for inclusion: the use of student

---

[1] These reports include: Darling-Hammond and McLaughlin, 1995; Hawley and Valli, 2000; Knapp, 2003; Putnam and Borko, 1997; 2000; and Wilson and Berne, 1999.

[2] Mieke Lunenberg, Fred Korthagen, and Anja Swennen conducted a similar review of the literature and also found that a limited number of research publications dedicate attention to teacher educator modeling. They point out that those that do pay attention are predominantly self-studies in which teacher educators write about their own work. As examples, the authors cite Hamilton, 1998; Russell & Korthagen, 1995; and Loughran & Russell, 1997, 2002 (Lunenberg, Korthagen, and Swennen, 2007).

journals, the use of popular films and television, and the use of modeling. [3]

Grossman's analysis of the state of research on teacher educator modeling coupled with Borko et al.'s acknowledgement of widespread attention on the practice lead me to ask a few fundamental questions: Why are teacher educators drawn to modeling? What is it that the field knows about teacher educator modeling? And, in what ways and to what extent are teacher educators harnessing the potential that modeling affords? I ask these questions because in spite of the great appeal of modeling in teacher education, it seems the ideas haven't been very well unpacked.

These questions drove me to the study that I present here, and my response is in the chapters that follow. This dissertation grows out of a concern for teacher education practice, and the growing need to support teachers' development as professional practitioners capable of ambitious teaching. In a broad sense, this dissertation probes teacher educator modeling. In particular, the study is concerned with modeling that aims to explicitly make teaching practices visible, learnable, and is constituted by doing the practice in particularly demonstrative ways. The study inquires into both what is involved in doing the modeling and how teacher-learners take it up, and how their uptake[4] and learning shape the effort to model. This is not a typical definition of modeling, but it aligns with current thinking on practice-based teacher education (Ball & Cohen, 1999), and provides the grounds to exploit modeling's potential. Therefore, this dissertation includes some logical unpacking of current practice, and an intentional design and study of modeling that intends to be more explicit. In light of the limited inquiries into teacher educator modeling, the aim of this dissertation is to contribute a way to think about developing and enacting such practices.

---

[3] Grossman's criteria followed from Suzanne Wilson, Robert Floden, and Joan Ferrini-Mundy's research report prepared for the U.S. Department of Education in 2001. In addition to their criteria, Grossman exercised three others: (1) Studies needed to focus on discrete instructional strategies rather than on more general descriptions of pedagogy; (2) Interpretive studies needed to include descriptions of data collection and analysis; and (3) Self-studies using surveys needed a return rate of 60% (Grossman, 2006, p. 426-428).

[4] A dictionary definition of uptake is that uptake is the action of taking up or making use of something that is available (Stevenson, 2010). Uptake for the purposes of this dissertation is consonant with this second view, as the study is principally concerned with how teacher-learners and the teacher educator make use of the modeling available during the dialogue that follows it, and not what they do with the modeled instructional practices in their own classrooms.

Before discussing the orienting questions that guide this inquiry, and some accounting for the terms I use throughout, this chapter first steps back to examine what may underlie this enthusiasm for teacher educator modeling. As a final step for this orienting chapter, I provide an overview of the rest of the dissertation.

Fueled by beliefs, rather than systematic study

Over a decade and a half ago, Theo Wubbels, Fred Korthagen, and Harrie Broekman (1997) cautioned teacher educators about the frailty of modeling. Their research examined a pre-service teacher education program over a number of years and found that teacher educators failed to draw attention to their pedagogical choices, and assumptions were made that by simply representing a teaching practice, strategy, or tool, pre-service teachers would be able to recognize and decompose what they were encountering. However, this was not the case. Through their analysis, the researchers demonstrated the limited effect that modeling can have in teacher education. Their argument is echoed in the works of Maria Blanton (2002), and Dominic Peressini and Eric Knuth (1998). Blanton argued that in order to change intending teachers' notions about discourse a focused attention on and analysis of the nature of discourse moves was required. This was beyond what the teacher educator's modeling was able to provide. Peressini and Knuth found that the discourse that was being promoted in the university math methods course was not transferring to the classroom. The teacher educators in the mathematics education classes emphasized that they had modeled for their students a discourse where they encouraged participants to question, or try to clarify, each other's statements and word choices. However, the researchers found that such practice was not carried out in the student teachers' field placements.

In the examples above, ostensibly, the teacher educators' gravitation towards modeling is much more about beliefs and assumptions about observational learning, than any systematic support on what modeling actually involves and in what ways people learn in and from it. The confidence in the strength of modeling perhaps derives from three places: first, a common faith in learning from sensory experience; second, confidence that teaching is simple as opposed to complex practice; and third, conviction that teaching teacher-learners techniques constitutes professional education. The belief in teacher

educator modeling could stem from one, or any combination, of these. In what follows, I explicate each of these beliefs while emphasizing how educators have problematized and countered these arguments through sustained thought and studied practice.

Beliefs in Teacher Educator Modeling I: Common Faith in Learning from Sensory Experience

A common theory of learning is that people learn through their senses. Much of what people learn comes by watching, carefully or otherwise. We learn by imitating what we see, and we pick up on what others are doing and try it out in our own ways and on our own terms. Younger sisters mimic what their older sisters do, much to the aggravation of the latter. They do so as a means to grow and develop with much less risk than they would through their own trial-and-error attempts. Learning through our senses links to past actions and shapes chains of events. Learning vicariously, as it is often called, is ubiquitous and it occurs whether we like it or not, intended or not.

John Locke made this case with his revival of Aristotelian empiricism and the framing of the *blank slate,* which reemphasized a belief that our minds are informed by what they experience from the outside world. The argument was that the mind gathers data from sensed experiences and generates simple ideas, and over time these simple ideas coalesce to form complex ones. In more colloquial terms, the mind is an empty bucket, ever ready to be filled with unadulterated evidence from what we see, hear, and touch. Such a perspective seems to fuel attraction to teacher educator modeling.

From Sensory Experience to Guided Experience

A Logical Counter

Karl Popper, Margaret Buchmann, and John Dewey agreed that there are problems with such a view. Popper argued that this theory views knowledge as objective, and therefore assumes that knowledge can be objectively demonstrated (Popper, 1972). Such a perspective marginalizes the scrutiny required to learn from observation. Our senses, in Popper's view, are ill-equipped to decode, arrange, and organize the chaotic messages that the environment provides. Learning from our senses works best when it is constructed alongside possessed knowledge and when it problematizes what is being perceived. Thus, for Popper the information that our senses generate require systematic restructuring (Popper in Hark, 2003). Margaret Buchmann, with her co-author John Schwille, makes a

similar case on the grounds that learning from sense experience puts a great amount of pressure on individuals' ability to discriminate in firsthand encounters. The evidence from our senses feels compelling (Buchmann & Schwille, 1983). There is a vividness to it, which persuades and attracts us. As experiences are constituted by a number of things, to learn from experience entails a certain amount of sampling. Our minds, Buchmann and Schwille argue, are not very selective, however. Therefore, what individuals take from an experience can be misleading.

Dewey made his case on the grounds that "mis-educative" experiences in our past influence our current experiences (Dewey, 1938). Dewey characterizes such experiences, in part, as "engendering callousness," and being "not linked cumulatively to one another." Callousness by its very nature is conditioned—we develop a callous to protect our skin from a relentless irritant. Those that learn teaching, for example, are conditioned by routine and similar instruction from their schooldays through to their teacher education, leading to a view of teaching as common and simple. The callousness that forms from "mis-educative" experiences in our past limits our ability to draw from current experience. Furthermore, learners' past "mis-educative" experiences promote a struggle to "link" together what they are seeing with what they have done in the past, or they may do so artificially. This wastes energy and makes learners impulsive. Consequently, learners take what they can from sensory experiences and do not consider much beyond what they immediately sense.

Popper, Buchmann and Schwille, and Dewey's arguments put pressure on teacher educators' faith in modeling. Teacher educators that organize their instruction in ways that rely on learners' to draw from their performance are placing a bet on the learners' capacities to discern from their sensory experiences. In some situations this may be reasonable, but relying on learners' senses has a cost: learning from experience is not automatic, so learning from experience requires interpretation, placing great demands on learners' abilities to extract and distinguish, and make sense from what they see. Those that deploy modeling in conventional ways rely on teacher-learners to be capable scrutinizers, judicious in discerning what they see, and that the practices that they are performing stand out enough to be scrutinized and discerned.

A Systematic Counter

The preceding argument makes a case that sensory information and relying on learning from experience is insufficient and could be misleading. Building from these points, I turn to why relying on learning from observed experience is also problematic for the learning of professional practice. This counter evolves comes from social-cognitive and sociological perspectives. In the conventional modeling efforts investigated by Wubbels et al., Blanton, and Peressini and Knuth, any learning that resulted from the teacher educators' modeling would be dependent on the learners' capacity to not only observe, but also think, attend, and relate. The theoretical sketch I provide below on these capacities problematizes teacher educator modeling in its conventional form. In short, learning from observation and our sensory experiences requires thinking and attention.

Learning from observation requires thinking

The most extensive and rigorous research related to what people take from modeling comes from cognitive psychology. In particular, the ontology of the knowledge base derives from the scholarly work of social cognitivist Albert Bandura (Bandura, 1977, 1986). Bandura's social cognitive perspective on what learners take from modeling emerged from decades of research on children's observational learning.[5] Through his work Bandura found that cognitive skills and new patterns of behavior could be acquired, but entailed more than the mere watching of the performances of others.

In his treatise on Social Cognitive Theory, Bandura explicates what modeling entails from this perspective

> In social cognitive theory, the generic term *modeling* is used to characterize psychological matching processes. This construct is adopted because modeling influences have much broader psychological effects than the simple response mimicry implied by the term imitation, and the defining criteria of

[5] In 1961 and again in 1963, Bandura studied children's behavior after they watched an adult act aggressively towards a 5-foot spherical doll that had a low center of gravity, was made out of vinyl, and was painted to look like a clown: commonly referred to as a "Bobo" doll. In the "Bobo Doll Experiment" 73 children from the Stanford nursery school were exposed to aggressive and non-aggressive models of behavior. Bandura found that children that were exposed to the aggressive models were more likely to act physically and verbally aggressive later on in their own interactions with the doll than those who were not exposed.

> identification are too diffuse, arbitrary, and empirically questionable to clarify issues or to aid scientific inquiry. (Bandura, 1986, pgs. 48-49)

Bandura's definition distinguishes between modeling for mimicry and modeling for cognitive change. For Bandura, there are five main functions of modeling, as defined in his terms. First, modeling is a way to teach components of a skill and to provide rules for organizing those components into new structures of behavior. Second, modeling can strengthen or weaken inhibitions over behaviors that have been learned before. Third, modeling can prompt others to act in ways that they know, but have not tried. For example, when a teacher-learner observes a teacher educator revoice a response, this may be something they had come to know about during their pre-service teacher education, but seeing it employed may encourage use. A fourth function of modeling is to draw learners' attention to particular objects or materials from the setting that the model takes advantage of. The result, says Bandura, is that observers may use the same or similar objects, but in idiosyncratic ways. For example, when teacher-learners observe a teacher educator using a hypermedia tool, they may avail themselves of that tool, but put it to use in different ways. The fifth function of modeling that Bandura highlights is that models can elicit emotions, which in turn builds emotional connections to the associated events (Bandura, pgs. 49-51).[6]

According to Bandura, these five functions occur when observed events are transformed into symbolic representations, which can in turn serve as guides for future action. As a result, learners could come to know judgmental standards, cognitive competencies, and generative rules. However, this transformation has limits and requirements. As Bandura writes,

> A number of factors influence the exploration and perception of what is modeled in the social and symbolic environment. Some of these relate to the cognitive skills and other attributes of the observers. Others concern the properties of the modeled activities themselves. Still others pertain to the structural arrangements of human interactions, which largely determine the types of models available for observation. (Bandura, p.51)

---

[6] These five functions elaborated by Bandura emerged, in part, from his research (Bandura, 1969, 1971). It is also important to relate that he profited greatly from the work of others: Berger, 1962; Aronfreed, 1969; Kuhn, 1973; Bindra, 1974; Denney & Denney, 1974; White and Rosenthal, 1974; Denney, 1975; Tannenbaum & Zillman, 1975; Bullock & Neuriger, 1977; Meichenbaum, 1977; Rosenthal & Zimmerman, 1978—a point Bandura himself acknowledges.

Bandura's commentary signals that learning from modeling is going to be governed by the properties of the modeled activities, but it will also be bounded in important ways by the processes involved in observation, and the interaction between. This means that if observers have familiarity with what is being modeled, their cognitive processing will be more efficient and their observations more perceptive. In contrast, in order for observers with less familiarity to connect what they see with what they already know some thinking is involved. A seemingly straightforward statement, but this creates a problem. Thinking is slow, effortful, and uncertain.

In a summary of decades of cognitive science research[7] on thinking, Daniel Willingham writes about these three properties of thinking in an accessible way:

> First, thinking is **slow**. Your visual system instantly takes in a complex scene. When you enter a friend's backyard you don't think to yourself, "Hmmm, there's some green stuff. Probably grass, but it could be some other ground cover—and what's that rough brown object sticking up there? A fence, perhaps?" You take in the whole scene—lawn, fence, flowerbeds, gazebo—at a glance. Your thinking system does not instantly calculate the answer to a problem the way your visual system immediately takes in a visual scene. Second, thinking is **effortful**; you don't have to try to see, but thinking takes concentration. You can perform other tasks while you are seeing, but you can't think about something else while you are working on a problem. Finally, thinking is **uncertain**. Your visual system seldom makes mistakes, and when it does you usually think you see something similar to what is actually out there—you're close, if not exactly right. Your thinking system might not even get you close; your solution to a problem may be far from correct. In fact, your thinking system may not produce an answer at all. (Willingham, 2009)

If we remember only what we think about, but thinking is complicated by the effort required, then it seems that thinking about what is being modeled can benefit from facilitation and guidance. Bandura also argues that "unguided massive modeling" leads to misperceptions and erroneous observational learning (Bandura, Grusec, & Menlove, 1966). He points out that crucial details slip by when people observe entire performances, and observers mistake what they see and hear. This can be mediated, argues Bandura, if

[7] To name a few, Willingham consistently relies on the works of Baddeley, 2007; Feldon, 2007; Ericsson, et al., 1993; Bransford et al. 1999; Duncker, 1945; Chi et al., 1981.

measures are taken to facilitate observers' attention and to break down what is being modeled into parts.

From this perspective, it seems that rather than relying on learners to puzzle through their sensory experiences of entire performances, subdividing complex modeled activities into naturally occurring segments and highlighting the constituents improve the opportunities to learn from sensory experiences. This means that when rules of a practice or teaching processes are deliberately distilled out from the modeled practice, then a conceptual structure can be imagined. This structure may or may not resemble the teacher's own practice, but even the contrasting process can aid in retaining certain properties of what was modeled. Without this effort leaves much to chance.

In this section I have discussed one of the underlying assumptions about teacher educator modeling. A common view of experience is that learning through our senses is productive for professional education. However, philosophers and cognitive scientists disagree with this line of thinking. From the latter point of view, sensory experience demands keen observation and focused attention. The former argues that senses can be misinformed, lead us to false conclusions, and ill-equipped to parse the experience in useful ways. In this next section, I take up a second common assumption underlying the enthusiasm for teacher educator modeling, and problematize it from the point of view of recent research in teacher education.

Beliefs in Teacher Educator Modeling II: Uncomplicated Views of Teaching

Teaching, in an everyday sense of the word, has come to represent very much, and as a result has come to mean very little. From swim teachers to spiritual teachers, the term for the occupation has been applied to instruction of many sorts. Teaching is thought to be a common part of everyday activity. For example, the work of classroom teaching has been broken out in management terms, such as "best-practices," thus implying mechanical solutions and standard operating procedures. "How to teach" resides on-line, captured in screencasts, videos, social media, and has been commoditized. Thus, teaching, for many, seems rather simple. Consequently, modeling such work seems pedestrian. A fictional dialogue may help to consider this point.

TE 1: *I'm trying to get my TCs (teacher candidates) to give their students more time to speak in class? I keep telling them about the value of student-led discussions, and how giving students time to speak helps them practice public speaking, and be better listeners. They keep complaining that there isn't enough time. Do you have a similar problem? How do I get them to do this?*

TE 2: *Well, I model making time in class to allow students to speak. We do a lot of small group activities where they get to hear each other talk about the readings and their experiences in the field. I go around, drop in and out, and just listen.*

TE 1: *And that works?*

TE 2: *I noticed a lot of my TC's started doing more daily carpet-time routines with their classes.*

TE 1: *How do you know that what they started doing was because you modeled small group activities?*

TE 2: *I don't think it's too much of a stretch to think that what we do in our teaching is more powerful than what we say. I mean, I remember I had this one professor when I was student teaching and I soaked up everything she said and did – her attitude, her habits—everything. I love teaching because of her. Modeling what we want our TCs to do gives us a chance to show them how to organize activities with a real audience, and how to do things well. The TCs, they are struggling with so many things—planning, management, … they just want a model to imitate.*

TE 1: *Hmm. Okay, I'll try that.*

Modeling is seen as the vehicle to teach everything from planning to professional responsibilities, and from pedagogy to instilling a deep and abiding love for teaching. For TE 2, modeling offers real-time opportunities to show what can be done with students and how it should be done. Modeling also affords the chance to demonstrate dispositions needed for teaching; i.e., teacher educators are "role models." Teacher educators, as in the ones I caricature above, seem to be keenly aware of what it means to model teaching and to be a 'model teacher, ' yet there is little care in what gets modeled and how it unfolds. I argue that in addition to a belief that learning from observation is easy, what fuels this faith in modeling is the belief that teaching is simple.

From Simple to Complex

An Analytic Counter

It turns out classroom teaching can be quite a complicated endeavor. Negotiating the interface between students, the teacher, and content, is not a simple matter (Cohen, Raudenbush, & Ball, 2003). As researchers have shown, to teach in intellectually "ambitious" ways (Franke, Kazemi, & Battey, 2007; Lampert, Beasley, Ghousseini, Kazemi, & Franke, 2010; Windschitl, 2012) requires proficiency in subject-matter knowledge (Schwab, 1964, 1971; Ball & Wilson, 1996), pedagogical knowledge (Shulman, 1986) pedagogical content knowledge (Shulman, 1987), and adaptive expertise (Hatano and Inagaki, 1986; Bransford, Derry, Berliner, & Hammerness, 2005).

To put these constructs in context, a sketch of the demands on a 9th grade social studies teacher may help.[8] In a 9th grade U.S. classroom, a teacher might need to teach about the spread of Buddhism in the ancient world. To do so, the teacher would need to have some basic subject-matter knowledge. They would need to know functional details—characters involved and places of note. And they would need to know more crucial ideas about interaction and historic modes of communication. They would need to know about the rigidity of ancient forerunners of Buddhism in order to contrast them with contemporary versions. They would need to know the debates between and the threats to the ancient spiritual practices. They would need to know how research has shifted extant perspectives on these topics as well. To be effective, the teacher would benefit from some pedagogical knowledge, too. They would need to know the subtle characteristics of each student, and have a broader sense of common patterns of thinking of 9th graders, in order to leverage opportunities for them to not only know information, but also read carefully, identify themes, and write and talk persuasively about them. To generate student thinking the teacher would need to have some proficiency in pedagogical content knowledge. They

[8] This illustration stems from my interpretations of decades of research and scholarly leadership dedicated to articulating the complex nature of the work of teaching (e.g., Cohen, Raudenbush, & Ball, 2003; Lampert, 2001; Fenstermacher, 1994; Shulman, 1987; as well as those cited above). An important ingredient in this view is that teachers are "adaptive experts" (Bransford, Derry, Berliner, & Hammerness, 2005). Bransford et al. contrast this view with "routine experts," who have a core set of competencies that they develop and hone over a professional life building ever more precision and efficiency. "Adaptive experts," on the other hand, continually restructure core ideas and beliefs, and expand and extend their competencies to fit with these new positions. Adaptive expertise requires an ability to innovate, have flexible skills and knowledge, and develop awareness.

would have to be able to draw from their subject-matter knowledge and their pedagogical knowledge and reformulate the content in terms, modes, and representations that fit well for their 9th grade students, being attentive all the time to their languages and cultures. They would need to be selective and thoughtful about the resources they deployed, in order to challenge assumptions and provide opportunities for students to question historical sources.

Then, they would have to marshal and mobilize all of this knowledge and expertise skillfully as they enact a lesson. This would entail the teacher having practiced and honed routines that could facilitate and ease learning opportunities. They would need to organize time, space, materials, and students strategically and deliberately, and design sequences of lessons that provided opportunities for inquiry and discovery. The teacher would need to foster student engagement, provide opportunities for students to practice core disciplinary skills, such as reading, writing, discussing, interpreting, and evaluating. They would need to have adaptive strategies, as well, that would allow them to capably respond to what students do or say, ask questions when necessary, and listen when needed. They would have to iteratively assess what students have come to know and are able to do as a result of the instruction before, during, and after the lesson. They would have to lead a whole class discussion, prompting some to talk and urging others to listen. And they would have to manage small groups, as well as individual work.

Then, they would need to be reflective and analytical about their efforts as well as the students'. They would need to find media and mechanisms that would support them in analyzing the complex interactions that just occurred, and doggedly critique their effort looking for ways to improve and enhance the learning opportunities. They may need to find ways to communicate about their teaching with trusted peers, teacher leaders, or outside resource persons. And, they need to do all of this work in relation to external benchmarks and guidelines, and ensure that it meshes with larger societal, school, and personal goals.

I draw this sketch in order to illustrate the possible complexity of teaching. Teacher educators that rely on conventional modeling to represent practices that can relate this complexity omit more than they show. In light of the complex nature of teaching, they put inordinate pressure on learners to not only identify constituent parts of teaching, but also coordinate those parts with broader aims and endeavors, through unguided observation.

Expecting learners to draw connections and transfer learning from their experiences as students of teaching to enactors of teaching requires significant thinking. Relying on such effort to be consistent seems tenuous. Modeling can involve teacher-learners in deliberate study of principled practices, though. And, it can provide a resource for a teacher educator to use in ways that help teacher-learners consider the potential of employing the modeled practice in their own teaching.

In this section I have discussed a second underlying assumption about teacher educator modeling. A common view of teaching is that it is simple. However, research presses educators to think differently about the work. Teaching is complicated because of what is required and because of what it entails. The type of teaching I describe here is complex, and as others have called it "intricate" (Ball & Forzani, 2009) and its constituents "invisible" (Lewis, 2007). Such a view draws attention to whether conventional modeling can represent all of these invisible and intricate parts. In this next section, I take up a third and final common assumption underlying the enthusiasm for teacher educator modeling, and problematize it from the point of view of recent research in teacher education, and from recent and ancient philosophical viewpoints.

Beliefs in Teacher Educator Modeling III:
Convictions Privileging Technique over Principled Practice

Another issue to note from the dialogue I sketched above is that the TEs see modeling small group work as a means to get their TCs to emulate their techniques. In this view technique is stripped from its social, relational, and theoretical anchors. Such a view, while fictional here, has real roots in the legacy of teacher evaluation, which spilled over into teacher education in the United States. In the 1920s, teachers were evaluated on personal characteristics (Kennedy, 1987; Kennedy, 2010; Lampert, 2010; Rosenberg, 2012). Discipline, cooperation and loyalty, instructional skill and scholarship, and educational background made up the criteria of evaluation tools. W.W. Charters and Douglas Waples (1929), for example, carved out 25 "essential" qualities of an excellent teacher.[9] In their study of teacher evaluation instruments in the 1970s, Wood and Pohland

[9] *25 Essential Qualities:* Adaptability, Attractiveness, Breadth of Interest, Carefulness, Consideration, Cooperation, Dependability, Enthusiasm, Fluency, Forcefulness, Good Judgment, Health, Honesty, Industry,

(1979) reported that even within their small sample of evaluation instruments there were 1,928 different items, most of which had to do with personal qualities, such as punctuality, dependability, and loyalty (Kennedy, 2010; Forzani, 2011). What teachers were accountable for shifted in the 70s and 80s to include observable teacher behaviors. A teacher was evaluated for the pacing of instruction, organization of information, frequency of questions, classroom atmosphere, content representations, the provision of feedback (ibid). Emphasis and interest was on the precision of the tools, and the reliability of the data that they generated (ibid).[10]

The evaluation of teachers fed into the preparation of teachers. During this time in the 1970s and 80s, the observable teacher behaviors that were considered important for future teachers to learn were called "competencies." University-based teacher education institutions sought to break down teaching into discrete parts called "competency statements," such that each part could be an observable behavior, and each part could be taught to future teachers as stand-alone units (Kennedy, 1987 in Lampert, 2010). In a review of the research on competency-based teacher education in 60s and 70s, William Spady, collapsing multiple definitions that programs were using to define their work wrote that Competency Based Teacher Education was:

> [A] data-based, adaptive, performance-oriented set of integrated processes that facilitate, measure, record and certify within the context of flexible time parameters the demonstration of known, explicitly stated, and agreed upon learning outcomes that reflect successful functioning in life roles. (Spady, 1977, p. 10)

The argument that many teacher educators made was that desired teaching behaviors were to be specified by the program in self-paced packages, and a demonstration of proficiency was needed for each competency before a student of teaching could advance (e.g., Getz, Kennedy, Pierce, Edwards, & Chesebro, 1973, p. 300).

Leadership, Magnetism, Neatness, Open-Mindedness, Originality, Progressiveness, Promptness, Refinement, Scholarship, Self-Control, and Thrift (Kennedy, 4).

[10] Houston and Howsam, for example, argued " The preparation of instruments to define performance criteria is the sine qua non of competency based certification. The committee cannot emphasize too strongly the needed development of measures of teacher performance in the classroom. If BEPD had to support a single effort to establish competency-based teacher education, it should invest in the development of instruments to assess teacher competencies" (Houston & Howsam, 1972, p. 30).

From Competencies to Practices

A Research-based Counter

Over time Competency Based Teacher Education was critiqued for not being "empirically based" and being "normative" (Cochran-Smith and Lytle, 1999, p. 260 in Lampert, 2010). An additional grave concern was that the techniques were being pulled away from the aims and intention of purposeful instruction and taught to future teachers. Missing from the image of a "competent" teacher was the role of students, and that the import of any teacher activity is to advance student learning.

A counter view to Competency Based Teacher Education has been posited by contemporary reformers of teacher education in the United States, where "practice" has come to represent a way of thinking about the work of teaching. Researchers have termed such work as "core practices" (Grossman & McDonald, 2008), "generative practices" (Franke & Chan, 2008; Franke & Kazemi, 2001), and "high-leverage practices" (Hatch & Grossman, 2009; Ball, Sleep, Boerst, & Bass, 2009), and in doing so are building on each others' efforts to determine the focus of teachers' education. For Tom Hatch and Pam Grossman, high-leverage practices are those instructional approaches that will help teachers face problems that commonly come up while teaching, and also are vehicles for their own learning. For example, orchestrating group discussions will lead to opportunities for students to articulate their thinking, which in turn will offer the teacher opportunities to think about issues that come up in terms of content, pedagogy, and student thinking. Members of the University of Michigan's School of Education have formulated another definition of "high-leverage practices." In their work, the community of scholar-practitioners identified 19 practices, such as "Making content explicit through explanation, modeling, representations, and examples" and "Implementing organizational routines, procedures, and strategies to support a learning environment." These practices constitute the curricular core of teacher preparation efforts in some related programs.

Deborah Loewenberg Ball and Francesca Forzani (2009) explain that "High-leverage Practices" include tasks and activities that are essential for beginning teachers to understand, take responsibility for, and be prepared to carry out in order to skillfully enact their core instructional responsibilities" (Ball & Forzani, 504). The definition highlights an important shift in the move away from competencies to practices. "Practices" includes

technique and more. As teaching is purposeful, principled, and constituted by relational work, the learner is of central importance in this definition, as are the instructional responsibilities. In this view of instruction, technique sits within broader social, educational, and individual aims (Lampert, 2001).

As with the enthusiasm for Competency Based Teacher Education, a risk for teacher educator modeling is that technique is being privileged in what teacher educators try to show, and as a result those techniques could be being pulled away from broader principles. Modeling need not be viewed as a constellation of detached techniques and procedures, however. Modeling can deliberately demonstrate "principled practices" (Grossman, 1991; Dewey, 1904). And, it can be used as a resource to study and coordinate the technique with broader intellectual aims and social responsibilities that constitute such practices.

A Logical Counter

An orientation to practice is not new in education or in philosophy. John Dewey's thoughts on practice have supported this orientation in teacher education, and provide another counter argument against convictions that privilege technique over principled practice.

In his seminal essay, Dewey argues that theory and practice in teachers' education are interrelated (Dewey, 1904). For Dewey, the psychology, the logic, and the ethics of developing children requires grounding in theoretical ideas of teaching and learning. Without this base the teacher runs the risk of under-developing an ability to grow in their professional position over time (Dewey, 151). There are "evils" that Dewey points to that will develop out of an emaciated theoretical grounding; e.g., lack of intellectual independence, inability to maintain steady growth, and intellectual subservience—an inability to cultivate independent thinking (Dewey, 151). Additionally, Dewey notes that the aim of theory is to support the practical work of learning to teach. "Practice work," as he calls it, is not merely the site of enacting or witnessing techniques of teaching, however. Rather, the role of practice is to incite intellectual reactions about theory in the professional learner (Dewey, 143). Dewey's concern with the relationship between theory and practice in teachers' education moved him to articulate the particulars of what practice work could entail if leveraged. In practice environments students of teaching would: (1)

observe psychological and theoretical insights; (2) observe an intimate introduction to the lives of students, by being useful in helping the instructor; (3) encounter opportunities to observe the technical points of classroom teaching and management; (4) participate in the actual doing of teaching, with maximum liberty; and (5) learn teaching through an apprenticeship (Dewey, 166-169). These elements were tangible ways that Dewey saw that the relationship between theory and practice could be bridged in a laboratory-type of learning environment.

Practice includes larger educational aims for learners and for society, and they include commitments to subject-matter knowledge and the skills that come along with it (Cohen, 2011). When practice is given a priority in teacher education it centers learning about instruction on what teachers do with students in classrooms, and with content. Attention on practice has implications for the content, method, and structure in teacher education practice. The kind of modeling that Wubbels et al., Blanton, and Peressini and Knuth investigated, as well as that represented in the dialogue I sketched, seem to be limited to and content with portraying techniques and things to do. However, another view is that teacher educator modeling is the personification of practice, which entails commitments, beliefs, dispositions, and theory, in addition to techniques. This view allows us to consider better what modeling can mean in relation to learning to do the work of "principled practice" (Grossman, 1991).

To orient this discussion on teacher education practice in this way is an acceptable starting point, but the theory-practice debate has long threads that reach back to ancient India as well. A useful discussion of which can be found in Sheldon Pollock's article, *The Theory of Practice and the Practice of Theory in Indian Intellectual History* (Pollock, 1985). In his work, Pollock argues that in Sanskritic culture śāstra ("theory") and prayoga ("practical activity") were inextricably bound in śāstras (pronounced sha-s-thras), such as the Rig Veda, Manusmriti, and the Kāmaśāstra. The association was not causal in these texts—where knowledge of theory preceded practical endeavors—rather the two mutually affected, constrained, and informed one another.

Pollock argues that the śāstras have a mythical aura about them, which has implications on the prioritization of theory. The very notion of a śāstra implies that it was conceived primordially, and composed in ethereal ways as opposed to through the hands of

humans. This implies that knowledge is fixed. If knowledge is fixed, then the practices that depend on it are also set. If practices need not evolve, change, or grow, then experimentation, invention, and discovery are unnecessary. Pollock—citing architecture and mathematics—notes that he is not arguing that innovation does not exist in India, or that it has not occurred. Rather, he is pointing out that such innovations are viewed through an inverted ideological lens, which claims that these achievements are results of "renovations and recoveries." Where Pollock's argument proves helpful is that while these texts are cosmological and highly theoretical in nature, they are nevertheless blueprints for how the cosmic should proceed; i.e., guides for everyday practice (Pollock, p. 518).

In Sanskritic India, śāstras were programmatic. According to Pollock, communities were brimming with extraordinary taxonomies and nomological handbooks that made homogeneity conducive for over two thousand years. As the oral became textual, such articulations were seen as devices rather than storehouses of knowledge. For example, the 196 yoga śāstras of Patañjali detail the aims, intentions, and consequences of yogic beliefs, while also detailing the āsanas (body positions) that aid in harnessing the physical, mental, and spiritual through concentration. And the Ayurveda, derived from the Rig Veda, merges the codified natural laws with natural medicinal treatments. Furthermore, the Kāmaśāstra —the procedural handbook about human sexual conduct—also provides treatments of theory in procedural terms. As a result, Pollock argues such śāstras need not be interpreted as theoretical treatises, but rather prescriptive systems (Pollock, p. 504).

Even though they had emerged from a primordial status explicating how to achieve "the meaning of life," the śāstras developed into specialized texts that present the practical means to reach there.[11] Pollock draws on Rāmānuja[12] to argue for the basis of this view:

---

[11] This did not occur with ease, of course. As an example, Pollock cites a classic account of how the Kāmaśāstra in its most accessible form came to be.

> We are told that Prājapati enunciated the "means of achieving the three ends of life" (trivargasādhana) in one hundred-thousand chapters at the beginning of time, when he created them. Svayambhuva Manu separated out the one section dealing with dharma, Brhaspati the one dealing with artha, while Nandi, the servant of Siva, formulated a kāmasūtra in one thousand chapters. Svetaketu, son of Uddalaka, abridged this into five hundred chapters, Babhravya of Pancala into two hundred and fifty chapters with seven topics. Different people thereupon separately reworked the seven topics. …Vatsyayana took up the task of summarizing the whole subject in a single small volume. (Pollock, 1985, p. 513)

"Śāstra is so called because it instructs; instruction leads to action, and śāstra has this capacity to lead to action by reason of its producing knowledge" (Rāmānuja in Pollock, p.509).[13] Thus, following Pollock, even the most substantial primordial texts in ancient India are manuals. Today, the priority of knowledge from the śāstras frame many decisions in India. Some view them as faultless and well defined. But as the śāstras themselves are of great importance, Pollock's analysis that theory and practice have been fused for some time warrants recognition.

My comments here on Pollock's treatment of the theory practice dialectic in ancient India hardly do justice to the complexity of his argument and the issues he raises. What I find compelling is that it echoes modern assumptions that practice can be codified, and to adequately understand such codification it is best not to divorce it from theory. Critics of this work might argue that employing a practice-based theory is a neo-colonial endeavor, in which I am importing an American conceptualization that holds no credence in India. They may claim, also, that an overly systematized way of teacher education impedes the progress that can be gained from more organic growth, and that teacher education is best informed through local truths and firsthand experiences. However, if Pollock's argument is acceptable, then such a view imports provisions for the counterargument that progress in Indian teacher education can also depend on intentional design, codified patterns of performance, and a grammar of practices.

In this section I have discussed a third underlying assumption about teacher educator modeling: that a common view in teacher education maintains that knowing techniques means knowing teaching. However, as I argued above, research underpinned by

---

[12] Rāmānuja was an 11th Century scholar. His most famous work is the Brahma Sutra Bhashya— a commentary on the Brahma Sutras.

[13] For example in the Manusmriti, directives are given on greeting others. While this is practical in feel, it also articulates the theoretical construction of hierarchy.

> After the salutation, a brahman who greets an elder must pronounce his own name, saying "I am so and so." .... A brahman should be saluted in return as follows: "May you live long, sir"; the vowel /a/ must be added at the end of the name of the addressee, the preceding syllable being lengthened to three morae.... A brahman who does not know the proper form of returning a greeting should not be saluted by learned men. . . To his maternal and paternal uncles, fathers-in-law, officiating priests, and other venerable people, he must say, "I am so and so," and rise before them, even if they are younger than he. (Manusmriti 2,122 in Pollock, 1985, p. 500)

logical philosophical arguments has prompted some educators to think about the work of teaching as purposeful work constituted by principled practices. Trusting in sensory experience is unreliable. Relying on the observational experience alone is limiting. Harnessing that experience through explicit and deliberate means makes teacher educator modeling a resource for the learning of professional practice. Conventional views of modeling assume a great deal. The sheer scope of the information and knowledge that can be gleaned from the teacher educator's performance is overwhelming. This is complicated even further by the complex nature of teaching and individuals' limited capability to discriminate during sensory experiences. Modeling, though, is an ever-present resource available in teacher education settings. However, as David Cohen, Stephen Raudenbush, and Deborah Ball (2003) argue, resources only matter when they are noticed and used. [14]

In chapter 2, I take up how researchers are building ways to enhance teacher educator modeling. In many of these cases teacher educators undertake some deliberate unpacking of their performance and leverage the multiple semiotic resources available — talk, gestures, interaction with material objects—in their modeling. In doing so, they are attempting to use modeling as resource to provide an opportunity to learn about teaching. Although the literature on teacher educator modeling that shares this view is limited, it seems reasonable to suspect that such work can be consequential in supporting the learning of teaching.

Arguments such as Buchmann and Schwille's critique of common beliefs about learning that assume subjective individual experience is a sufficient foundation for knowledge have prompted many, including me, to consider that the resource of modeling needs to be taken advantage of through deliberate means and brought forward for collective inquiry. For some scholars this entails narrating their pedagogical reasoning (e.g., Lunenberg et al., 2007; Korthagen et al., 2001; Loughran, 1996). My concern with these forms of explicit modeling is that they remain underspecified and idiosyncratic. My engagement with the literature and my exposure to deliberate modeling practices raises questions about the designs and deployment of what have been come to be called "explicit modeling practices" (Lunenberg et al., 2007). Moreover, I wonder how what I have come to

[14] While their argument expands thinking on classroom teaching, I am cautiously optimistic that it may be a useful and relevant insight for teacher education as well.

call "dialogic modeling" is distinct from these efforts, and in what ways and to what extent it can provide opportunities for learning about teaching. In chapter 2, I detail how scholars are taking up this challenge in teacher education, and raise questions about these undertakings. I do so to develop the argument for why the study reported on in this dissertation was necessary, and to establish what this dissertation hopes to contribute to these emerging and rare efforts.

Research Questions

The focus and goal of this study is to understand the work involved in a particular type of *explicitly* modeling instructional practices, how such an endeavor operates, what are its determinants and mechanisms, and what learning opportunities and problems emerge as a result. To examine these topics and to build an understanding of how teacher-learners and the teacher educator inform the practice, two questions guide this research:

RQ 1: What is the work involved in enacting explicit modeling of teaching practices?

RQ 2: What kinds of opportunities to learn might dialogic modeling present for teacher-learners?

Prerequisites[15]

This dissertation is about generating a systematic outlook on using practice to teach practice. My focus is on how it gets pulled off, what the teacher educator does, and how the learners inform the effort. With such a focus, this dissertation does little with social, historical, or cultural implications, as one might expect from educational research. At the same time this dissertation has an interdisciplinary feel. I leverage typical qualitative research methods and put them in dialogue with analytical methods borrowed from literary theory. This research occurred in India, and the individuals and the settings I

[15] I borrow this practice of writing from James V. Wertsch, whom I regard as one of the clearest writers in our field. Wertsch opens his book, *Voices of the Mind: A Sociocultural Approach to Mediated Action*, in similar form. While many of the ideas Wertsch presents in this book do not feature in this dissertation, much of what I am able to communicate through my writing I learned from his lucid style. While for now, I only endeavor for such conciseness, I have found that the practice of explicating my own assumptions in ways that approximate his, helps clarify my thinking. My intention in sharing these "prerequisites" with readers is that it has a similar effect for others.

engaged informed the ideas presented here in no small way. I shall try to clarify what I mean by this and clarify my worries and hopes for this project by sketching several of the assumptions inherent in this dissertation's title. In addition to the problems I have framed above, my assumptions involve a belief that dialogue is productive to learn practice, confidence in certain ways to study practice, and concerns over teacher education in India.

Why "Dialogic" Modeling?

My view of modeling of any kind is that it is not an individual act. It is a product of and resource for interaction. It also sees teacher-learners as adult learners, and that the subject of their interest is complex and multifaceted, thereby requiring deliberate attention. This study focuses on the co-production of meaning by both learners and educator through a practice that is generally conceived of in terms of the educator alone. Bringing what is modeled into a social space allows it to become the target of comments, critique, and analysis. In positing my own approach to modeling, I do not wish to claim that all modeling is social and that those who do not leverage these aspects are neglectful. There are indeed opportunities for learning that conventional modeling provides. I simply wish to call attention to an overlooked practice of teacher education by examining it in a form that is active and accounts for the collective dynamic that the social setting provides. In doing so, I am consciously focusing on the premise that learning about teaching through modeling is about the teacher educator *and* the teacher-learners using it as a *resource* for the learning of *principled practice.*

My use of the term dialogic is not simply about dialogue, and it is not an attempt to identify the superficial feature of who is talking, or that talk is involved. Rather, it is a conceptual marker that helps to draw attention to the co-construction of the work involved, where the teacher-learners and the teacher educator unpack practices together. An account of dialogism can draw from Gordon Wells (1999) or even Paulo Freire and Ira Shor (1987), yet I chose this term in light of the work of Mikhail Bakhtin (1981). Bakhtin's basic idea is that dialogism refers to the dual functions of communicating through text. In a written text, both writer and reader convey meanings and generate meanings. These meanings develop through words, or as Bakhtin puts it utterances. Both the writer and the reader through thoughts, perspectives, points of view, shared meaning, individual

understanding, judgments, and particular emphases qualify every word. Bakhtin also points out that each word is connected to another word that is also laden with the same qualifications, which in turn is connected to another word, and on down the line. Dialogism entails the writer's words being incorporated into the reader's discourse, where words house ideas, which are fitted in with—or rejected by—existing conceptual understandings. Such a process helps to develop relationships between the reader and writer's conceptual frameworks. Dialogism, for Bakhtin, also means that the discussion informs, and is informed by, what has come before. Dialogic literature, for example, is in communication with multiple works that may span time and space, potentially informing a reader's perspective on all of them.

I use the term dialogic, because it forces me to recognize in what ways and to what extent the data I generated around teacher educator modeling is an intellectual experience informed by the learners. Several explicit modeling efforts involve processes of externalizing thinking. However, not all deliberately attend to how learners inform the instruction, and how their experiences interact with what is being modeled. Casting dialogic in with modeling interjects multivoicedness—between individuals and across time—into the dynamic processes that characterize its function. I expand on these points in chapters 4 and 6.

Why A First-person Study?

To study this phenomenon required two conditions: a proximity to practice and cases to examine. The required proximity seemed likely to best evolve through a qualitative research tradition, but I questioned whether what I wanted to know would be accessible from an outside research position. Research methods influence what can be seen and what can be imagined for the improvement of teacher education. Therefore, to effectively imagine and see this practice I gravitated towards first-person research methods (Ball, 2000).

First-person research is one way to characterize the work of educational researchers such as Carol Lee (for a specific example see: Lee, 2007), Magdalene Lampert (for a specific example see: Lampert, 2001), and Deborah Ball. Ball, in particular, classifies her early work as first-person research. Ball argues that a first-person research perspective

helps to "probe beneath" the boundaries of practice, through researchers' careful tracking of adjustments, decisions, role shifts, and struggles; and it can also "transcend above" the boundaries of idiosyncratic practice by aiming to produce knowledge for the profession. In doing so, Ball makes a distinction between first-person research and other types of research inquiries that collapse teacher and researcher roles; e.g., action research, narrative inquiry, teacher-research. She points out that what first-person research shares with these models is a focus on practice, but what distinguishes first-person research is the deliberate use of the position of the educator to ground questions, structure the analysis, and represent the interpretation (Ball, p. 365). And these methodologies are not intended to pay attention to the production of insights that can be shared broadly and to theories that can be expanded to inform the profession. Moreover, she argues that first-person research allows the researcher to understand local meanings, languages, norms, and practices in a grounded way. To access these intricate spaces and to delve deeply into what dialogic modeling entailed and implied, first-person research methods seemed suitable.

The selection of a first-person research perspective also evolved from a struggle with a second question: Where would I find enough cases of this phenomenon? While anecdotally I had observed this practice in the work of teacher educators, there was no single site or one single teacher educator that I could foresee aiding me in developing a substantial corpus of cases required for analysis. To study this practice, I would need to generate numerous cases to analyze. Thus, first-person research seemed a necessary and reasonable approach. I expand on this discussion in chapter 3.

Why India?

This study could have been done in North Dakota, but I chose India. I make this blunt statement, because this is an inquiry into a how a practice functions, and what opportunities to learn it provides. Thus, the practice is the first priority, and the context second. However, as I have pointed to in previous discussions, I view learners as having great influence on any instruction, irrespective of how carefully and deliberately it has been designed.[16] By this token, I include learners in the practice, rather than with the

[16] I thank David Cohen for making this point clear to me through comments on previous drafts of these ideas, as well as through his own writing. Of particular note, in *Teaching and its Predicaments*, Cohen makes clear that instruction is shaped, not only participated in, by learners: "Every instructional discourse is thus jointly

context. Still, I worry that to gloss the context and its influence on the data and me would diminish the case I present here. Thus, what I offer below is intended to acquaint readers with my bearings on how this work relates to teacher education in India.

I turned to India, because part of what drives my professional agenda is to improve the educational realities and outcomes for children in government schools in India. The route where I think I can be of most help is in the field of teacher education. While India—in terms of historical, cultural, and social influences—does not feature in this dissertation, I have tried to hold it as ever-present. There are policy and practical implications for India that I draw from this study, but I shall hold those until the end. While there may be others, the role of India in this study falls to three points in my mind. First, studying a practice where multiple languages are at play forces researchers to closely attend to language, thereby enhancing the potential for learning from the research. To foreshadow a bit more, in this study I worked with and between Kannada and English at all phases—designing the study, enacting the study, generating data, analyzing data, and writing this research report. All of these efforts put me nose to nose with every usable utterance as I worked to discern meaning from the interspersed blend of Kannada and English in the data.[17] Second, my acquaintance with the historical, literary, philosophical, and sociological literature of the region has been used to leverage interpretations. Putting this knowledge in dialogue with what educational research and theories have built up seemed fruitful. Third, over time it has become clear that modeling is an inescapable part of the learning opportunities for teachers in India. It is this last point that I expand upon in what follows.

The role of teacher educator modeling in India

The broader education system in India has a common national curriculum, a common examination system tied to that curriculum, teachers are ostensibly trained under a common curriculum that is linked to the children's curriculum, and there is an interlinked infrastructure of agencies dedicated to the management of the system. These agencies develop curricula, standards, and set measures of quality. And at any given time several of

---

and socially constructed, even if it is the work of one solitary soul on a desert island as he responds to a monologue produced by a hermit in a far-away closet" (Cohen, 2011).

[17] Readers of this dissertation will find more on these efforts in chapter 3 on methodology.

these agencies can be in direct contact with individual schoolteachers, or can be running in-service teacher education programs for cohorts. Furthermore, each of the 22 recognized states and union territories also have their own complete infrastructure, similar to what I just outlined, which coordinate with these national bodies.

The vast number of agencies and parties involved in the management of the government sector in-service teacher education system comprise what is often referred to in India as the "cascade" structure (National Policy for Education, 1986; Ramachandran et al., 2008; Alexander 2008; Dyer and Choksi 2004; Sarangapani and Vasavi 2003; Dhankar 2002; Dyer 1996). The "cascade" structure was devised to ensure that India's 8 million teachers, spread across more than 1,000,000 districts, and 4,000,000 schools (District Information System for Education Report, 2011) receive direct interaction on new reforms, agenda, or materials.

In the "cascade" structure a curriculum reform (e.g., National Curriculum Framework – 2005; Environmental Education Curricula and Project Books-2012), new agenda for teaching (e.g., "Nali Kali," or Activity-based Learning Pedagogies; Constructivist Pedagogy), or new materials (e.g., new mathematics kits for Classes I and II, or new NCERT textbooks) emanate from the central government and are communicated down through the many levels of the institutional structure. In the "cascade" structure a national resource person, or persons, will train key resource persons from the state level, who will in turn train district level resource persons, who will then train block and cluster level resource persons, who will train schoolteachers en masse in batches of 50-150.

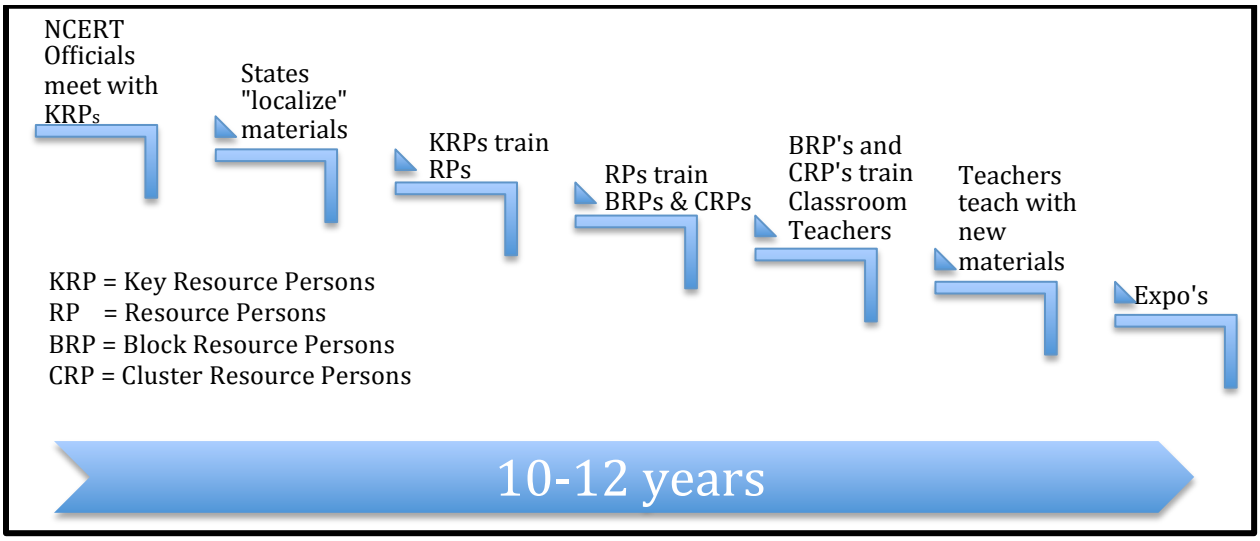


Figure 1: Representation of "Cascade" System for Teacher Education

An example may help to illustrate the way the "cascade" structure functions. In 2003 a push was made to incorporate environmental education into the school curriculum. Generally, a mandate is given by the central government, most likely through the Ministry of Human Resource Development (MHRD), which manages the education sector, but in this case the Supreme Court initiated the push. The Supreme Court mandated that environmental education be taught in Classes VI through XII, and that the National Council of Educational Research and Training (NCERT) was tasked as the organizing body to consider ways to support the enactment of what was being asked. Upon the Supreme Court order, the NCERT then designed and developed feasibility studies within their networks. Then prototype materials were developed and those were again tested and reviewed. Then a professional development program and plan for national discussions were devised. From this point the "cascade" structure was set in motion. Central authorities from the NCERT deliver the message and materials to state level authorities, and request the state level authorities to take it to the district level. The first of these meetings between the national and state level representatives (Key Resource Persons, or KRPs) was held in February 2012. Once this type of meeting is held in other parts of the country, the provided materials are to be localized and translated for regional relevance. The district level authorities are then tasked with taking the revised materials to the block and cluster level.

At this point, Block and Cluster Resource Persons (BRPs and CRPs) then may choose to hold a seminar or orientation, or even a workshop on the new curricular materials with their constituent teachers. The teachers will then implement the devised program that was passed down through the "cascade" structure with their students, and in a final step offer feedback into the system by way of exhibitions of student work at the local, district, state, and national levels. This feedback is intended to help officials rework any materials for subsequent academic years. From the point when the Supreme Court issued the mandate in 2003, it will have been eleven years until the first teacher will teach students using the new curriculum and materials for Environmental Education. This is an example of how the "cascade structure" operates.

The strength of this system is that it allows a message from the center to reach the lakhs and lakhs of teachers in every corner of the diverse country. However, the model has been critiqued for its 'top-down' structure, with materials developed by central authorities

and trainings conducted by regional officials, and for a lack of integration with the daily work of teachers (Saigal, 2012). In a longitudinal study of India's District Institutes of Education and Training (DIETs) in northern India, Caroline Dyer and her colleagues suggested that several national level reforms of the last two decades have had limited success in supporting persistent change in teachers' practices (Dyer et al., 2004). Rahul Mukhopadhyay (2009) observed that during training sessions in-service trainers often discussed the administrative duties of teachers, rather than instructional responsibilities and possibilities. Furthermore, Prema Clarke, through an empirical study of DIETs in Karnataka in the 1990s also showed how the manner in which in-service trainings were conducted rarely attempted to integrate teachers' existing frameworks and practical knowledge (Clarke, 2003). Such research demonstrates that while government sector teachers undergo ample training, the efforts are misaligned.

Part of the issue, I would argue, can be clarified through an understanding of the construct of diffusion. Sociologist Everett Rogers took this construct up as a way to comprehend how people communicate and adopt new ideas. He articulated five factors that influence the diffusion of innovations: knowledge, persuasion, decision, implementation, and confirmation (Rogers, 1962, 2003).[18] Modeling plays a principal part in Rogers' view on diffusion. Rogers' draws a distinction between observational modeling and social modeling in his work. In observational modeling, individuals observe another's behavior and then work to do something similar. In social modeling the observer extracts the required essential elements from the behavior patterns they observe in order to enact comparable behaviors (Rogers, 2003). Thus, for Rogers, there is a distinction between observational modeling, where observation is a means for imitation of the entire performance, while social modeling is a means to analyze and distill out what is needed for

[18] Rogers' conceptualization continues to be an important piece in considering the implications of developing and distributing innovative ideas. According to Rogers, this decision-making process occurs over time and is influenced by the members in the social system, and the social settings in which it occurs. Diffusion, for Rogers, is a process of communication wherein change is sought out. Therefore, the idea that is being diffused has some qualities of newness and relies on information. The newness then requires that some level of uncertainty be involved. Uncertainty, for Rogers, is the degree to which a number of alternatives are perceived. And the information affects the uncertainty as it provides the necessary base for weighing the alternatives. Thus the innovation-diffusion process is an information-processing activity, in which information is sought out, then obtained, and options are weighed, thereby reducing the uncertainty implied in a novel approach.

reproduction in light of contextual demands. In sum, Rogers' argument is that diffusion is a social process, and learning from this process relies on communicative modeling.

From this line of thinking, if it is reasonable that the diffusion of ideas relies on modeling, and that learning is supported well when communication channels are put to work, then it seems plausible that advancing a view of explicit modeling may be fruitful to the Indian context. If such a view on the diffusion of ideas seemed sensible to program facilitators—whether they are key resource persons or block resource persons in the "cascade structure" —then it seems that explicit modeling may have currency as a vital process for the promotion of new ideas. Moreover, it may give weight to the notion that relying on conventional modeling is insufficient, as it doesn't capitalize on the interpersonal communication necessary for the diffusion of ideas. Thus, for curricular reforms, new pedagogical agenda, or new curricula materials to be effectively diffused through the "cascade structure," it seems a research-based explicit modeling practice could offer some instructional support to those program facilitators, and also offer fodder to consider new ways to engage in the work of teacher education. I return to these points in chapter 7.

Overview of Dissertation Chapters

To pursue these questions and line of inquiry, I generated 29 cases of dialogic modeling to study. The cases were part of larger professional development settings that I designed and developed with faculty at the Regional Institute of Education in Mysore, India. These settings took place at four different government higher primary schools in southern India, and incorporated practice-based teacher education design principles, and leveraged the established knowledge base for teacher education from industrialized countries and from India.

Figure 2 displays the arrangement of the chapters that structure the report on this study. In Chapter 2, I discuss the foundations in the literature for the work of explicit modeling in teacher education. In order to give readers a vision of what modeling in more demonstrative ways entails and that fits the parameters that are underspecified in other explicit modeling practices, this chapter also features an episode of dialogic modeling drawn from the data generated for this study, and explains some of its contours. In Chapter

3, I provide rationales for the study and its design, the method of data construction, and the first of two discussions on the methods of analysis. I also offer details about the professional learning settings in which I deployed the practice, and the teacher-learners that were integral to it.

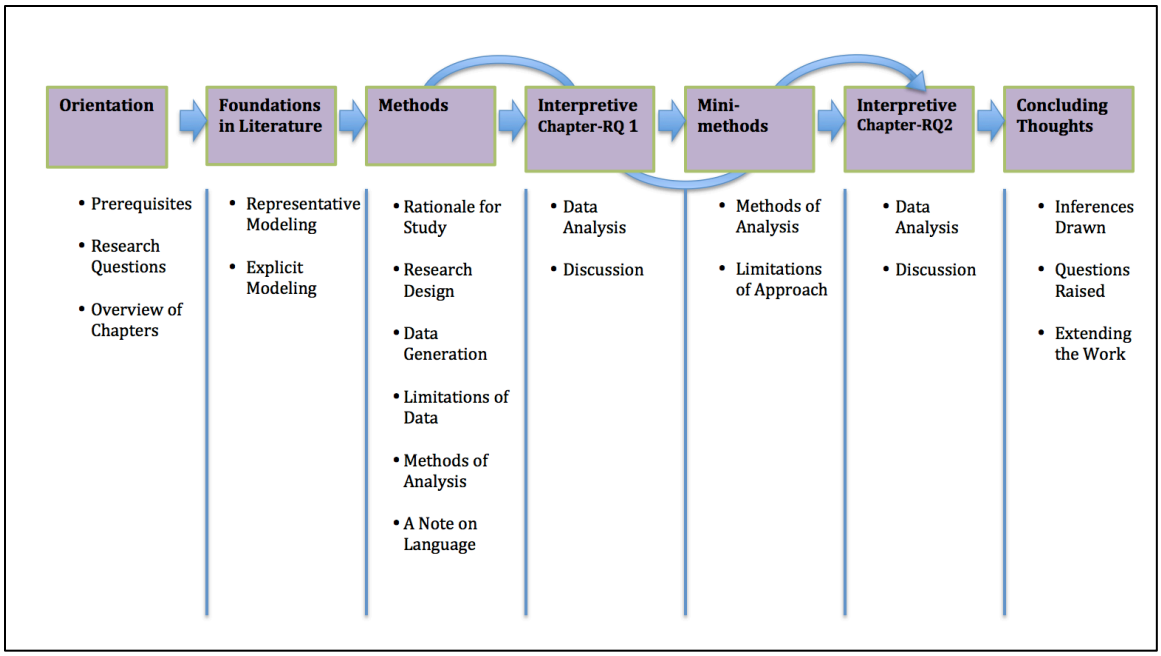


Figure 2: Arrangement of Dissertation Chapters and Thread of Argument

Chapter 4 is the first of two chapters that represent my interpretations of the generated data. In this chapter I describe three processes that underpin dialogic modeling. I detail and discuss my analyses of these processes and provide readers full examples from the data to help warrant the claim that teacher educators can use modeling as a resource to support teacher-learners' deliberate study of principled practices, and that this study can involve considering and questioning the "exportability" of a modeled practice. In Chapter 5, I return to the methods of analysis and introduce a second set of analytical tools exercised for this study. The intent for this second chapter on methodology is to discuss the analytical methods that helped me build the warrants and assertions to respond to Research Question 2. This methods chapter is condensed, in that it only takes up methods of analysis, and does not attend to all of the topics generally found in methods chapters. It has been drawn out of the primary methods chapter in order to facilitate reading of the dissertation,

as these methods are distinct from the first set and are in direct relation to the analyses that follow them. The data, setting, and participants remain the same. Chapter 6 is the second chapter that represents my interpretations of the data, wherein I analyze and consider the symmetrical structure of dialogic modeling. I detail this structure as a way to respond to this study's second research question, and build further warrants for the central claim on the work that can be involved in explicit modeling practices. In Chapter 7, I take up some conclusions that can be drawn from this work, the questions that it raises for teacher educator modeling, and the ways in which I envision extending this work.

Chapter 2:
Foundations in the Literature for the Work of Explicit Modeling in Teacher Education

Modeling has been flagged in many public discussions about teacher educator practice. For example, a recent report by the National Staff Development Council (2009) noted that the design of successful learning experiences for in-service teachers often involved the modeling of sought after practices. The Council's assertion is based on two decades of research (see Carpenter et al, 1989; Cohen & Hill, 2001; Garet et al., 2001; Desimone et al., 2002; Penuel, Fishman, Yamaguchi, & Gallagher, 2007; Saxe, Gearhart & Nasir, 2001; Supovitz, Mayer & Kahle, 2000 in Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009). Furthermore, in a large-scale study which examined effective features of professional development with 454 teachers, Penuel et al. (2007) pointed out that modeling was part of the strategies to help teachers focus on student inquiry. There are also increasing discussions about modeling in the research on the particular tools of coaching, the use of video, case based methods, delivering feedback, and in rehearsals with in-service teachers (Driscoll, 2008; Sherin & Van Es, 2005; Stein & Coburn, 2008; Poglinco et al., 2003). And, several studies have shown that cooperating teachers in field placements support teacher learning by modeling both practice and professionalism (Koerner et al., 2002). Finally, there are increasing efforts to study the teacher education practice of modeling on its own (e.g., Lunenberg et al., 2007; Korthagen et al., 2001; Smith, 2005; Wideen et al., 1998; Loughran, 1996). As a result, many people are claiming many things about modeling, and modeling has come to mean many different things.

Modeling

Part of what drives this condition is that teacher educator modeling relies on understandings developed in studies on teacher modeling and modeling with children. In this area, too, modeling has a great many alter egos. A few examples: Behavioral Modeling refers to the process where persons in authority exhibit specific behaviors, rules are inferred, and learners begin to emulate or imitate the behaviors (Manz & Sims, 1981); Symbolic, or Pictorial, Modeling, where individuals are exposed to representations in

videos or pictures (Bandura & Menlove, 1968; Keller & Carlson, 1974); Verbal Modeling provides rules and cues on how to engage in dialogue (Huntinger & Bruce, 1971); Creative Modeling is the process of exposing learners to new perspectives thereby weakening conventional mindsets (Belcher, 1975; Harris & Evans, 1973); Cultural Modeling occurs when stereotypes and gender roles are transmitted through instructional materials and institutional practices (Bem, 1977; McArthur & Eisen, 1976 in Bandura, 1986). Referential Modeling presents actual events along with their abstract counterparts (Zimmerman, 1983); and Cognitive Modeling entails instructors verbalizing the rules and strategies that guide their choice of actions (Meichenbaum, 1977). Learning through vicarious means has had traction for decades in education research (Miller & Dollard, 1941; Mischel, 1973).

As I argued in Chapter 1, much of what we know about modeling comes from the scholarly efforts of Albert Bandura. Bandura and his colleagues Dorothea and Sheila Ross argued that observation plays a significant part in children's learning (Bandura, Ross, & Ross 1961). Bandura went on to argue that imitation was a foundational means for the learning of new behaviors and the modification of existing ones (Bandura, 1969). In subsequent work he suggests that observers of an activity learn faster than performers of it (Bandura, 1977). And in a seminal study with young children, Bandura and his colleague Peter Barab tested whether children imitate what is modeled for them with respect to whether the model was rewarded or not (Bandura and Barab, 1971). This modification to previous research (i.e. Bandura's Bobo Doll Experiment (1961, 1963) discussed in Ch. 1) helped Bandura and Barab build the argument that when the modeling did not consist of discernible consequences, the observers did not imitate what was modeled in their own subsequent performances at a stable rate. Given Bandura and Barab's argument, when cues such as material benefits, stimulated enjoyment, and positive or negative reactions are evident, then this anticipation of prospective actions coalesces into a mental model.

Although the extent of the research on modeling with children is compelling, the assumption being made in teacher education is that these theories hold when applied to the professional learning of teaching. This stance seems partially plausible and partially tenuous. However, without an agenda comparable to the one Bandura and his colleagues evolved over decades it seems that there are few other places to turn for conceptual support; leaving open the possibility for multiple interpretations.

Modeling in Teacher Education

Modeling in teacher education means many things, and as a result has come to mean very little. For some, modeling refers to demonstrating particular ways to teach. For example, researchers have argued that teacher candidates learn how to write performance-based objectives (McGlamery and Shillingstad, 2011), how to use learning centers in elementary classrooms (Langer et al., 1981), and how to use technology (Molebash, 2002, 2004; Keiper, Harwood, and Larson, 2000) when the teacher educator models these. Modeling also refers to ways of being that teacher-learners can pick up on, such as caring teaching (e.g., Goldstein and Freedman, 2003), ethical frameworks (e.g., Warnick and Silverman, 2011), and compassion (e.g., Conklin, 2008). In this view, modeling is conceived of as something all together different than a way to teach about ways to teach. Researchers also talk about modeling as a motivational tool that can illustrate how to teach with an "inquiry-oriented approach" (Wubbels, Korthagen, and Broekman, 1997), a "meaning-oriented learning approach" (Bronkhorst et al., 2011), and with democratic values in mind (Segall, 2002).

In field experiences, it has been argued that intending teachers can learn from their cooperating teachers' modeling of habits and dispositions, as well as ways of interacting with students, planning lessons, and communicating with colleagues (Zembal-Saul, Krajcik, & Blumenfeld, 2002). Sometimes the cooperating teacher may be deliberate about this, but in many cases it is up to the intending teacher to draw out what they can.[19]

Modeling can also refer to the use of exemplary teaching in case studies, video representations, or in live teaching. In the early 1960's, the Stanford Teacher Education Program employed "symbolic demonstration" as a main component of their program, where live or videotaped portrayals of desired teaching behaviors were modeled (Gage, 1968). Decades later at Stanford, Sam Wineburg and Pam Grossman (1998) wrote about how they created discussion spaces to talk about exemplar teaching. In instances such as

[19] Scholars have raised concerns about the modeling provided by cooperating teachers. Sykes, Bird, and Kennedy (2010) argued that given there are a fraction of cooperating teachers that are relatively "ineffective" the modeling they provide in the field can be detrimental to the growth and development of student teachers. Allen & Casbergue (1997) argued that expert teachers were not the best models of reflective practice for student teachers in the field, as their actions had become automated, which in turn hindered their ability to model the full process or understand the struggles their student teachers were having with reflection.

these, the term modeling reflects a particular definition: teacher educators use a concrete representation of teaching to highlight particular teaching behaviors through discussion.

Finally, there is a body of research pertaining to modeling in teacher education that only highlights the practice as a feature of larger efforts. The bulk of the research surveyed for this research only invokes teacher educator modeling by naming it as part of their program design, or making a proposal for it. For example, Bank Street and Alverno Colleges point to modeling as a key factor in their teacher education programs, and research on these programs has pointed out the same (Darling-Hammond, 2000; Feiman-Nemser, 2001). In the University of Michigan's Summer Learning Institute for pre-service teacher education, modeling is again cited as a central feature of the program design in terms of methods, stance, and ways to engage with content (Ghousseini & Sleep, 2011). While these cases richly detail the programs and speak of modeling as an important feature, they don't necessarily explicate what the practice entails, how it unfolds, and what modeling means. Thus, employing a term and relying on an underexplored and under-conceptualized practice.

My review of the literature on teacher educator modeling led to a few fundamental questions. Do all of these programs and researchers consider modeling to be the same thing? Or is it different in each case? And, if modeling can arguably lead to very different ends (e.g., learning ways of being versus learning ways to teach) is it reasonable to expect that modeling be employed in similar ways? A practicing teacher educator who wants to employ modeling to support teachers to learn about teaching may wonder whether modeling is best suited for teaching about ways of being, rather than ways to teach. Or, they may wonder if modeling requires a representation, such as video. This line of thinking raises an additional set of questions. Is the modeling captured in the medium of video the same as the modeling that occurs through face-to-face interactions? Is modeling without a discussion the same as modeling with a discussion? Are they both modeling? And how does one "do" modeling? Might the way one models depend on what one models? Despite studies that argue that modeling does occur, is central to program design, and has promise, there has been relatively little organization on what modeling means, effective ways to employ it, and to what ends might it be suitable.

These unanswered questions leave designers and practitioners of teacher education in the precarious position of not knowing what modeling means, effective ways to employ it, and to what ends. Furthermore, the fogginess constricts how the field is able to communicate about what teacher educator modeling is and what it affords. The limitation of the existing literature is that modeling has been taken up as a pre-defined construct, and there is little attention paid to variations in the construct. Modeling is accepted as productive in teaching teachers, but what it takes to effectively model teaching practice for the learning of teaching is less clear. What is needed is to better understand the mechanisms by which modeling can support teacher learning, what practices of modeling actually support, and how does one do modeling.

Explicit Modeling in Teacher Education

Some scholars have taken up the challenge of defining modeling more clearly, and laying out how they enact it (Korthagen et al., 2006; Lunenberg et al, 2007; Jay, 2002; Nicol, 1998; Loughran, 2006, 2007; Kosminsky, Russell, Berry, & Kane, 2008; Berry, 2004; Crowe & Berry, 2007; Kosnik, 2007; Senese, 2007; Myers, 2002; Grossman et al., 2000; Bashan and Holsbat, 2012). As a result, there is some coordination on the concept of "explicit modeling"; another form in the lineage of modeling practices. Two primary characterizations come from John Loughran and Amanda Berry, and from Mieke Lunenberg, Fred Korthagen, and Anja Swennen:

> At one level, explicit modelling is about us ''*doing*'' in our practice that which we expect our students to do in their teaching…At another level, there is also a need to *offer* our students *access* to the pedagogical reasoning, feelings, thoughts and actions that accompany our practice across a range of teaching and learning experiences. We make such access available in a variety of ways, through 'thinking aloud', journaling, [and] discussions during and after class with groups and individual student teachers. (Loughran & Berry, 2005, p. 194, emphasis added)

> Student teachers often do not learn a great deal from the model behaviour demonstrated by their teacher educators, because they do not recognize it as such. For this reason, teacher educators should not confine themselves to (1) modelling, but should also (2) *explain* the choices they make while teaching (meta-commentary), and (3) *link* those choices to relevant theory. (Lunenberg, Korthagen, & Swennen, 2007, p. 531, emphasis added)

Looking across the two different explanations of explicit modeling it seems that in the first, the teacher educators' modeling is labeled as explicit, signaling an intention to distinguish this form from others. Whereas, in the second, the term "explicit" is not used, but it can be inferred that the authors are arguing that modeling requires more than demonstration given their list of two steps in addition to modeling. In spite of this difference, the two characterizations share common ground. In both the authors seem to view explicit modeling as a way to expose teacher-learners to pedagogical reasoning and the theoretical rationales associated with certain behaviors. Also, action—present in both—takes the form of "doing" and "offering" in the first, and "explaining" and "linking" in the second; thereby implying that explicit modeling is about taking practical measures to enhance modeling. The character of the activity, though, resides with the teacher educator, indicating that learners are recipients in the interaction. A central distinguishing feature of my argument for this dissertation is that teacher-learners and teacher educators both inform the work of modeling—explicit or otherwise.[20] Furthermore, the teacher educator modeling that I am interested in uses the teacher educator's instruction as a *resource* to make *principled practice* "visible" (Lewis, 2007) and "studyable" (Ghousseini, 2011), thereby providing opportunities to learn about practices; points that I return to at the end of this chapter.

Although these definitions are imperfect, what they have in common provides useful grounds with which to consider the research questions that guide this study: (1) What is the work involved in enacting explicit modeling of teaching practices?; and (2) What kinds of opportunities to learn might dialogic modeling present for teacher-learners? In what follows, I detail three teacher education efforts to clarify how scholarship is shaping the concept of "explicit modeling" and to illustrate ways in which explicit modeling practices might be developed. This chapter examines the work that these scholars point to as an antecedent to their efforts. In doing so, my aim is to bring readers closer to the development of others' explicit modeling practices, as well as my own, and to provide a

[20] I thank David Cohen for making this point clear to me through comments on previous drafts of these ideas, as well as through his own writing. Of particular note, in *Teaching and its Predicaments*, Cohen makes it clear that instruction is shaped, not only participated in, by learners: "Every instructional discourse is thus jointly and socially constructed, even if it is the work of one solitary soul on a desert island as he responds to a monologue produced by a hermit in a far-away closet" (Cohen, 2011).

rationale for why I privilege explicit modeling over other forms. This chapter concludes with an illustration and narrative explication of the explicit modeling practice that I have come to call dialogic modeling as a means to preview what the practice entails and depict how it is similar and different from other modeling.

Donald Schön's Three Modeling Strategies

The echoes of Schön's conceptualization of reflection-in-action and reflection-on-action are evident in many efforts of explicit modeling, as they strive to externalize these otherwise internal processes. Additionally, much can be learned from Schön's research on making such reflective processes evident to learners of professional practice. In his book, *Educating the Reflective Practitioner*, Schön describes three forms of modeling that he argues can serve as ways to "coach" learners to be reflective practitioners: (1) "Follow me!"; (2) "Joint Experimentation"; and (3) "Hall of Mirrors" (Schön, 1987).

The "Follow me!" procedure is comprised of showing and telling on the part of the instructor, and listening and imitating[21] on the part of the learner. The instructor attends to the learners existing abilities through close observation of initial performances. The instructor then shows or tells the learner about a particular technique that they feel would be relevant and useful for the learner. This may entail questions, criticism, or instructions. The instructor then models the actions just described, and throughout pauses to ask the learner questions about the performance, about what the learner understands, and about the instructor's own effectiveness. The learner then tests out their understanding of what was interactively modeled by redoing the initial performance.

Schön draws on Nicolas Delbanco's study of master cellist Pablo Casals with his student Bernard Greenhouse to characterize this modeling method. Greenhouse:

> During the first hour, [Casals] sat about a yard away. He would play a phrase and have me repeat it. And if the bowing and the fingering weren't exactly the same as his, and the emphasis on the top of the phrase was not the same, he would stop me and say, "No, no. Do it this way." And this went on for quite a few lessons. I was studying the Bach D-Minor Suite and he demanded that I become an absolute copy…And after several weeks, I had become a copy of the Master.

[21] Imitation, in Schön's sense, is not about blind mimicry. Rather, it is a highly creative and constructive process, and it entails deliberateness. For Schön, imitation is essential to learning (Schön, 1987, p. 243).

> And at that point, when I had been able to accomplish this, he said to me, "Fine. Now just sit. Put your cello down and listen to the D-Minor Suite." And he played through the piece and changed every bowing and every fingering and every phrasing and all the emphasis within the phrase. And when he finished, he turned to me with a broad grin on his face, and he said, "Now you've learned how to improvise in Bach." (Delbanco, 1985 in Schön, 1987, pgs. 176-179)

Greenhouse's characterization of the lesson with Casals has two parts. In the first part, Casals asks Greenhouse to mimic his performance in every way: bowing, fingering, and emphasis. Throughout, Casals corrects every small detail of Greenhouse's performance. This process continues for weeks until his performance is a precise match of his teachers. Then, once precise imitation is accomplished, Casals demonstrates an entirely different configuration of bowing, fingering, phrasing, and emphasis for the same piece. Schön's interpretation is that "the lesson" was not that there were two ways to perform Bach's D-Minor Suite, but that the performer can invent as many ways as possible to perform music, and each can be as precise and as beautiful.

For Schön, the lesson relies on two important mechanisms: demonstration and imitation. This method is directive and composed of painstaking mimicry, yet can have impressive results. From this point of departure, Greenhouse was able to explore and invent his own interpretation of the piece. While not the case for Greenhouse, a concern for this method that Schön cites is that it calls upon the instructor to critique the performance of the learner at the outset, rather than involve the learner in a joint discussion to solve the problems. Because it is likely that learners' will feel insecure when this critique falls, Schön argues this can have adverse implications; suggesting the need to explore other alternatives.

Some teacher educators' use of modeling follows a similar format. In some cases where modeling is used to teach about ways of being, ways to teach, or as a motivational tool, there can be an absence of collaborative discussion. Some teacher educators rely on their demonstration to be instructive and in many cases do not relate or discuss the reasons why certain actions are taken. There is an assumption that demonstration will lead to imitation.

The second type of modeling that Schön explicates is "Joint Experimentation." In this method, argues Schön, instructors bring both their deep knowledge of the subject and the

ability to perform to bear in their guidance of learners. The intention, according to Schön, is to lead the student into a search for the most appropriate means for them to achieve the objective that they seek. In this type of modeling, the instructor engages the learner in collaborative inquiry, and resists the impulse to tell the learner the resolution to the problem. In doing so, the instructor risks losing the learner's trust, if the learner becomes aware that the instructor is being inauthentic and holding back.

Schön provides an example from the instructional efforts of Rosemary, a master violin teacher, with her student Dani, to illustrate this explicit modeling practice. After Dani's initial performance Rosemary provided some cursory evaluation: "That was wonderful, sugar," which was quickly followed by attention to the details of the performance. Rosemary asked Dani to identify the principle themes of the performance. Dani did this by playing certain sections that exemplified the three themes, and then labeling them in her own words: "lively," "stormy," and "reflective." Upon this description, Rosemary orchestrates a conversation through precise questioning.

> Rosemary: Suppose we wanted to accentuate the liveliness of the first. How would we do it?....[pauses to think with head in hands]…There's an upbeat that goes to a resting place. Perhaps you could really *spring* off of it and land on the next—ta –dum!

Dani tries this out and likes what she is able to do. Rosemary, then prompts another experiment:

> Rosemary: How about the third, how would you make it really reflective?...You could *restrict* the bowing [miming what she meant].

Dani tries this, too. Rosemary then asks Dani which she would use. Dani responds, "I'm not sure. I'll have to think about it." Schön notes, Rosemary sat back pleased (Schön, 1987, p. 179-182).

Schön views this type of explicit modeling interaction as "Joint Experimentation." Both instructor and learner are testing out variations within the performance—one verbally and one physically—and importantly the instructor is fostering inquiry and

experimentation in the learner as well. The prerequisite for such a joint production, Schön points out, is that the learner is able to decompose their effort and reflect on options, thereby becoming aware of the choices that exist in what they already know to do. The modeling takes the form of guidance and the questioning, as well as representations of the variations that can be tested. Schön argues that such a process is tailored to the learner's particular needs and promotes a beneficial relationship.

Some teacher educators that use exemplars in videos and case studies, those that reference modeling in field placements, and those interested in explicit modeling, follow an analogous design. They, too, rely upon dialogue to enhance what can be learned from modeling, and they can sometimes facilitate questions that in some cases lead to experimentation. Dialogic modeling, too, shares in parts of this conceptualization, as it leverages dialogue to bolster the learning that modeling can provide. Additionally, as with "Joint Experimentation," one of the intended goals is to support teacher-learners to become aware of the choices that exist in their current practices.

The third form of explicit modeling that Schön specifies emerges from his study of psychoanalytic practice and counseling practice. What Schön identifies as the "hall of mirrors" is a process in which the learner and the instructor are continually shifting perspectives, and the instructor uses their learning interaction to parallel the conditions of the learner's performance setting. At one moment the two parties might be discussing some aspect of the learner's performance, in another moment the learner may be providing a synopsis of a past performance, and in yet another moment either may be projecting alternatives for future performances. In doing so, the instructor pushes the learner to reframe the dialogue they are having in terms of her own experience with clients. The objective is that the dialogue between the instructor and the learner mirrors the dialogue that the learner performed in their practicum and has brought to the instructor for discussion. Thus, the "hall of mirrors" can only be employed when there is parallel between the practicum performance and the instructor-learner dialogue. What is modeled through such interactions, for Schön, is how to manage parallel situations and interactions. Furthermore, the learner in these situations is able to experience and potentially reflect on how such an interaction may feel for their clients.

In an example drawn from the instruction of psychoanalysts, Schön details how a dialogue between a field supervisor and a resident parallels an interaction the resident had with her patient, where the patient's issue was that she was feeling "stuck." As the resident narrates how she was unsure of how to help her patient, the supervisor reframes and pushes the resident to reframe the retelling of the interaction with questions such as, "What did [the patient] mean when she said that?" and "What did you mean when you made that comment?" The questions helped the resident illuminate what the patient meant by "stuck." Simultaneously, the resident came to know about her own issue—wherein she was "stuck" in how to help her patient. The supervisors questioning techniques in this situation mirrored those that the resident might use in her work with her patient. Furthermore, the resident was engaged in the experience in such a way that provided her with a first-hand sense of what it felt to be "stuck"(Schön, 1987, pgs.231-242). The analogous nature of the instructor-learner dialogue to the learner's practical setting is a necessary condition for the hall of mirrors.

Many explicit modeling practices, including dialogic modeling, can be associated with features of this approach. Teacher educators that employ explicit modeling in teacher education settings do so with activities that sufficiently parallel teaching. This parallel possibly provides a mirror on their own practice, such that they can see a practice that resembles their own. This is true also in dialogic modeling, where the principled practices modeled are as relevant to teaching as they are to teacher education. Furthermore, "hall of mirrors" seeks to illuminate the meaning behind certain behaviors and choices. This is also a factor in my design of dialogic modeling; a point which I expand upon later on in this chapter.

"Hall of Mirrors," "Joint Experimentation," and "Follow Me!" are three types of explicit modeling that Schön derived from his research on the education of professional practitioners. While he doesn't name these practices as explicit modeling, I raise Schön's efforts because there are strong connections with his practices and existing explicit modeling practices, and to provide a basis for understanding how explicit modeling is being used in the professional education of teachers. Moreover, there are aspects of "Joint Experimentation" and "Hall of Mirrors" that I appropriated into my design of dialogic modeling. In what follows, I detail three specific cases that not only draw deliberately upon

Schön's efforts, but are also landmarks in the emergence of explicit modeling practices. In addition to providing a helpful introduction to the literature, I will also argue that while dialogic modeling shares common features with these practices, such as dialogue about modeling, there are important limitations in the conceptualizations that I tried to overcome in my emerging design of dialogic modeling.

Examples of Explicit Modeling Practices: "Thinking Aloud," "Meta-Commentary," and "Professional Critique"

The most developed models of recent explicit modeling practices seem to stem from the efforts of John Loughran.[22] One of Loughran's early studies marked an important advancement of Schön's ideas in the field. His self-study research has pioneered what it means to externalize one's thinking for the learning of professional practice. And his efforts exemplify the extent to which explicit modeling practices go, and what such practice might yield for teacher-learners.

Loughran initially discussed his practice in his book *Developing Reflective Practice: Learning about Teaching and Learning through Modelling* (Loughran, 1996). In this work, Loughran discusses his use of a particular practice called "thinking aloud," which he used in his pre-service teacher education course. Distinct from the data collection technique in psychology associated with information processing, Loughran describes the technique of "thinking aloud" as "an attempt to give students immediate access to the thoughts, ideas, and concerns which shape my teaching" (Loughran, p. 28). What this means is that throughout the class sessions Loughran constantly narrated his thoughts, his judgments, and his decisions. Loughran's narration was not interspersed throughout the class, and it wasn't framed by reflective moments at the end of the class. It was constant. As one student in the class put it, "…Well, you're self-explanatory…every second sentence is "We're doing this because of such and such a reason, and do you understand why we're doing it," and if we don't you explain it" (Loughran, p. 28). Loughran designed "thinking aloud" as a way to provide commentary on his pedagogical reasoning in real-time.

---

[22] For readers that are less familiar with his work, John Loughran has taught science methods courses to pre-service secondary teachers at Monash University in Australia for the last three decades. He is now Dean of the School of Education there and served as the Director of Teacher Education when he conducted the research presented in this book. He is a seminal figure in research on reflective practice and modeling.

Loughran's research into this practice focuses on how "thinking aloud" influences student-teachers development as reflective practitioners. To explore this he employed seven data collection tools to gather students' developing views about reflective practice: student-teacher journals; his own teacher educator journal; audio-recording of the teacher education seminars; open-ended questionnaires from the end of the seminars; multiple interviews with the nine student-teachers throughout the year; interviews with four of the student-teachers whose work in the field was video-taped; and the video recordings themselves (Loughran, p. 11-12). From this research Loughran surfaced a promising finding. It seems that the explicitness that Loughran offered in the TAL (Teaching and Learning) seminar was highly valued by the student teachers.

> Perry: I like to watch you in TAL. You're more interesting than what's going on, just watching you thinking what am I going to do here, which area am I going to go on with now, how long will we spend on this task, how many people have finished, people are getting fidgety, others are still reading, this is working, this isn't working, where to from here. All of those are sort of obvious, but then when you're doing your own teaching you've got to sort of go back and say well what worked here and what didn't? How much time should I spend on this, am I going down the right track, is there a better way I can present it, etc. So they happen, and I guess that's the reason that I reflect is that I can see the value in it.
>
> Interviewer: Where do you see the value in it?
>
> Perry: By improving and by learning about teaching, and teaching about learning. So the reason I reflect is for personal growth plus professional development. They're the two areas that I see as reflection, because once something's over if you can gain something from what went before then there has to be an advantage I suppose, that's where I see reflection.
>
> (Loughran, p. 53)

Loughran found that his practice of explicit modeling demonstrated to the student teachers that teaching is composed of intricate interwoven tasks, and that visible actions and outcomes are not always the result of what was intended. He also reasoned that his practice of modeling reflection helped to build the student teachers' confidence. For some of the student teachers the strategies that Loughran employed in the TAL class showed them that even experienced teachers struggle with things not going "smoothly" or

"according to plan." Loughran argues that "thinking aloud" not only represented teaching itself, but also the reality of the thinking necessary for teaching (Loughran, p.44).

Loughran's work provides a strong basis for developing hypotheses about how modeling can be leveraged for teacher learning, because it draws attention to the complexity in making teaching visible. Furthermore, Loughran's research argues that teacher-learners see value in his explicit modeling. However, there are aspects of the study and the practice it explicates that bound its utility.

The first limitation is associated with the breadth of the study, within which the explication of "thinking aloud" sits. "Thinking aloud" is only one part of a much larger treatment of Loughran's teacher education course. Loughran's book provides an account of the entire process from course intentions to course design on to the enactment of the course. The explication of "thinking aloud" is only one piece of this. The second limitation is in terms of what the research report provides. Loughran prioritizes what "thinking aloud" accomplishes rather than building a better understanding of how it can work. By jumping into the implications of the practice, an accessible distillation of how the practice operates is elided. These two constraints may leave interested teacher educators in the position of drawing the practice out from the totality of the course design, and teasing apart how it works and why one might employ it. This raises a few questions: In what ways and to what extent can teacher educators who are trying to learn about particular practices do so from exhaustive treatments of entire programs or courses? Might they be better served by thorough treatments of individual practices, initially separated from larger programs and then subsequently re-aggregated elsewhere? Can a collection of plausible practices bound together be disaggregated? Or does focusing on *a single* practice boost usability?

Increasingly, teacher education researchers are taking on the challenge of exploring a single practice teased out from the totality of instruction, and in explicating how it operates before enumerating its affordances. One recent example comes from the collaborative work of practitioner-researchers at the University of California at Los Angeles, the University of Washington, and the University of Michigan (Lampert et al, 2013). The research reported on attempts to build an understanding of an "unusual" form of teacher education, which they call rehearsals. Their research addresses two main questions: (1) What do teacher educators and novice teachers do during the kind of

rehearsals they developed?; and (2) Where, in what they do, are there opportunities for the novice teachers to learn about the complex work of teaching? By bounding their inquiry to what is involved in a single practice—the doing of rehearsals—and what opportunities to learn such an effort provides, the researchers are able to contribute a rich image of what is possible in teacher education, while also undergirding their proposition through a systematic inquiry. Such a treatment of a single practice seems fruitful, and is the pathway that this research follows as well.

Another dimension of Lampert et al.'s work helps to draw attention to a second set of limitations in Loughran's published report. Lampert et al. argue that their rehearsals are anchored by a particular set of instructional activities (IAs). IAs are " containers for the practices, principles, and mathematical knowledge that novice teachers need to learn and be able to use in interaction with students" (Lampert et al., p.228). The work involves deliberately teaching novice teachers how to use particular IAs. In my reading of Loughran's research report I was unable to find any attachment to a set of practices or organization around evidence-based practices. Moreover, the report provides very little information on the variation of the practices taken up when he employed "thinking aloud." Instead, the report discusses Loughran's narration of the pedagogical reasoning associated with his "thoughts, ideas, and concerns." Thus, while I agree that Loughran's research on and development of "thinking aloud" provides important background for interested teacher educators, explorations of explicit modeling of practices that take up practices supported by *both* "wisdom of practice" (Shulman, Wilson, & Hutchings, 2004; Shulman, 2007) and systematic inquiry seems warranted. My conceptualization of dialogic modeling is to leverage these two sources of information as well as a third—the observation of the teacher-learners teaching their own classes. Thus, my conceptualization of dialogic modeling is a revision of Loughran's practice, and attempts to build upon it in deliberate ways. Moreover, this route seems appropriate and feasible in light of the developing architecture around "practice-based teacher education" (Ball & Cohen, 1999); a point which I will pick up on later in this chapter.

"Self-conscious Narrative"

A second example of an explicit modeling practice comes from the scholarly work of Eric Wood and Arthur Geddis at the University of Western Ontario (1999). In their work Wood and Geddis investigate the intentionally designed practice that they call "self-conscious narrative." As the instructor for a mathematics methods course for pre-service teachers, Wood uses this practice each year during one of the final lessons of the semester. During this lesson, Wood models all of the elements that the class took up during the previous weeks by teaching about a specific mathematical concept. He supplements his model teaching with a "metacommentary" throughout, similar to Loughran's "thinking aloud," and there is a conversation about the teaching after the lesson concludes.

In the following example, Wood (Eric) is writing a set of problems on the board for the pre-service teachers (acting as students) to work on. The authors use italics to signify Wood's explicit "self-conscious narrative."

> Eric: [Writing at the blackboard] $(X-2)^2$, write down the answer. $(X-7)^2$... I want no middle steps, folks, I just want the answer... $(x + 5)^2$, and $(x + b)^2$. You have two minutes. *You know what I'm going to do now? I'm going to take attendance. I didn't take attendance at the beginning of class. I got started right when people came in... because I didn't want to waste two minutes taking attendance. Now I've got two minutes to myself when you've got something to do, and I'm going to take attendance. The point is, I don't want to eat up good instructional time with administrivia. You know... you can spend a huge amount of time with administrative tasks and then not have enough time to teach. So, you've got to manufacture times to do that stuff* (Wood & Geddis, p.113).

During the model lesson Wood pauses and uses voice inflections to indicate when he steps out of the high school mathematics lesson that he is modeling and steps into the self-conscious narrative about the instruction. Through this commentary, Wood tries to reveal several considerations that shaped how the mathematics lesson unfolded, what he was trying to do, and his rationale for doing it. He also is trying to show how the lesson emerged from his lesson plan and how the unfolding of classroom events shaped the way he modified the plan (Wood & Geddis, p.111). The aim of the practice, it seems, is to engage students in thinking about how the teaching they observe is planful, and to provide access to Wood's pedagogical intentions.

The authors argue that self-conscious narrative helped ensure that important

details were not overlooked. Moreover, the authors assert that by using self-conscious narrative, Wood was able to represent pedagogical actions and the pedagogical thinking behind them in the same space (Wood & Geddis, p.118). And they claim that the modeling of questioning strategies in this lesson coupled with the narration of the instructor's intentions anchored in a contextual experience is a "far more powerful strategy than [the] simple exhortation to "use questions to develop your lesson"" (Wood & Geddis, p.115).

Although my reading of this study informs my understanding of the landscape of explicit modeling, it also raises several questions and concerns. For one, the research report says little about methods of analysis, but rather presents a straightforward narrative account of the practice. Although the presentation is rich and detailed it is also bound to the practitioner and the context; making it difficult to discern how one might draw the practice into one's own repertoire carefully and with fidelity. These concerns over the limitations of the study lead to significant questions about the practice as well. First, self-conscious narrative was employed during a staged lesson, however it is unclear to what extent the instances of self-conscious narrative were deliberately designed into the lesson, or if they just emerged through Wood's intuition and interest. Second, in what ways and to what extent are the practices, strategies, and routines that Wood extracts from his instruction associated with research-based teaching practices? It is unclear from the research report if, for example, setting a task for students to complete in order for the teacher to take attendance is a practice that based on empirical evidence, if it is coming through Wood's wisdom of practice, or if it is in response to his own observation of his students' teaching. Finally, the descriptions provided raise significant questions about the mode of the practice. The narrative form raises a concern that Wood's telling and explaining about what he is doing and why is little more than reformatted direct instruction. An alternative approach might be more grounded in inquiry, and may rely on the learners to derive the intentions underpinning the action. Research on teaching corroborates the assumption that inquiry and discussions can lead to learning if certain conditions are met (Nystrand & Gamoran, 1997; Barker, 2012).

Although Wood & Geddis' work is limited in defining the specific expertise required to support teacher-learners to learn about teaching, the importance of the inquiry into "self-conscious narrative" should not be overlooked. It was an integral entry into research

that strives to enhance teacher educator modeling. The work that I investigate and propose in this dissertation stems from my reading and critique of this practice, and seeks to build on its efforts. It informed not only the design of dialogic modeling, but also the way in which I chose to study it.

"Professional Critique"

Another promising example of teacher educators crafting an explicit modeling practice is "professional critique" (Loughran and Berry, 2005). In a graduate level program for pre-service teachers at Monash University, John Loughran and Amanda Berry co-taught a course titled *Developing Pedagogy*. In this course Loughran and Berry worked together to leverage modeling by sharing two roles: modeler and debriefer. The modeler would instruct the class, while the debriefer would interject periodically to either explicate the thinking behind the modeler's practice, or lead a discussion about the same. The practice is part of an array of pedagogical activities geared towards generating meta-level dialogue around pedagogical decision-making and highlighting the problems that arise in authentic teaching.

The practice unfolds as such: Both Loughran and Berry begin the class by quickly outlining the purpose of the session. They flag which one of them will serve as the instructor and which one will be the de-briefer for the day. For example, Loughran might be the one to teach something, while Berry de-briefs his teaching. While Loughran teaches, Berry carefully attends to the pedagogical details; e.g., aspects of the instructional procedure; the manner and mode of Loughran's questions and responses to student comments; and her impression of what students attend to. Then, when Loughran's teaching comes to a close, he steps back (literally), and Berry steps forward to begin the debrief.

In her role as the debriefer, Berry may draw attention to particular choices Loughran made, or questions he asked. It is up to her discretion. To do this, she might ask questions to the class about their perceptions, or interview Loughran about his. Some discussions may consider structure of the pedagogy, while others may concern feelings associated with performance. If so desired, Berry might also facilitate inquiry into the pedagogical principle that undergirds Loughran's instruction. For example, in one session, Loughran was teaching the prospective teachers about the "Prediction, Observation,

Explanation" (POE) teaching procedure. Berry's debrief took up how the POE worked and the value of K-12 students committing to their views through writing about their predictions, observations and explanations. Berry carefully phrases her questions as she asks the prospective teachers to explain the effects of Loughran's teaching behaviors that encouraged or discouraged their involvement in the experience. As the questions and answers slow, Loughran moves back in and closes the class.

Loughran and Berry's goals are captured in their explicit modeling definition noted earlier in this chapter. To reiterate, though, their goals for this practice are two-fold. The first is to "practice what they preach," thus providing an illustration of the type of teaching they advocate. The second is to provide access to the pedagogical reasoning that accompanies practice (Loughran and Berry, p.194). These two levels are what constitute their practice as explicit modeling. If Loughran and Berry were to rely on their modeling of engaging teaching, then this would be akin to direct instruction in their view. However, leveraging the modeling so that teacher-learners gain access to what undergirds instructional practices is what the explicitness of "professional critique" ostensibly affords.

In the end, Loughran and Berry make claims about the general category of explicit modeling, rather than any specific assertions about "professional critique."

> Explicit modelling through ''talking aloud'' and ''debriefing teaching," creates new ways of encouraging student teachers to grasp the possibilities for learning about teaching that are embedded in their experiences and to see these possibilities as opportunities, not instructions or recipes, for practice (Loughran and Berry, p.196).

The practices that they advocate, they argue, create opportunities to "see and feel" what is happening in embedded experiences of teaching and learning. Moreover, they argue that such practices aid teacher educators to rely less on telling and showing and to re-orient their teaching to one of facilitating and orchestrating opportunities to learn.

In designing the explicit modeling practice for this study, I shared the confidence that explicit modeling could yield these, or similar, results. Loughran and Berry's argument, in part, persuaded me to consider ways to interlace dialogue with modeling, and to organize my instruction as a process of orchestrating learning opportunities and managing ideas. However, I felt that there were limitations to what their research report provided, as

well as constraints on the practice. First, "professional critique" requires extensive coordination between two expert teacher educators. Furthermore, this requires fluency in co-teaching. Although their argument for collaboration is warranted and can plausibly lead to the "reframing" that Schön pressed for, sadly many teacher education programs seem ill-equipped to promote or sustain such relationships. A second issue is that the research report is a conceptual argument, rather than an explication of a practice. The sketch of the practice in the research report is illustrative, however it is used in service of theory. This is done at the expense of a deep exploration and explication of the practice, which I argue are necessary to warrant the claims that can be ascribed to any single practice. It seems that this was not the authors' intent. For example, if the authors hoped to provide teacher educators a usable sketch of the practice, then the narration that they provide might also be connected to a discussion of analytical methods in the research report, which might boost the credibility of the claims made about the practice. The consideration of the practice comes through the narration of what was done, and what happened when it was done, but it falls short of a logical unpacking of the practices, or relaying any systematic analyses that were carried out on the data.

The three explicit modeling endeavors that I describe here are deliberate attempts to make practice visible, and to illustrate the processes involved in selecting, organizing, analyzing, and enacting instructional practice. Their similarity is that these explicit modeling practices attempt to externalize thinking, and they use modeling as more than just a site to specify or ordain a teaching practice. The teacher educators in these instances ask their students to step out of the instruction they are all in, and to make themselves analytical consumers of it. Doing so, the scholars argue, provides a window into the complex nature of teaching. Teacher educators who employ modeling in this way also argue that they provide access to cognitive processes relative to teaching, and are not merely modeling for imitative purposes. In these situations teacher educators have taken responsibility for designing their instruction in such a way that intends to provide teacher-learners access to what underpins pedagogy. They do so by narrating as in the cases explored by Loughran (1996) and Wood and Geddis (1999), or by having colleagues highlight their higher-level internalized thought (e.g. decision-making, predicting, questioning), as in the case presented by Loughran and Berry (2005).

Similar practices to the three I have detailed here seem to be cropping up anecdotally and in the published teacher education literature. While perhaps not always identified as "explicit modeling practices," they share similar features. For example, in Hala Ghousseini's work (2011) and in Walter Parker and Diana Hess's research report (2001) the researchers identified that the teacher education routines and discussions they were investigating paralleled classroom discussions and routines and the teacher educators in their investigations explicitly drew learners' attention to them. Dawn Garbett and Rena Heap (2011) write about "tiered-teaching" where they critique one another's teaching as it unfolds to draw learners' attention to their "reflective practice." Hilary Conklin explains to readers that she "debriefs" her teaching in her efforts to leverage her modeling of compassion (Conklin, 2008). And Matthew Ronfeldt and Pam Grossman found that educators in both clinical psychology and education were "pausing to explicate" their practices (Ronfeldt and Grossman, 2008). Anecdotally, teacher educators also discuss these moves as "using a time-out" (personal communication with Dr. Lisa Barker 11/15/2012); "pushing the pause button" (personal communication with Dr. Chandra Alston 10/27/2011); "stepping it out" (personal communication with Dr. Darin Stockdill 10/15/2009); and "reframing" (personal communication with Dr. Bob Bain 2/29/2013).[23] Although there are increasing efforts to make teaching more visible, these practices suffer from under-conceptualization. The enthusiasm for such practices, ironically, seem to be fueled by the counter arguments to the beliefs explicated in Chapter 1, and perhaps the

[23] Program-level attempts are being taken up as well. At the University of Chicago Urban Teacher Education Program (UTEP), the program is up front with student teachers about the interesting endeavor that they are about to embark on.[23] The teacher educators relay the complexity of what the student teachers will be engaged in: the students are simultaneously learning how to teach and experiencing teaching at the same time. To manage this complexity, the program has introduced a dynamic present in all of their work, which they call "split-vision." "Split-vision" is a protocol in which teacher educators work to build explicitness into their practice. Once a learning activity is complete, then the teacher educators engage in talk about the diagnostic work that the teacher-learners just experienced. As a result, when a teacher educator employs a practice, such as grouping students, learners will be a part of the practice as participating students. Then, through dialogue, there may be some naming of the practice, followed by decomposition of the rationale for that practice in terms of the aims, adjustments, and implications. In some situations alternatives may be examined as well. This notion of "split-vision" emerged as an informal practice, but has become an important part of the teacher education program at UTEP, and is becoming a codified practice. This description draws from personal communication with the director of UTEP, Dr. Kavita Matsko (personal communication 4/30/2013).

systematic inquiry and prevalence of modeling in classroom teaching as discussed earlier in this chapter.

Externalizing thinking about what undergirds instructional decisions guides many teacher educators' renditions of explicit modeling. The study that I report on in this dissertation resonates with these works, but the practice that I loosely designed diverges from prior treatments in three important ways. First, I see modeling as a resource that can be leveraged through dialogue. Although, Loughran and Berry's "professional critique" features dialogue, in other explicit modeling practices narration seems to be the designated mode. While I make no claim that discussion yields better results than direct instruction, I do privilege this modality, thus distinguishing it from other explicit modeling practices. Second, I hold the teacher-learners as integrally informing instruction. Again, "professional critique" seems to account for the learners' influence on the instruction, however, other reports minimize or do little with this perspective. Therefore, analyzing a practice with learners' involvement in mind is essential to bringing to bear how a particular practice unfolds and the learning opportunities it provides. Third, the teacher education that I studied is tied to practices that derive from systematic inquiry, a direct need, or the "wisdom of practice" (Shulman, Wilson, & Hutchings, 2004; Shulman, 2007). In all of the research discussed above, it is unclear from where the practices modeled emerge.

The concerns I raise here with existing explicit modeling practices and those that I grappled with in Chapter 1 pressed me to design a modeling practice that does not rely on learners' ability to navigate their sensory experiences, challenges the notion that teaching is simple, and seeks to take as its curriculum principled practices as opposed to techniques, in order for learners of teaching to enhance their abilities to support students. As I argue above, such a view of explicit modeling does not seem evident in the literature. Thus, my intentions are to dive deeply into an explicit modeling practice in a way that leverages my arguments on the limits of these valuable examples and build upon their efforts. Consequently, this dissertation takes a category of teacher educator modeling practice that is pervasive, but poorly specified, and tries to build a data set that allows me to study one form of explicit modeling in terms of its structure and what is involved. It strives to elucidate not only understandings of what happens when such explicit modeling occurs, but also generate details on underlying processes and overlying structures. In what follows,

I provide an illustration of what I have come to call dialogic modeling. In doing so, I intend to show how dialogic modeling fits in the landscape among other explicit modeling practices. Furthermore, because it is among the range of possibilities that are trying address the limitations learning from modeling, and because it is not the same as others, it will provide the foundation of what the study attempts to do.

An Illustration of Dialogic Modeling

Dialogic modeling can occur at any point in the professional learning session. It may be a planned event, or it may emerge more organically, based on what is occurring during the teacher education program. It takes as its content a "principled practice" undergirded by research-based investigations, or drawn from first-hand observations of the teacher-learners' teaching,[24] and in rare cases may be based on what might be construed as wisdom of practice. In this data set, "principled practices"[25] came to mean instructional practices that are constituted by aims, responsibilities, and courses of action. For example, recapping a lesson, organizing for group work, and teaching with and through problems, might be considered as "principled practices," as they are teaching actions embedded in certain aims and attentive to responsibilities. While the practices that were taken up during the dialogic modeling episodes investigated here were not pre-determined, they were informed by my acquaintance with the set of "high-leverage practices" argued for by Tom Hatch and Pam Grossman (2009), and those formulated by members of the University of Michigan's School of Education. In particular, this community of scholar-practitioners identified 19 such teaching practices. For example, "Making content explicit through explanation, modeling, representations, and examples"; "Implementing organizational routines, procedures, and

[24] My instruction was also informed by material provided by the teachers and through my own observations of their teaching. On the non-session days, teachers observed their peers teach lessons, kept teaching journals, and had their teaching video-recorded. Information from the three resource tools—observations, journals, and video representations—was used in the subsequent day's session as "records of practice." Prior to each weeklong workshop, I attended classes, met with teachers, students, and administrators, and participated in cursory school activities, such as lunch, assemblies, and staff meetings. Conceptual and practical considerations on the trainings, as well as the training schedule, can be found in Appendix 1.

[25] I borrow this term from Pam Grossman, who writes about a teacher-learner's use of the term in her article "Overcoming the Apprenticeship of Observation in Teacher Education Coursework" (Grossman, 1991). For Grossman the term implies practices that are connected to theoretical frameworks and broader purposes for teaching.

strategies to support a learning environment"; and "Eliciting and interpreting individual student's thinking."[26] Such practices can constitute the curriculum of dialogic modeling.

In dialogic modeling the teacher educator uses the modeling of practice as a resource. During instruction, the teacher educator breaks the flow and launches a discussion on a particular practice regardless of grain-size. The discussion may take up routines[27], strategies, or principles.[28] Since learners may be engrossed with what the teacher educator is asking them to do, they may not be able to tease out critical points about the modeled practice. Therefore, in dialogic modeling the teacher educator pauses and goes back. The teacher educator does not wait until after the entire session, and judiciously interjects into the stream of the session. Turning back to something in the recent past closer to when it occurred can lessen the burden on recalling what happened; i.e., a recency effect (Baddeley & Hitch, 1993). Also, since the teacher-learner may or may not be attending to what is being modeled, or how it is done, the follow-on discussion intends to diplomatically focus attention, and bring the modeled practice into a collective space. The discussion gives the teacher-learners and the teacher educator an opportunity to scrutinize the modeled practice, pose and respond to questions about the practice, and consider its implications.

The teacher educator might begin by asking what the teacher-learners noticed about his or her practice, and based on their responses the teacher educator can take the

---

[26] For more information on the "high-leverage practices," readers can visit: http://www.teachingworks.org/work-of-teaching/high-leverage-practices; a website maintained by the TeachingWorks organization housed at the University of Michigan.

[27] Gaia Leinhardt and Jim Greeno point out the importance of routines in their efforts to articulate the cognitive demands of teaching when they write, "Routines are small, socially scripted pieces of behavior that are known by both teachers and students. For example, a routine for distributing paper is often initiated by the teacher walking across the front row of the room with a pad of paper and giving several sheets to each child in the front row. The first child in each column then takes one piece and passes the rest back through the column. This routine provides a quick and efficient way of distributing paper, a requirement that arises in several activity structures" (Leinhardt and Greeno, 1986, p. 76). Routines play an important part in purposeful teaching, because routines allow activities to run efficiently, and the more mental energy we spend on small decisions, the less we may have for more substantive ones (Leinhardt and Greeno, 1986). Thus, knowing and understanding routines such as distributing materials, reduces teachers' cognitive loads and expands their facilities to deal with unpredictability.

[28] Lacking a useful way of framing these practices from the literature, I defined "principles" as abstract ideas consisting of aims, responsibilities, and courses of action that provide a distinct way of thinking about the work of teaching.

opportunity to push them to speculate about affordances and limitations of what they noticed, as well as weighing the alternatives. He may also ask them to talk about their own practice, or posit how they may do it in the future. The intention is to help build the "adaptive expertise" necessary for managing the fluidity and uncertainty of classroom teaching. While adaptive expertise requires a balance between innovativeness and efficiency, developing such expertise requires guidance and instruction. It is not something that evolves naturally (Bransford et al., 2005; Ericsson, 2002).

Conventional interpretations of teacher educator modeling may assume expert practice on the part of the teacher educator. This may not always be the case, however. To rely on teacher educator modeling from less than optimal models may not always benefit teacher learning, either. Alternatively, dialogue in and around the teacher educators modeling, whether exemplar or not, can provide a space to consider the experience, and can involve inquiry, and the sharing of knowledge. In dialogic modeling the teacher-learners are as responsible for the learning trajectory as the teacher educator.

Although the teacher educator sets the parameters of the discussion, by choosing which practice is discussed and by orchestrating the discussion, teacher-learners inform the direction the discussion goes, what gets taken up, what gets left behind, and what can be drawn from the experience. An alternative might be a monologic transmission model where the teacher educator tells the teacher-learners about the practice; what it is, why he did it that way, and what he hoped to gain. In some situations, this might provide a useful opportunity to learn. However, discussions can create an organized way for teacher educators and teacher-learners to co-construct concepts and arguments for or against practices.[29]

Diving into the Interactional Space of Dialogic Modeling

The set of principles discussed above are the conceptual underpinnings that guide the intent of dialogic modeling. What the teacher-learners interact with, how they go about interacting, and who they interact with shape what is available for learning and ostensibly

[29] Such opportunities seem to be theoretically warranted in research on teaching (Nystrand & Gamoran, 1997). Lisa Barker, for example, argues that discussions in English Language Arts classrooms invite students to "draft" ideas for future writing (Barker, 2012).

encourages them to take that learning with them back to their own classrooms. As a way to build up readers' background knowledge on dialogic modeling before moving into the ways in which I critically analyzed how the practice unfolded in subsequent chapters, I provide a small description and episode of dialogic modeling as a means to close this chapter.

Box 1 below is a depiction of how dialogic modeling unfolds. The example is drawn

Box 1: Episode 4.2.1 - Cauvery Session 2_Modeling 1_Greetings

Many of the teacher-learners are already seated, but others are trickling in and getting settled. As they enter the room, the teacher educator welcomes them in different ways by saying, "Hello," "Please come," or "Namaste" (ನಮಸ್ತೆ). A teacher that did not participate in the first session also enters the room. The head teacher introduces her to the teacher educator, and the two have a quick conversation. The head of the lower school enters, and the teacher educator greets her and brings a chair over for her to sit. After the group has all arrived and they have settled in, the following discussion ensues:

1	TE:	I have a question to start with. Did you notice what I did when you all entered the room?
2	Lilly:	You stood up.
3	TE:	I stood up. Very good. Okay.
4	Kalpana:	You greeted us.
5	TE:	I greeted you?
6	Jyoti:	In the sense, you welcomed us.
7	TE:	Okay. What did I say to you?
8	Ameena:	Where were you? [laughing]
9	TE:	Oh, right. I asked her where she was today. And did I greet you when you came in? Do you recall, what I said to you ma'am?
10	Kavitha:	You just said hello.
11	TE:	Just hello. Okay.
12	Aadya:	You found a place for me.
13	TE:	I found a place for you. That is true, sometimes we do that.
14	Aadya:	Then I greeted you.
15	TE:	Then you greeted me. That was very nice, thank you. So, the question I have is, so you noticed it, right, is this a good thing to do, or useful thing to do, with students? Greeting them like this?
16	Teachers:	Yes, it is useful.
17	TE:	Useful. It's useful. Lilly, tell me what do you do when you greet students? Do you do it with each class?
18	Lilly:	Yes.
19	TE:	Each class. So, give me an example of how you do it.
20	Lilly:	While entering the class, the students stand up.

from the data generated for this study, and comes from the second session at the Cauvery School in Mysore, India—one of the four sites for this study. The episode begins just prior to the start of the second session of a weeklong workshop, with the teacher educator greeting the teacher-learners as they enter the room.

21 TE:	Right.
22 Lilly:	So, they wish. I also say according to what they wish.
23 TE:	You wish them. Do you wish them one by one, or wish them all?
24 Teachers:	Altogether.
25 TE:	Altogether. Does anyone wish a few students one by one?
26 Kalpana:	No. We can't.
27 TE:	No chance.
28 Teachers:	[laughing]
29 TE:	Okay. Is there a benefit to wishing them one by one?
30 Kalpana:	No, when they wish, we wish them.
31 TE:	Yes, but do you ever have a small personal conversation? Just, "how are you" and "how was your lunch"; atara idiya (ಅತರ ಇದ್ದೀಯ; *Anything like that*)? Is there any benefit to doing that?
32 Kalpana:	Of course, we can do for conversational practice and all.
33 TE:	Oh. That is one benefit: conversational practice. What other benefits? Ruchi, do you have any ideas? [pause] Okay, keep thinking.
34 Lilly:	To build up a rapport with the students.
35 TE:	Okay.
36 Jyoti:	Eye to eye contact. We can make eye to eye contact.
37 TE:	Eye to eye contact. So, building a relationship. Making a quick connection.
38 Madhavi:	For discipline, sometimes we will ask them to repeat and say it in a polite way.
39 Ruchi:	Students become mentally present in the class.
40 TE:	Ah, makes them mentally present.
41 Ruchi:	They may be physically present, but mentally absent. So, this attracts students for a particular subject. They may be disturbed in another class, so not concentrating to our particular subject. So, when the class teacher focuses on particular students, the students can concentrate.
42 TE:	So, there are few things: One is bringing concentration; two is bringing into the class the idea of politeness for students. You said also…?
43 Kalpana:	Conversation practice and building a rapport.
44 TE:	Conversation practice and building a rapport. There are many many things. Now, whether you think it can be done, or if it should always be done, or if you can do it one by one with a few students each day, I am not discussing that. Either way is fine, I think. There are benefits and problems with both, right? So, something to remember.

Greeting students has become an entrenched and routine practice for many practicing teachers in the U.S. In spite of its routine nature welcoming students can be characterized as a "principled practice." Carol Weinstein and her colleagues' research suggests that when teachers set the tone of their class by greeting students at the door, this demonstrates a commitment to building caring classrooms (Weinstein et al., 2004). Robert Marzano's research-based strategies also point out that greeting students, both in and outside of the school, can have a positive impact on their learning (Marzano et al., 2003). And a study by Allday and Pakurar (2007) measured the effects of teacher greetings on students' on-task behavior. For their study, they devised a protocol that included using the student's name to greet a focal student at the door, which was then followed by a brief, positive interaction concerned with behavioral expectations for the day. Allday and Pakurar's study found that these types of teacher greetings increased focal students' on-task behavior during the first 10 minutes of class. This research coupled with my fieldwork, over a nine-month period in India, led me to believe that greetings was a "principled practice" worthy of study and culturally appropriate in India as well. Thus, the dialogic modeling of the principled practice of greetings was an intentional choice.

In terms of the work involved in enacting dialogic modeling, at the beginning of this interaction (Lines 1-15) the group reconstructs what just happened, and highlights particular facets of the modeled practice (represented in the paragraph that precedes the dialogue in Box 1), such as my physical movements, things I said, and the practice is linguistically marked as "greetings" and "wishing." In reconstructing the practice, the teacher-learners and I engage in an un-choreographed exchange where I press the teacher-learners to name the modeled practice. As I knew by this point, sometimes launching the discussion did not go smoothly. Sometimes teacher-learners would pick out the practice very quickly, other times they did not. I learned to manage this by either embedding the practice in my line of questioning, rather than asking openly if they noticed what I just did. Or, if I felt very unsure, then I might ask a particular teacher-learner, who may have been involved in the interaction, directly. As in all of the professional learning settings, I learned quite quickly who was eager, who was passive, and who needed some chances to participate. In this case I intended to direct the teacher-learners attention by subtly asking about what I did when they entered the space. In doing so, I was trying to re-orient the

teacher-learners to what just happened. “What did I say to you?,” I ask (line 7); “Do you recall what I said to you ma’am? (line 9)” Kalpana, Jyoti, Ameena, and Kavitha all respond. Unsolicited, Aadya interjects, “ You found a place for me” (line 12). Her comment solidifies for me that the teacher-learners are sufficiently re-oriented to what just happened.

Bolstered by the responses, I direct the discussion (line 15) once again by asking: “Is this a good thing to do, or useful thing to do, with students? Greeting them like this?” In chorus, the teacher-learners respond that it is useful. Puzzled as to whether they actually believe this, and if it is evident in their practice, I directly ask Lilly what she does to greet students, and whether she does this every class. My experience with Lilly thus far is that she is one of the more articulate and invested teacher-learners. Throughout the weeks I spent at the school leading up to this point, she sought me out to observe her class, asked me several questions, and stayed after the professional learning sessions to discuss teaching further. I felt that whatever her response was, it would help move the discussion in an interesting direction, possibly put others at ease, and relieve me from dominating the discussion. She succinctly responds that she does greet students; others affirm that they do as well. Then, hoping for more, I press her for an example. Lilly replies that when she enters the class the students stand up and wish her—read as greet her—and she wishes them according to what they say. Her response provides others a concrete example of a colleagues practice, potentially making the practice seem more doable in their own practice. Intrigued by this routine, I ask if she wishes them one-by-one or altogether. In asking this, I indicate that there are options, variations, to greeting students. I am also trying to flag for the teacher-learners that this was a feature of my modeled practice. Several teacher-learners respond, “Altogether.” Then I ask if anyone wishes a few students one-by-one. Kalpana responds, “No. We can’t.” Laughing along with everyone else about the unlikelihood of greeting 40 to 50 students individually I give voice to what everyone seemed to be thinking: “No chance.”

It seems that in these two parts of the dialogue (lines 1-15 and lines 15-28), the teacher-learners were engaged in a simple form of studying practice. They do so by articulating conceptual boundaries for the modeled practice, which entailed naming the practice, marking ways in which it was enacted, and establishing a perceived limitation for greeting students one-by-one in their own practice. In effect, the group moved from being

exposed to a practice, to scrutinizing the practice, and then evaluating it. Such work is fruitful for teacher learning (Sherin, Jacobs, and Philipp, 2010; Erickson, 2006; Grossman et al., 2000). From this point, the group breaks down the practice of greeting students in terms of its benefits and limitations.

With my next question, I accept the limitation of greeting students one-by-one, but also ask the teacher-learners to consider the possible benefits of doing so. Challenging them to do this had its share of uncertainties. Would the group be able to come up with a list of benefits to a practice that they had just disavowed? Would there only be a few contributions? And possibly even fewer contributors? Would I have to manufacture the possibilities? What if the teacher-learners pushed back and said there were no benefits? Or, might they say that this practice was irrelevant for teachers in India?

With all eyes on her, Kalpana courageously—and thankfully—comments (line 32), " Of course, we can do for conversational practice and all." In a context where English is not the home language for all students, but English is the medium of instruction, providing students as many opportunities to practice speaking English, as Kalpana suggests, seems rational. Echoing each other, Lilly and Jyoti add "building up a rapport" and "making eye contact" as two other benefits. Madhavi then contributes that greeting students can be used to maintain discipline (line 38); meaning that greetings can be used to facilitate choral responses, thereby gaining students' attention. The responses were coming quite quickly, and I revoiced each in turn. In the midst of these rapid contributions, I turned to Ruchi. My interest was to bring her into the fold, since this was her first day. She did not seem ready, or perhaps able, to express her thoughts at that moment. A few moments later, however, Ruchi contributes the final plausible benefit to the growing list by saying that students may have some lingering issues or thoughts from their previous class, and that greeting them can reorient them to the present class, helping them to be "mentally present" (line 39-41). The group successfully constructs a substantial list of plausible benefits to greeting students one-by-one, even though this form of greetings initially seemed far-fetched.

The articulation of these five benefits—conversation practice, building rapport, making connections, showing respect, and facilitating focus—builds on the work done during the earlier parts of the dialogue, and provides further explication of the practice of greetings. Attending to this facet of a practice afforded teacher-learners an opportunity to

engage in the analytical work of construing aims and potential outcomes in a very concrete way; ideas that might have been overlooked if the teacher-learners only experienced the modeled practice.

Although the group had co-constructed this list, I was troubled by the ease at which the list was constructed, especially in light of their commitment that greeting students one-by-one was not possible. I was surprised that so many responses had come so quickly, and from so many different teacher-learners. Although, I am trying to make the point that greeting students in personal ways is helpful, do they believe this? Do they accept the view that there is an emotional component to even routine actions and behaviors? Should I have asked the teacher-learners about the feelings that my greeting generated in them? Were the teacher-learners able to see that there were options beyond the way I greeted them? Was this quick dialogue enough to illustrate that teaching is packed full of instructional decisions? The answers to these questions would go unanswered, as I chose to end the dialogue, but my teaching that followed would need to be responsive.

As an introduction, this episode is useful in demonstrating how dialogic modeling typically unfolded, and some of the work involved. However, it does not reveal well some of the limitations that came up in the other 28 episodes. For example, a persistent issue with the discussions in this data set has to do with access. In many of the episodes presented later in this report, only a few teacher-learners do most of the talking, and these learners were mostly those proficient in English, those that were confident in their teaching abilities, or those with whom I was able to forge strong relationships outside of the sessions. Scholars argue that these participation patterns are likely to pervade small group discussions (Barker, 2012; Lewis, 1997). Practitioners that teach in schools and in teacher education settings still contend with how to promote equitable participation in discussions, and this was something unresolvable in my own practice, and likely led to several missed opportunities.

A second issue of concern with dialogic modeling is that in some episodes the discussion resembles recitation more than it does a natural conversation. Tharp & Gallimore (1988) characterize a recitation as one in which the teacher asks most of the questions and does the majority of the talking. In spite of this, I continue to believe that

discussion-oriented teaching has the potential of engaging teacher-learners in delving into teaching practices and studying them. It fosters opportunities to develop interpretations, and to use learners' experiences with teaching to support their interpretations, and it can expose teacher-learners in the discourse of the profession. Discussions, such as these, of course are built from the experiences and knowledge base that teacher educators and teacher-learners possess and are able to call upon in the moment. Discussions that are conducive to participation can help open up the space to make teacher-learners more active in co-constructing their expertise. Often this was the case, but just as often it was not.

In general, across the episodes, the teacher-learners and I both exposed and experienced a particular practice. I also closed the episode with summative comments. The teacher-learners, by responding to prompts I provided, carried the burden of the work in-between. They articulated what they remembered about the modeled practice, they explained their views about it, and they evaluated the practice in their own terms. Experiencing the modeled practice and then discussing it gave teacher-learners the opportunity to engage in the important work of studying practice, thereby creating a space to subtly question existing assumptions.

From Narrating to Analyzing

Conceivably, dialogic modeling might consist of a practice being intentionally drawn out from the ongoing instructional efforts of the teacher educator, and unfolding through a dialogue in a step-wise fashion. Positing this image might be apt, but even so it would be limited. An analysis that stopped at this juncture would rely on replaying what the teacher educator did, rather than on any systematic interrogation of the effort. Such a treatment would be, and has been valuable in, extended discussions of whole lessons, or teaching over the course of a year. However, to explicate an isolated practice in a similar way did not seem sufficient. Such a brief would not be an in-depth treatment, and wouldn't have the empirical base I sought. Although, this narration and the associated problems addressed here provide a skeletal frame for dialogic modeling, it is difficult to discern the depth of the analytical work going on in these phases that might constitute its explicit nature. Moreover, to stay at this level would not serve the purposes of this study well, nor would it fit the character.

In contrast, the intention of this study is to deeply dig beneath the surface of this teacher education practice, in order to better understand its explicit nature, and perhaps something more about the nature of conventional modeling. Moreover, I wanted to understand better what it is, and what is involved in doing it to encourage more discourse around what it takes to do these kinds of practices. And, in order to understand what it was, I needed to do it and study it from multiple angles. Therefore, subsequent chapters flesh out and challenge this sketch by unpacking what the teacher-learners and the teacher educator do that enables them to move from a sensory experience of a practice to an experience bolstered by noticing, decomposing, and reasoning about the instructional practice.

In closing this chapter, I return to the previous discussion about explicit modeling practices. Dialogic modeling, as I describe it above, shares many features with other explicit modeling practices. All of these efforts attempt to direct learners' attention to the teacher educator's modeling. And this attention is sometimes drawn through discussions; some of which are more directed than others. Yet, while there are similarities across the practices there are important differences between those explicit modeling practices and this one. First, what can be drawn from dialogic modeling is due in large part from the learners. Other efforts are less clear on how learners inform the instruction and to what extent the knowledge is publicly co-constructed. Second, dialogic modeling uses time differently than the other examples provided in this chapter and doesn't rely on partnerships. Loughran and Wood, for example, discuss what is being modeled in "real-time," or as close as possible to when it happens. In dialogic modeling, there is space between the modeling and the discussion. In choosing to give this gap, the modeled practice stood separate from the dialogue, arguably setting it up as a representation of practice. And third, there is an intended curriculum for dialogic modeling that draws upon a set of evidenced-based principled practices and from observations of the teacher-learners' classroom teaching. In particular, associations with practice-based teacher education, high-leverage practices, and my ethnographic fieldwork, as well as this study itself, informed what dialogic modeling took up.

Chapter 3:
Methodology of Data Construction and Methods of Analysis

Introduction

This chapter provides a narrative of how this study unfolded from a nested idea four years ago to a study of teacher education practice, and on into this research report. Narrating this study's incubation is important in helping readers come to know about the final research methods and interpretations more fully. In what follows, I discuss a bit of background, my personal and professional interest in this topic, describe the research design for the study, the methodology for constructing data, and my methods of analysis, all of which led me to the assertions that I explicate in the chapters that follow.

Background

The empirical content of this study draws from first-person research and includes data collected from field observations, video recordings, stimulated recall interviews, and teacher educator journals. For this study, I worked as a teacher educator in three government higher primary schools (standards 1-8) and one private school in Mysore, India. Based on a view of teacher education that focuses on the centrality of practice (advanced earlier in the dissertation), I designed and developed professional learning programs with faculty colleagues in India. These programs endeavored to support teachers to learn more about their practice by learning how to use certain tools to facilitate their own reflection. During weeklong school-based after-school programs (an underexplored medium in most government sectors), teachers were introduced to how to conduct peer observations, maintain incident specific journals, and how to use video of their peers' teaching to facilitate a collaborative conversation about practice. I posited that collaboration and practice could serve as anchors for professional learning, and that video technology could facilitate the learning activities. My goal was to learn about the work of teaching teachers in India, and what are the main obstacles to teachers' learning from teacher education, as well as what are some affordances of a deliberately designed professional learning setting. All of this sits outside of the purposes of the study discussed in this dissertation, but it undoubtedly informs it.

Because I wanted to learn more about the way that teachers in India think and learn

about teaching, and because I wanted to think deeply about teacher education practice more broadly, I pursued a project that would allow me to focus on a single practice. In Chapter 1, I discussed my interest in exploring the phenomenon of explicit modeling as it operates in teacher education. In particular, the study is concerned with modeling that aims to explicitly make teaching practices visible, learnable, and is constituted by doing the practice in particularly demonstrative ways. The study inquires into both what is involved in doing the modeling and how teacher-learners take it up, and how their uptake and learning shape the effort to model. During the teacher education workshops dialogic modeling was enacted 29 times.

Why I Studied Explicit Modeling

Personal and Professional Interest

As a practicing teacher that has undergone teacher education in four different countries, it has been tempting to read the shortcomings of such professional development as the fault of the particular trainers and educators. But as I have listened to conversations among teacher educators and been "inducted" into the work of teacher education, I have come to realize that teacher educators work off their experience, and often they work with little or no guidance. Of course, there are multiple ways that teacher educators share ideas about their practice. Collaborative groups, professional journals, and conferences create environments where teacher educators can delve into the repertoire of others. But like teaching, such conversations begin with a teacher educator sharing what they do in their class, their college, or as part of their NGO. This beginning is followed by generic comments; usually "That seems interesting" or "That's not realistic," or in cross-national discussions "That wouldn't work for [insert nationality] teachers." As a result, what gets done in teacher education is often "homegrown."

During my time as a teacher educator, one such "homegrown" practice piqued my interest because of its peculiarity. There were occasions when I was observing teacher educators teaching learners about a topic and the conversation was flowing back and forth. All of a sudden the conversation stopped. Then the instructor made some ritualistic hand gesture, like a sports official signaling a time-out or like they were pushing the rewind button on a VHS player. A moment passed, and the silence that often accompanies

pantomime was soon broken by a pointed question: "What did I just do?," the instructor would ask.

What followed was a conversation about what the instructor had just done either physically, vocally, or instructionally. I inferred that the instructor was trying to focus the learners' attention on something in her instruction that they might not have picked up on. Sometimes questions were asked, and sometimes there was a mini-lecture. The "time-out" ended when some point had been made, and the teacher education resumed.

Initially, I took this instructional move to be nothing more than just something that one or two teacher educators did. But I kept seeing this happening in various shapes and forms. It didn't matter if it was a literacy course, or a math methods course, or a professional development exercise in a local school district, in the U.S. or in India. It happened when teacher educators were in the midst of deep dialogues about children's misconceptions and it happened when teacher educators were writing on the board. Teacher educators were calling a time-out and pressing rewind irrespective of the grain-size of their instruction. It seemed to have some import. Learners' eyes would brighten, heads would cock as if looking through a gap between two panels of wood, and there were nods of agreement.

So, like any novice teacher educator might do, I adopted this move into my own practice. I worked off the images of what I had seen, and what I gleaned from short conversations with colleagues. The move seemed to entail a teacher educator authentically acting out a practice. Then they paused, signaled a break with an obvious gesture, and called attention to what they just acted out. This was followed by a brief discussion. In my own practice, the move had currency. In particular, while in India during the summer before my dissertation research, I found that teachers appreciated the highlighting of particular aspects of my work with them, and they valued what they took as my willingness to open myself up for critique. I also found that when I didn't do this move, I felt I had shortchanged the teachers. This left me curious.

Emerging Questions

What was it about this move that elicited this sense of learning from everyone involved? Why was it perceived to be effectual? Was it effectual? These questions were swimming around in my head, when I returned from India. Once back in the U.S., I was

confronted again with more teacher educators doing this move. This time no time-out signal or VHS button. This time on two separate occasions teacher educators interrupted their teaching by literally stepping to the side to highlight what they just did, as if to signal an alternative identity able to analyze a parallel self. These encounters raised the question of whether this move might be "a practice," albeit an undefined and unspecified one.

Conversations with these teacher educators introduced me to their instructional goal of explicitness. For them, this side-step was a way to call attention to their own techniques and strategies. For them, the people they were modeling for were not attending to what they wanted them to attend to in their modeling effort. To mediate this, these teacher educators had devised a way to make their modeling unambiguous by being *explicit*. Again, it seemed effective, but our conversations revealed their uncertainty. I was seeing and experiencing a "homegrown" teacher education practice that many were doing, but no one knew anything about; me least of all. More questions bubbled up.

How does *explicit* modeling help teachers to see teaching, if at all? Does the knowledge and scrutiny of practices give them a window into teaching that they didn't have before? Why did teacher-learners need their teachers to draw their attention to what they were modeling? And, might something be learned about teacher education more broadly, if I studied this single teacher education practice? This final question led me to generate the research design detailed below and the study reported on in these chapters.

Research Design

The Phenomenon of Interest

In the explicit modeling practice under investigation, a teacher educator models a practice, and then facilitates a discussion about the modeled practice with teacher-learners in a professional development setting.

Methodological Approach: First-Person Research

To study this phenomenon in generative ways required two conditions: a proximity to practice and cases to examine. As discussed in chapters 1 and 2, the phenomenon of interest was one that did not exist in a form that fit with my assumptions about practice-based teacher education. Thus, the study required cases to be generated. The required proximity seemed likely to best evolve through a qualitative research tradition, but I

wondered if what I wanted to know would be accessible from an outside research position. I believe that research methods influence what can be seen and what can be imagined for the improvement of teacher education. Therefore, to effectively imagine and see this practice I gravitated towards first-person research methods.

As discussed in chapter 1, first-person research is the deliberate use of the position of the educator to ground questions, structure analysis, and represent interpretations that can build research-based understandings for the field out of one's own practice (Ball, 2000). First-person research, though, does not come without hazards. In her explication of the research approach, Ball flags three special questions of which to be mindful when conducting this type of work. First, "Does the researcher think he or she is particularly well-equipped to be designer, developer, and enactor of the practice, or would an experienced practitioner be a more reliable partner in the construction?" (Ball, 2000, p. 391) Second, "How can the researcher gain alternative perspectives and interpretations of his own and others actions and thoughts in the session, while also seeking to use the intimate and personal as resources?" (Ball, 2000, p.393) And third, "Is the question at hand one in which other scholars have an interest, or should have an interest, and if so, will probing the inside of a particular design offer perspectives crucial to a larger discourse?" (Ball, 2000, p. 391)

In considering Ball's first question, the kind of teacher education that I imagined was not ubiquitous, and when encountered it was serendipitous. To inquire into explicit modeling, I needed to see it. When asked, experienced practitioners described their use of the practice in ways that lacked conceptualization and intent. Examining another's instruction would require coaching, which would encumber my research interest. Moreover, such a study in teacher education required strong relationships with teachers, schools, and—given my interest in government sector schools in India—with block, district, and state level officials. This type of familiarity and access is unique. And were it not for the U.S. State Department Fulbright grant, I myself may not have been able to build the required institutional and personal relationships that allowed me to design, develop, and enact professional learning settings where I could create opportunities to animate this phenomenon.

My epistemological beliefs in how knowledge is constructed and evaluated are also

important in considering Ball's first caution. Even though this work explores a particular practice of teacher education, my stance is that instruction is informed by both educator and learners. As such, who the learners are and a shared belief in their abilities were requisite. Teachers are often caricatured in India as lazy, inhumane, and irrelevant. To examine another teacher educator's work with them would introduce a relational dynamic that might pull my attention as a researcher in another direction. A study of this teacher education practice required a different stance from the teacher educator. If I, as the teacher educator, conjectured that government school teachers in India were invested in their own work, cared about the students they worked with, and were eager for authentic learning opportunities for themselves, then I felt that this stance might help to maintain a focus on the opportunities and challenges of this practice, and not prompt me to be caught up in an unproductive narrative of Indian teacher limitations. Also, if I were wrong about their characteristics and yet I wanted to use the personal and intimate as resources, then I needed to be sure that the derived data was managed in a way that protected the safety and welfare of the teachers. Care must be taken to respect the intimate and personal details that can emerge from any research on education. The profession of teaching in India, though, is in a vulnerable position, and teachers a very vulnerable population. Thus, my choice of research approach was not just theoretical, but pragmatic and ethical as well.

With so much bound up in the psychologizing of my position in this study, my stance could be a cause for concern, as it does with many first-person research studies. To mediate this terrain, Ball's second question urges first-person researchers, as it did for me, to thoughtfully create distance between the practitioner-self and the researcher-self. Ball points to Ruth Heaton's work (1994), where Heaton used the methodological device of "multiple Ruths." Heaton invented a Ruth 1, a Ruth 2, and a Ruth 3 to help her separate her vantage point at different time points. Ruth 1 is Ruth as the teacher; Ruth 2: Ruth as the teacher reflecting on Ruth 1's efforts; and Ruth 3: the third "self," three years removed from the teaching and reflecting, looking back with conceptual distance.

In my own work, I created this necessary conceptual distance in a slightly different way. As the teacher educator, I kept my own journal of the instructional experience taking up the challenges and struggles of teaching teachers in India. This reflexive work inevitably focused on my failings and missed opportunities as the instructor. As a research informant,

I kept a separate journal to collect data on the explicit modeling practice. This journal had a specific protocol of questions that I responded to immediately after each session. And as an analyst I have kept a third journal. The intent of maintaining these three sites to collect my thoughts was to have a deliberate way to keep distinct my thoughts as a teacher educator, research informant, and research analyst. These ways of framing my roles helped condition me to seeing the work that I had done as if it were the work of another. Developing this tri-partite way to create intellectual space for myself and from myself was necessary for me to understand the phenomenon on multiple levels. Also, during analysis I adopted the convention of referring to my work as a teacher educator in the third person. In the data construction section below, I detail these efforts further.

Ball's third caution is one of warrants and claims: What can be warranted from the study of a single teacher educator's practice? First-person research, it should be noted, is a genre of qualitative case studies. Case studies have achieved routine status as a viable method in doing educational research (Yin, 2009). The viability of case based methods though are based on two conditions. First, are the research questions trying to address descriptive or explanatory issues, or are they concerned with causality? Second, is the researcher interested in illuminating a particular situation through a close understanding of it? This study does not pursue causality or effectiveness, rather it is concerned with how a particular practice unfolds and operates. Furthermore, this study purports to be situated in authentic learning situations and aims to produce firsthand understandings of the work involved in explicit modeling and illuminating facets of teacher education in India. By that token, a main objective of this research is to strive to contribute to teacher educators' practice.

While a focus on a particular practice may seem narrow, such an inquiry more than anything is concrete. It is through this lens of the concrete that first-person research can help create meaning. Frederick Erickson describes the kind of research on the concrete that can surface relevancy for a larger audience

> Mainstream positivist research on teaching searches for general characteristics of the analytically generalized effective teacher. From an interpretive point of view, however, effective teaching is seen not as a set of generalized attributes of a teacher or of students. Rather, effective

> teaching is seen as occurring in the particular and concrete circumstances of the practice of a specific teacher with a specific set of students "this year," "this day," and " this moment.".. The search is not for *abstract universals* arrived at by statistical generalizations from a sample to a population, but for *concrete universals*, arrived at by studying a specific case in great detail and then comparing it with other cases studied in equally great detail....The task of the analyst is to uncover the different layers of universality and particularity that are confronted in the specific case at hand--what is broadly universal, what generalizes to other similar situations, what is unique to the given instance. This can only be done, interpretive researchers maintain, by attending to the details of the concrete case at hand. Thus the primary concern of the interpretive research is particularizability, rather than generalizability. (Erickson, 1986, p.30)

Studying a teacher educator's efforts anchored in authentic practice creates a valuable opportunity for researchers to arrive and readers to derive "universals" that can be applied and appropriated to their own educational efforts. The requisite though is a convincing argument arrived at by confronting concrete circumstances of practice, and an interpretive perspective that values the particular. If these two conditions exist, then there is viable power in what Erickson refers to as "concrete universals." This study was carried out with this perspective in mind. There is no effort to claim probabilistic generalization, however the study raises theoretical generalizations. In particular, a voice from Indian teacher education, it seemed, could contribute a crucial perspective necessary to comprehending larger discourses of teacher education.

Research Questions and Rationale

The focus and goal of this study is to understand the work of the *explicit* modeling practice, how it operates, what are its determinants and mechanisms, and what learning opportunities and problems emerge as a result of deploying it. To examine the work that is involved in the explicit modeling practice and to build an understanding of what teacher-learners make of it, two questions that guide this research are:

RQ 1: What is the work involved in enacting explicit modeling of teaching practices?

RQ 2: What kinds of opportunities to learn might dialogic modeling present for teacher-learners?

Key Construct – RQ 1

A key latent construct that I am using to investigate the first research question is: "work." Deborah Ball and Francesca Forzani's explication of their meaning of "work" in relation to teaching is helpful to consider here:

> By "work of teaching," we mean the core tasks that teachers must execute to help pupils learn. These include activities carried on both inside and beyond the classroom, such as leading a discussion of solutions to a mathematics problem, probing students' answers, reviewing material for a science test, listening to and assessing students' oral reading, explaining an interpretation of a poem, talking with parents, evaluating students' papers, planning, and creating and maintaining an orderly and supportive environment for learning. The work of teaching includes broad cultural competence and relational sensitivity, communication skills, and the combination of rigor and imagination fundamental to effective practice. (Ball & Forzani, 2009, p. 497)

Ball and Forzani's definition sets parameters for the practice of teaching, which is much broader in scope than this inquiry. However, their explanation illustrates the dimensions of what "work" can entail in a study of a teacher education practice. I tend to think of "work" as what is involved in doing the explicit modeling and how teacher-learners take it up, and how their uptake and learning shape the effort to model. Thus, a large part of this investigation is into the core activities involved in the doing of the practice, such as its core tasks, and also the structures that are built out through the combined efforts of the educator and the learners. Additionally, by "work" I mean both the aims (to make practice visible and learnable) and constituents (doing the practice in particularly demonstrative ways) of the practice. These two dimensions provide a window into how I am using this term, and what I hope to learn by investigating it.

Such a view situates learning as a process and not a product; thus bounding this inquiry to tell us about learning, and not what was learned. Although this study cannot answer questions about the distal outcomes of dialogic modeling, the analyses and interpretations raise further questions and some details that can contribute to such a discussion and to how a study could be designed to take this up. I return to this in my concluding thoughts in chapter 7.

Key Constructs – RQ 2

Two key analytic choices reside in the constructs for the second research question: "opportunities to learn" and "teacher-learners." Theorists have provided a helpful way to consider what it means to provide an "opportunity to learn." Conventional notions of "opportunities to learn" take the term to mean access to content, access to resources, and access to instructional processes. While these issues still plague school systems, Pamela Moss and her colleagues have leveraged dialogue across research discourses to argue that "opportunities to learn" can be regarded in terms of the interactions among learners and elements of their learning environments (Moss et al., 2008). Their definition:

> Opportunities to learn are affordances for participation, which are relations between characteristics of activity systems and characteristics of participants. Whether or not students can or do take up these opportunities and whether they might or might not do so is an important aspect of the learning that actually occurs and should be considered in any theory of learning (Moss et al., p. 191).

As Moss and her colleagues argue the notion of "opportunities to learn" is about what is provided and what is made available. These opportunities come by way of careful alignment between the system, i.e., the practice and the participants; the teacher educator and the teacher-learners. The definition provided above presents a conceptualization that presses me to consider in what ways and to what extent the structure of the practice is implicated in the opportunities it provides.

Also, important in my conceptualization of the second research question is that teachers are learners when they participate in teacher education. I see their teacher education context as different from their teaching context, and I assume that their thinking processes are different as a result.[30] Moving from the role of a teacher of a subject to the

[30] Considerable research has taken up teachers thought processes during teaching. An important staple of research on teachers' thinking has been the study and understanding of teachers' decision-making processes. A robust body of literature that emerged from the research and argumentation has been organized in published works such as Shulman and Elstein, 1975, and reviews of literature from Clark and Peterson, 1986, and Shavelson and Stern, 1981. The attention to this important construct justifiably engaged many researchers in recent decades. In doing so, it is arguable that attention was diverted from the study of teacher learning in the context where much time and money are spent: professional development. For the most part the studies explored the thought processes during teaching. Examples of research that explored how teachers make sense of their educational opportunities include Borko & Putnam, 1996; Feiman-Nemser, 2001; Grossman, Smagorinsky, & Valencia, 1999. However, these seem to be exceptional cases.

role of a learner of teaching involves a considerable change in bearings. The shift in mindset that is often required is one from teachers/instructors/facilitators of children's learning to that of a learner focused on their own learning processes, needs, and aims. It is reasonable to expect teachers oscillate between the roles of learner and teacher during teacher education events. Thus, I rely on the term teacher-learners to reflect their dual role as learners that must think in particular ways and do particular things in the teacher education setting, and teachers that worry about connections between the teacher education setting and the classroom. And how the practice unfolds hinges on these individuals that are neither teacher nor learner, but both.

Sources of Information

The study of this phenomenon was set in four 1-week professional learning workshops with teachers at three government higher primary schools (grades 1-8) and one private school in Mysore, India. During these workshops the focus of this study—an explicit modeling practice intended to direct attention to teaching practices—was enacted 29 times. Preceding each workshop, field observations at the respective school were conducted. The study and its framing workshops were also preceded by six months of observations and two week-long pilot workshops carried out with different schools also in Mysore.

Context

The Professional Learning Settings

As background for the systematic investigation of how I employed dialogic modeling, I first describe the design of the professional learning settings I conducted and how dialogic modeling factored into them. The design is based on an interest in transacting India's recent teacher education reform agenda: The National Curriculum Framework for Teacher Education (NCFTE, 2009). The central agenda outlined in this framework is to support teachers to learn to be reflective practitioners. Reflection, as argued in the framework, should focus on teachers' practices and should "explain the reason why" of how things are done. In doing so, the authors of the framework posit that reflection can support teachers to build capacities and abilities to enhance decision-making and come to know

more fully basic theories and principles behind classroom practices (NCFTE, 2009).[31] From this point of departure, the aim and intention of the trainings I designed was to support teachers in learning how to use specific tools for individual and collaborative reflection.

The design was also informed by several assumptions primed by research on professional education. In-service teacher education in particular is productive when it consists of: content focus, active learning, coherence, longer duration, and collective participation (Penuel et al., 2007; Hawley & Valli, 1999; Kennedy, 1998; Wilson & Berne, 1999). Teacher education should be transparently "reform oriented" versus "traditional," or additive (Loucks-Horsley et al., 1998; Putnam & Borko, 2000). Also, it is instrumental if the teacher education fosters the perception that the teacher education activities cohere with teachers' goals and national goals for student learning (Penuel et al., 2007; Garet et al., 2001; Spillane & Jennings, 1997). It must also rely heavily on active engagement through representations, decompositions, and approximations (Darling-Hammond & McLaughlin, 1995; Brown & Wiggins, 2004; Grossman et al., 2009). And it requires structuring learning opportunities so that teacher-learners can encounter, experiment with, and evaluate the work of teaching (Little, 1982; Ronfeldt & Grossman, 2008). Teacher education needs also to value social and cultural appropriateness so that teachers will have opportunities to learn alongside colleagues from their school, or locale (Garet et al., 2001; Desimone, 2002). The work and role of the teacher educator is also central. It is necessary that the teacher educator manufacture ways for the teacher-learners to see them as a practitioner of

[31] The ideas presented here are drawn from the following excerpts:

> Pedagogical knowledge has to constantly undergo adaptation to meet the needs of diverse contexts through critical reflection by the teacher on his/her practices. Teacher education needs to build capacities in the teacher to construct knowledge, to deal with different contexts and to develop the abilities to discern and judge in moments of uncertainty and fluidity, characteristic of teaching-learning environments. (NCFTE, 2010, p.19-20)

> Teacher education, it may be seen, is a reflective undertaking that also issues forth in pedagogical prescriptions for carrying out teaching at the ground level. Being a meta-activity, it deals in showing how things are done at school and classroom levels, explaining the 'reason why' of things and the basic theory and principles behind classroom practices. (NCFTE, 2010, p.15)

effective teaching. Furthermore, without deliberate efforts teacher-learners may not see the work of the teacher educator as inextricably related to their work as teachers (Ronfeldt & Grossman, 2008).

The challenge was to incorporate all of these principles into the desired teacher education programs. I reasoned that learning to reflect on practices would require engaging teacher-learners in active practice with certain tools that might facilitate reflection, and calibrated teacher educator practices that portrayed reflection. Teachers were introduced to video analysis, peer observation, journaling, and collaborative conversations and had opportunities to practice using these tools throughout the duration of the workshops. The tools were intended to be vehicles to provide teacher-learners time and space to focus on particular practices and to provide them opportunities to connect these practices to theories and principles. My decision was guided by research that purports that classroom video, case studies, rehearsals, and critical conversations over student work could help expose the complexity of teaching to teacher-learners (van Es and Sherin, 2002; Grossmann et al., 2009; Lampert et al., 2013). And that tools such as these can support teachers in developing their ''ways of seeing, hearing, and noticing the many details of classrooms'' (Ball & Cohen, 1999), so that they can adjust their teaching accordingly when they are in the midst of the classroom. Such an outlook elevates professional inquiry towards problems of practice, and situates the study of teaching in deliberate and careful scrutiny of artifacts and materials of practice (Ball & Forzani, 2009; Grossman, 2011; Grossman et al., 2009; McDonald & Kazemi, 2013). Moreover, it views teacher education as a space to delve into the complexity of teaching and to provide opportunities to develop flexible skills, knowledge, and awareness (Lampert et al., 2013). An important ingredient in this view is that teachers are "adaptive experts," who continually restructure core ideas and beliefs, and expand and extend their competencies to fit with these new positions (Bransford et al., 2005; Hatano & Inagaki, 1986). The design was grounded in the conceptual premise that learning teaching could be anchored by a set of high-leverage practices (Sleep, Boerst, Ball, 2007), and to learn about such teaching requires an intellectual enterprise. It requires deliberate teacher educator practices that provide opportunities to study teaching through the *decomposition* of high-leverage practices and from *representations* of practice (Grossman et al., 2009; Grossman, 2011).

With these principles in mind, I developed and designed the curriculum for the in-service trainings in collaboration with teacher educators from the Mysore District Institute for Education and Training and the Mysore Regional Institute for Education. Through bi-weekly meetings over many months with faculty members from these institutions, I prepared to enact a program of teacher education of the kind that I describe here.[32] Furthermore, pilot-trainings helped me design a skeleton frame for the trainings. The product was a designed professional learning setting titled as *"Noticing the Little Things": Developing Reflective Practices for Professional Teaching*, with the objective of supporting teachers to learn about particular ways to reflect on their practice and the practices of others as a means to improve opportunities for student learning.

My systematic analysis of these teacher education programs begins with modeling. I chose to do so because I anticipated that conceptualizing and studying a modeling practice that aligns more fully with the principles sketched above would require sustained thought, inquiry, and guidance; luxuries of the dissertation process. Furthermore, to "do" modeling in a form that approximated other practice-based teacher educator practices seemed promising.

Sites

I was fortunate to win the support of the U.S. State Department Fulbright Grant, which enabled me to foster relationships with headmasters and teachers working at government schools in Mysore. With their support, I received permission from state and local authorities to work with three Government Higher Primary Schools (GHPS). During the second week of the study, a fourth school approached me to conduct the training with their teachers. After discussions with administrators and liaisons, this school—a private unaided higher primary school—was added to the study. The table below illustrates the four schools where this training took place and the number of teachers that work at each school.

[32] More details on these interactions and the development of the professional learning settings are in Chapter 3.

School Name	No. of Teachers
1. GHPS Medar's Block	8
2. GHPS Kumbarakoppallu	30
3. GHPS Metagalli	12
4. Cauvery School	8

Table 1: School sites and number of teacher-learner participants

Selection Procedures

It may be helpful to offer a sense of the school landscape in Mysore, which will frame my comments on site selection that follow. To do so, I offer a brief on the historical presence of educational institutions in Mysore. Then, I draw a comparison to a U.S. city to help provide a reference point for the necessary negotiations and compromises I made by selecting these four sites.

First, Mysore has a long history of formal education institutions. Prior to the colonial era, children attended vedic institutions and madrassas for their education. In the middle of the 19th century the East India Company began to organize western models of education in Mysore at what could be considered the kindergarten through secondary school levels. Higher education in Mysore received much attention and financial support during the colonial era with the organization of Maharajas College, Maharanis College for Women, various technical institutes, Medical Colleges, and the University of Mysore. Today, several national institutes have been set up in Mysore, such as the Central Food Technological Research Institute, the Central Institute of Indian Languages, the Defense Food Research Laboratory, and the All India Institute of Speech and Hearing. Living amidst multiple academic institutions suggests a community that operates in a culture of institutionalized education. Many communities in India share a reverence for education and schooling, but the presence of so many institutions in a mid-sized town is rare. I mention this because the interpretations of this study are local understandings, and the institutional landscape is very much a part of this context.

As with most things in India, the sheer numbers of the population dictate the availability of public goods. But there is also a density that impresses itself upon educational efforts. Drawing a comparison to a geographically comparable U.S. city may help illustrate what this means.

	Mysore	San Francisco
Sq. Mi.	50	47
Population	887,446	812,826
Enrollment	201,594	56,310
Schools	938	160

Table 2: Numerical Comparison between Mysore and San Francisco

San Francisco, comparable in size and in population to Mysore, has a significantly lower school-going population and a fraction of the number of government-funded schools.

As the table above indicates, in Mysore there are 938 government schools. From these 938, I selected four schools to conduct this study with. Selecting where to study dialogic modeling entailed a process. Over the last eight years I have worked to create and foster relationships with government officials, district level teacher educators, as well as regional authorities in southern India. Conducting this research, as a foreigner, required long-term relationships and a level of trust. Many government schools have been the subject of media ridicule and political condemnation. Much of the criticisms have come from informants that have masqueraded as researchers and then used their position as an insider to divulge the personal and the intimate. This network of colleagues and peers helped me create a thoughtful approach to finding schools that would be willing and interested to work with me.

My first step was to visit several schools that I had some familiarity with and just observe. Doing so helped me enhance my relationships with teachers and administrators, and gave me insight into the current teaching and learning activities at these schools, and to assess teachers' willingness to participate in professional learning opportunities. At the same time, I was able to attend a three-day workshop at the Regional Institute of Education for headmasters across Mysore. At this workshop, I was able to discuss with them a pilot training I conducted with a private school and an aided school in Mysore (discussed below). I asked the headmasters to consider if they wanted me to conduct similar school-based trainings with their teachers. Four headmasters approached me at the end of the meeting. I went and visited these four headmasters at their schools in the weeks that followed. Three schools came within the central city of Mysore and one was in a remote

part of the district. After these site visits and conversations with the teachers it became evident that two of the schools would be plausible sites for the study. They were plausible because the headmaster was willing to give me access, the teachers seemed interested, and all parties agreed that they would commit their time and physical resources to these workshops. For the next five weeks I continued to visit other schools, observe teachers' efforts, and ask if they might be interested in a school-based training. Few said they were interested, and none formally agreed. I then began to push my networks for suggestions and connections. It was suggested that I may want to consider working with schools that drew from different populations in Mysore, and were different sizes. Several suggestions were initially made, but a few schools repeatedly came up in these discussions; some of which were categorized as rural schools, which were not represented in my possible schools list. I reached out to these schools, and one agreed.

I now had three possible schools to work with. Through my colleagues at the District Institute of Educational Training and the Regional Institute of Education, I called a meeting of the three headmasters and the head teachers from each of the schools. Six individuals joined me for a half-day discussion on what I was proposing to do. I briefed them on the logistics and the technology I would be using. I noted that there would be no cost to them, and that their participation was all that was required. We also discussed the research that would be a part of these trainings. I commented that the research would require teachers to stay after the workshops to participate in interviews. Also, the teachers would need to consent to being video recorded during the sessions as part of the research.

More than just presenting to them what I had done and what I wanted to do, my aim for this meeting was to create an honest dialogue about the possibilities for the training, and to seek their guidance on what would be helpful for them, and what might be plausible with their teachers. They contributed some ideas about language and terminology and suggested a timetable for my observations and video recording procedures. I also asked if I could come and meet with all the teachers at the schools on a specific day preceding my formal time to visit and work with the teachers. My interest was to introduce myself, brief the teachers on what to expect, seek their input up front, and ask for their time commitment.

At these meetings with the teachers at each school, I outlined the research agenda as

well as the training schedule. I highlighted that after every session I would need two volunteers to stay a bit after the session ended to be interviewed by a research assistant about my teaching. I also asked if anyone had reservations about being video recorded during the sessions, and offered them the opportunity to opt out of the trainings if they were uncomfortable, or communicate with their headmaster if they did not want to be video recorded. It is my understanding from the headmasters involved that no requests of this nature were made.

In India there is no parallel structure to U.S. Institutional Review Boards. However, this research was still subject to IRB approval and was deemed exempt by the University of Michigan. I discussed the possibility of providing informed consent forms to the teachers with local teacher educators, my colleagues at the Regional Institute for Education, and the headmasters at the schools. I crafted such a form and had it translated into Kannada. They all felt that these were not required, and they cautioned me that introducing these forms might actually cause undue stress for the teachers. Based on their judgment, it seemed that consent forms would be culturally inappropriate, and therefore I did not ask teachers to sign such forms. In lieu of this, the public conversation that preceded the trainings served as the space to air any concerns with the procedures, their role in the research, and the public distribution of any research reports that would be generated.

At this point these three sites solidified in my mind as sound spaces to conduct this research. However, the headmasters', teachers', and my own interest was not enough to ensure that these trainings would come off. As government institutions, access to these schools was contingent on the Block Education Office permission. This required several letters and permissions, and more hours sitting in the two governing education offices than I care to remember waiting for official signatures. My longest day was 11 hours waiting outside the office of the Block Education Officer. Once I had these signed letters, then I had to take them to the Deputy Director of Public Instructor for another signature, and then back to the headmasters for their final approval. Once this had been given, then I was permitted to conduct the trainings with the three Government Higher Primary Schools (GHPS).

Medar's Block GHPS

Medar's Block is a small eight-room two-level school situated in what is commonly referred to as the "sweepers' colony" within the central city of Mysore. The label refers to the general occupation of most of the people that live near the school—most adults in the community are domestic servants or work as cleaners for the city, or don't work at all. The students that come to this school are generally first-generation learners; learners that have no history of school attendance in their family. As such, the families have little familiarity with formal education.

Three hundred students attend the school, and seven teachers and one headmaster make up the instructional and administrative team. It is a Kannada medium school, meaning all lessons are taught in the local language, and runs classes from first through sixth standard (grade). Each standard has one class composed of a distributed amount of boys and girls. Each teacher teaches one subject—Math, Science, Social Studies, PE, and Kannada—for each standard. Most of the teachers have been at the school for more than ten years, all have degrees in education—either a Bachelors in Education (B.Ed.) or a Diploma in Education (D.Ed.).

In the weeks that I spent at the school, all of the teachers came early and stayed late. Few were absent, and all attended my training workshops unless otherwise deputed for district business. These teachers supported the children with their family problems, their emotional challenges, and endeavored to teach them their subjects. Enrollment continues to drop at this school; a consequence of the upsurge of English-medium private schools targeting families plagued by poverty and the Right to Education Act (2009), which compels all private schools to provide 30 percent of their seats to those that cannot afford private education for free.

Importantly, the school receives support from the local administrator (corporation officer) in terms of materials and finances for activities. The school also has a library, which houses four up-to-date computer systems, reference books, and books for borrowing. This is a rare asset, which I found in only one other school in the 50 plus that I visited in Mysore. The benches, tables, chairs, and all materials in this room had been donated by local institutions, generous families from around Mysore, and through the efforts of the

corporation officer. This room served as the venue for the training.

Metagalli GHPS

Metagalli is a mid-sized school that sits in what used to be an industrial area on the outskirts of the city of Mysore. The school is classified as a rural school and comes under the jurisdiction of the Mysore Rural Block Education Office. Many of the students that attend this school are also first-generation learners, and many seemed to be a part of single parent families, lived with their grandparents, or lived in straw huts. Also, there were a small percentage of children who had been living on the streets and were brought in by members of the local community. Enrollment at this school has also been on the decline in the last few years, for many of the same reasons noted above. The teachers do make efforts to increase enrollment, however. During the weeks that I spent at the school, teachers took part in a "jatha," where teachers and students paraded in the local community around the school to distribute information on the Right to Education and raise awareness about the benefits of attending school to families and children that weren't enrolled.

Seventeen teachers work with the 615 students who attend Metagalli GHPS. As with Medar's Block, Metagalli too is a Kannada medium school and runs classes from first through sixth standard. Each standard has two classes composed of a comparable amount of boys and girls. Two different teachers teach each subject—Math, Science, Social Studies, and Kannada. Three different teachers teach English, PE, and Music. The lower standards (1-3) follow the Nalli Kalli (loosely translated as "Everyone Learns") system, where the classroom teacher teaches all subjects in a "student-oriented" way with centers. Most of the teachers have been at the school for more than ten years, a few were new, and all have degrees in education—either a Bachelors in Education (B.Ed.) or a Diploma in Education (D.Ed.). At the time of this research there were five male teachers and twelve female teachers ranging in age from 32 to 56. In the weeks that I spent at the school, all of the teachers came early and stayed late. Few were absent from their teaching, and all attended my training workshops unless otherwise deputed for district business.

It was difficult to ascertain the level of community involvement at this school. They too received several donations of uniforms for the children and some equipment. These were not at the level of Medar's Block, however. There were frequent visits by teacher

union officials and members of the BEO during the weeks that I was at the school. Most of these were official business and required the attention of several of the teachers and consisted of several formal protocols during the school day. The school had a well-maintained meeting room for public events and a computer room with 8 unused computer systems. The trainings were conducted in these spaces.

Kumbarakoppallu GHPS

Kumbarakoppallu is the largest school in the city of Mysore with 778 students enrolled and 30 teachers on staff. Students come from a part of the city densely populated with families that work as domestic servants, government employees, or small shop owners. The school has increased its physical footprint in the last five years to accommodate the increase in student enrollment.

As with Medar's Block and Metagalli, Kumbarakoppallu is a Kannada medium school and runs classes from first through sixth standard. Each standard has four batches composed of comparable amounts of boys and girls. Two different teachers teach each subject—Math, Science, English, Hindi, Social Studies, and Kannada. The lower standards (1-3) follow the Nalli Kalli system, as in the other schools. There are only two batches for each of these standards, however. Many of the teachers have been at the school for more than seven years, only one teacher was new, and all have degrees in education—either a B.Ed., or a D.Ed. At the time of this research there were four male teachers and twenty-six female teachers ranging in age from 28 to 50. Teachers were rarely absent from their lessons, and sixty percent consistently attended my training workshops. Others had family commitments, or were otherwise involved in professional obligations. The school had two computer rooms and two well-maintained halls for public meetings. These served as the venues for the training.

Cauvery School

As noted above, during the second week of the research colleagues that had relations with a private school in Mysore approached me. I met with the administrators of the school and the teachers and discussed with them the program and the requisites of time and physical resource commitment. The teachers and the administration agreed to what I outlined, noted their interest, and a timetable was set up.

Cauvery School is a mid-sized school supported through a formal trust. It is a private unaided school, which means that it receives no financial support from the state or the national governent. Students come from across the city, but according to the headmistress they come from families where at least one if not both parents are working professionals. The fees at this school are not high, nor are they low. The school consists of classes from kindergarten through high school. Three hundred and eighty-two students attend the primary and higher primary grades, and eight teachers and one headmistress make up the instructional and administrative team. It is an English medium school, meaning all subjects are taught in English. The school also offers weekly art and sangeet (singing) classes for each standard. Each standard has two batches composed of comparable amounts of boys and girls. There are two teachers for each subject. Many of the teachers were new to the school and also the profession. Only the headmistress had a diploma in education, but all other teachers had some form of university degree. Most teachers were under 30 years of age and were unmarried. The school had many technological tools such as smart boards and DVD players in many rooms. The school also had a reference library and large computer room with three systems. The computer room served as the venue for the teacher training workshops.

Site Selection

The three GHPS sites' selection can best be described in terms what Michael Quinn Patton calls "snowball" or "chain" sampling, yet, it was also purposeful. Patton describes "snowball" sampling as

> [A]n approach for locating information-rich key informants or critical cases. The process begins by asking well-situated people: "Who knows a lot about __? Who should I talk to?" By asking a number of people who else to talk with, the snowball gets bigger and bigger as you accumulate new information-rich cases. In most programs or systems, a few key names or incidents are mentioned repeatedly. Those people or events recommended as valuable by a number of different informants take on special importance. The chain of recommended informants will typically diverge initially as many possible sources are recommended, then converge as a few key names get mentioned over and over.

The "cases" for this research are not the schools or the teachers that participated. Rather the modeling "episodes" that occur between the teacher educator and the teacher-

learners provide the unit of analysis. However, these schools and the teachers served as the sites for this research. Several professional colleagues that have worked as government teacher educators for over two decades in Mysore suggested these schools to me. Their insight provided me with a list of possible sites where teachers would be amenable to school-based after-school professional learning, were committed to the work of teaching in terms of time and resources, and had strong administrative support. It was also recommended to me that a diverse array of schools in terms of size, location, and students served might offer me a wider range of interactions that could ostensibly inform my research in rich ways. Therefore, the four schools that I worked with provided me opportunities to enact explicit modeling with teachers that worked with exceptionally economically poor students, students that lived in all sorts of home environments, and had varying exposure to school. This variation was evident in the teachers' interests and perceived needs. The thread that connects these schools, however, is that they are administratively functional and teachers were invested in their work. These characteristics undoubtedly created inflections in the explicit modeling, which may have transpired differently with different teachers. However, the study of this practice would have been impoverished if conducted in sites where teachers did not attend the sessions, were uninterested, and the headmasters were unsupportive. While this study is one that is situated in local meaning, and any interpretations are contingent on the local conditions, the study required a functional space. To do so required intentional purposeful site selection. Again in Patton's words

> The logic and power of purposeful sampling lies in selecting information-rich cases for study in depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research, thus the term *purposeful* sampling. The purpose of purposeful sampling is to select information-rich cases whose study will illuminate the questions under study. (Patton, 1990, p.169)

Furthermore, site selection was influenced in large part by political, social, and cultural boundaries. Gaining access to these sites required long-term engagement in the city, social resources, such as my relationships with teacher educators, and the institutional backing of the Regional Institute of Education and Fulbright. Also, my own cultural heritage as a

foreign-born Mysorean who speaks the local language and could convey cultural sensitivity, ostensibly, helped me gain formal and personal access in these schools. At the same time, these factors undoubtedly played a part in the way that the 29 instances of explicit modeling unfolded. While this creates an atypical setting, this research doesn't seek to posit a successful model for explicit modeling in India and with Indian teachers. Rather, it is an inquiry into the determinants and mechanisms of the practice and the challenges and opportunities that it affords. It is an effort to understand teachers' education, which is locally fostered and culturally contingent, and also guided by principled interactions. With these contextual reference points in mind, what follows is a discussion of the data construction tools that I employed to source information that would aid in understanding the phenomenon of explicit modeling.

Data Construction

As discussed above, first-person research methods were selected for this study because of the proximity to practice that it affords, and because of the necessity to generate cases that would yield rich data on explicit modeling. Studies of practice occur in the concrete situations of social interactions. There are moment-to-moment nuances that are complex and elusive. Frederick Erickson notes, " Interaction face to face is so complex that it can be monitored only in highly selective ways, by participants during the course of its conduct, and by researchers who study that conduct after the interaction has taken place" (Erickson, 2006, p. 179). Being in the interaction helps attend to these moments, but deriving meaning from these interactions for research requires some way to record the details. Therefore, to gather the concrete and fine-grained information about what went on required multiple ways to gather information that could be used for descriptions and analyses. Several data construction tools, often associated with ethnographic methods, were used to gather information that could then be converted into data. Video records, teacher educator journals, ethnographic field notes, and stimulated recall interviews were the primary sources. In the data analysis section of this chapter, I detail how I constructed data from these information sources. Below, I describe my rationale for the selection of each of these, detail how they were employed, and discuss how pilot-studies benefitted the design of these tools.

Pilot Studies

Many qualitative researchers have expressed the importance of a pilot study in qualitative inquiry (Patton, 1990; Maxwell, 2013, Creswell, 2012, and Kim, 2010). Maxwell, for one, points out that pilot studies can help develop an understanding of the concepts and theories that are held by the individuals that one intends to study. For Maxwell, these exploratory studies provide opportunities for researchers to engage with the meaning and perspectives that can inform their conceptualization of the phenomenon (Maxwell, 2013). Creswell, also, argues that pilot studies can refine and develop research instruments, and assess degrees of bias (Creswell, 2012).

Yujin Kim writes about other important affordances of pilot studies (Kim, 2010). Kim carried out pilot work in preparation for her dissertation on Korean-American family dementia caregiving. In her work, she describes the specific practical and methodological issues that emerged as well as the modifications she made for the main study as a result of her pilot work.

> As a native Korean working on her dissertation within an American academic framework, this researcher is a Korean cultural insider acculturated to mainstream US society as both a student and social work practitioner. This experience has put her in the unique position of a free traveller between Korean culture, Korean-American culture, and American society. This unique position, in conjunction with her professional curiosity, has provided a matrix from which the study of Korean-American family caregivers' experiences emerged as a dissertation.
>
> In preparing this study, two concerns became manifest. The first one centred on a main data collection method for phenomenological inquiry. In order to relay the experiences of Korean-American caregivers, it is of foremost importance to let their voices be heard through in-depth interviewing. How possible would it be to have an in-depth interview with Korean-American families known to be reluctant to disclose themselves to strangers even when the researcher is of Korean heritage (Yuen and Kauh, 2002)? The second concern was related to the general perception of dementia in Korean culture. The most common Korean response to memory problems and associated behaviour in elderly people is to see these as normal consequences of getting old (Kim, 2002). Koreans may also identify dementia primarily by the irrational behaviour of persons suffering from this illness and the disruptive social and interpersonal consequences it shares with mental disorders (Yoon

> and Cha, 1999). Due to this negative impression of dementia, it might be even more difficult to recruit Korean-American families for interviews about their caregiving experience than to recruit families from other ethnicities. (Kim, 2010, pgs. 193-194)

For Kim, the implementation of the pilot was essential in four ways. Like Maxwell and Creswell, Kim found that pilot studies helped her reflect on the research process and potential difficulties in conducting a phenomenological inquiry. And she was also able to modify her data collection tools, such as her interview questions. Beyond this, however, the pilot helped her find out about issues and barriers related to recruiting potential participants. And she was able to get a sense of what it meant to carry out research in culturally appropriate ways.

Reading Kim's work generated questions that urged me to consider a pilot study for my research. Might a pilot study afford me a chance to not only test out data collection tools, but to also see what recruitment issues I might face? What would it take to recruit an entire faculty at a school to participate in the trainings and the research study? What would the teachers make of me as an Indian-American? How can I conduct research on practice in culturally appropriate ways? These questions prompted me to reach out to two schools that I had long-standing relationships with. I asked the headmistresses at these schools if I could run weeklong trainings at their schools, and conduct research with the teachers.

Both agreed and from mid to late February 2012 I conducted two pilot studies: one at a private school and the other at an aided (semi-private) school. At both schools teaching faculty were local Mysorean teachers, and all spoke Kannada. For both trainings, all participants used a mix of English and Kannada. And all of the teachers knew me, and I them. We had worked together on and off over the past few years in other professional development opportunities that I conducted in Mysore.

The pilot studies offered me a chance to test out the data collections tools, the organization and logistics, and also to determine ways of communicating the research agenda with teachers. In documenting and reflecting on these pilot studies in my research journal, I wrote

> Conducting educational research in India is about being a good listener first and foremost. Too often, as others have told me, researchers from the U.S. come in to try the "new cutting-edge" technique, or they come in

> with a condescending attitude. This is a problem, and something I actively tried to avoid in the pilots. I tried to remain humble and only offer my researched-based opinion when pushed. I feel that this served me well, and the teachers seem to be interested and willing to listen to what I have to contribute. Also, for the study I need to visibly carry an attitude that this is only the beginning, and that this experience will be the first of many subsequent ones. The teachers, in general, seem to be very skeptical of anyone who is only coming for self-serving purposes and will return in only unlikely circumstances. (Excerpt from Setty Research Journal, February 24th, 2012)

During the pilots I came to a number of realizations. First, the labor of conducting first-person research was going to be taxing. Designing and developing the training, let alone enacting the research on explicit modeling required an ability to manage my time well. This work was going to require systematic ways of generating information relevant to my research. Second, as noted in the comments above, I was going to need to be very attentive to the way that I carried myself, and I did not want teachers to be justified in their skepticism of me. I wanted to be respectful and caring, and I wanted them to know that I was a vested part of their community. Finally, the pilot studies informed my thinking about the conceptualization of explicit modeling. I became more sensitive to its possibilities in teacher education in India, and how it might unfold in government school contexts.

Video Recording

Video records play two parts in this study. First, they aided in constructing data about the explicit modeling interactions. And second, immediately after the session the records were used for the stimulated recall interviews with the teacher-learners. The choice to use video devices to record and generate data reflects an interpretation of what qualitative research on social interactions can afford. Erickson's writing is helpful in considering this position.

> Interaction face to face is a social ecology, a system of relations of mutual influence among participants that is sustained "online" in real time. That is, interaction is not usefully to be regarded as a succession of isolated acts, a ping-pong match of successive moves between speakers and hearers, and interaction involves nonverbal as well as verbal behavior. Everybody in the scene is continuously active-and interactive-that is, speakers are continuously doing verbal and nonverbal behavior

> and so are listeners, all addressing one another in varying kinds of ways. Thus social interaction involves not only talk by speakers but also the reciprocal attention behavior of listeners, who influence the speakers (continuously) during the course of their speaking. In recording for research purposes it can be analytically useful to document through picture and sound the continuous influence of speakers on listeners and also that of listeners on speakers (Erickson, 2006, p.178).

Understanding the explicit modeling practice required inquiry into what the teacher educator was doing with the teacher-learners. Additionally, an important stance taken in this study is that learners are central to any instruction. Teacher-learners' involvement in instructional practice is important to get a lens on the practice that I, as the teacher educator, am engaged in. For this reason, video records helped to render everybody in the scenes who, by their very presence, influenced the practice. Instruction, also, is not linear, nor is it all verbal. Instruction is a constant flow, as Erickson notes, and is composed of details and distractions. The nonverbal behaviors of speakers and listeners continuously inflect meaning into the interaction, and any exploration of the explicit modeling practice would be deficient without a way to attend to these nuances.

Video recording, though, no matter how fine-grained and directed can be incomplete. For one, placement of the video camera can narrow what can be gained from video records. Also, the video operator's attention can shift, and pertinent information can be missed. If poorly directed, they may zoom in and out, or from one speaker to the next. Thus, the video footage would be filtered through the video operator's lens. Also, their presence would be more noticeable and potentially influence behaviors.

According to Erickson the ideal situation would be, " To place the camera halfway along the side of the room, with the teacher and some of the students shown together in profile view is to emphasize reciprocal relations between the teacher and the students" (Erickson, 2006, p. 178). Unfortunately, this wasn't possible in any of the venues, as rooms were generally wide and dimly lit. To help account for verbal and nonverbal details, and to minimize these potential adverse effects, two cameras were used for video recording purposes. The recordings were done with smart phones equipped with video cameras. I made this choice to try and diminish the presence of the cameras and the camera operator. Moreover, mobile phones are ubiquitous in India, and as such their presence does not

create an overwrought scenario. However, this came at the expense of quality. One camera was placed at the front of the room on a small tripod and ran continuously from the beginning to the end of each session. The second camera was held by a research assistant, who had been trained by me on positioning herself and where to focus the video camera. She moved around the room as needed. She had also participated in the pilot studies and was aware of the research agenda. This second camera was also continuously run.

This effort provided 12 two-hour videos, from which I excerpted 29 different instances of explicit modeling. Below, I discuss how these video recordings were used as part of the stimulated recall interviews and for the teacher educator journal. In subsequent sections, I discuss how the information derived from videotape was prepared, packaged, transcribed, and coded for analysis.

Stimulated Recall Interviews

The stimulated recall interviews conducted with a videotape replay were a way to construct data about the teacher-learners' perspective on what they were thinking about during the enactment of explicit modeling. Generally, when this tool is used, researchers replay a video or audio recording of some instruction in order to stimulate a commentary upon the participant's thought processes at the time (Calderhead, 1981). In my view, instruction is contingent on learners. Understanding explicit modeling required attention to what the learner's made of the practice, and stimulated recall interviews seemed to be a fruitful way to generate a retrospective report on the teacher-learners' perspectives.

Prior to the week of workshops, and at the beginning of each session, teachers were briefed on the need for two volunteers to stay after the session and speak with the research assistant. At the end of each session, the group was reminded of this, and at least two volunteers came forward each time. It was recommended to me prior to the launch of this research by colleagues at the Regional Institute of Education to interview pairs of teachers, as most of them would not have been exposed to research before. The pair structure would offer them some security and also be sensitive to any concerns about an individual staying alone after a session. The teachers that stayed on were usually the ones for whom it was most convenient. Given, the workshops were after school, many of the teachers needed to be home soon after to meet their children at home, prepare meals, or to catch public

transport. At the end of each workshop, the video clips that showed the explicit modeling were quickly organized and cued up by me, and then handed over to the research assistant.[33]

I chose to employ the services of another researcher for this particular part of the study to maintain some separation between the research objectives and the training objectives. If I were to carry out the stimulated recall, I anticipated that it might appear that the stimulated recall interviews were part of the training. Also, if I had conducted the stimulated recall interview, then it could have led to other questions as well, which might detract from the focus of the exercise. I was fortunate that the research assistant could record the sessions and conduct the stimulated recall interviews. This gave her a better sense of the interactions, allowing her to probe and push when teachers were having difficulty focusing or understanding the line of questioning.

The research assistant generally followed a set protocol for the stimulated recall interviews. First, she would brief the two teachers about what they were going to do. She commented that the teachers were going to watch a brief clip from today's session, and then they would discuss a few questions about that clip. They would repeat this process two to three times. The researcher also noted that the teachers should speak in the language that they felt most comfortable with, either English or Kannada. Then she asked their permission to record the conversation. Once this introduction was done, then the teachers watched a brief clip of an explicit modeling interaction. After the entire run of the excerpt, the research assistant followed a semi-structured interview protocol. After they had discussed one interaction, then this process was repeated for a second video excerpt, and sometimes a third.

The protocol that was used for the recall interviews was developed iteratively through the pilot research, discussions with colleagues and mentors, and during the beginning stages of the research study. To help focus teachers on the teacher education and what they believe they were thinking during that time, the stimulated recall interview

[33] The research assistant, a colleague from a local school, is an experienced third-grade Kannada teacher, with practical knowledge in educational research. She is a native Kannadiga originally from Karnataka, and was not a member of any of the schools involved in this study. She had no connection to any of the teachers. Her role in the overall research project was to video record, conduct the stimulated recall interviews, support me in understanding complex Kannada phrases and terminology, and help in transcribing the interviews.

questions were revised twice; once after the first interview, and once again after the third interview. The protocol questions below guided all other stimulated recall interviews.

- Could you walk me through what you were thinking when this was going on?
- Is [named practice] valuable in teaching?
- Did what Rohit (or others) do and say help you to see the value (ಮೌಲ್ಯ) of [named practice]?
- In what ways? or Why not?
- How did Rohit's way of teaching about XXX affect (ಪರಿಣಾಮ) you?
- How do you feel about this way of teaching?
- Suppose you were the trainer for this workshop. How might you teach the teachers about [named practice]?

After all four weeks were complete, then either I or the research assistant transcribed all of the audio recordings from the interviews. This effort resulted in retrospective reports from 24 stimulated recall interviews; each concerned with a particular instance of explicit modeling.

Teacher Educator Journal

To aid in gathering information about the teacher educator's retrospective interpretation of the explicit modeling interactions teacher educator journals were maintained throughout the research study. Journals have been a part of many first-person researchers' efforts in teaching children (e.g., Ball, 1993; Lampert, 1986). However, keeping a teacher educator journal was an opportunity to document the teacher education experience in India in new ways. There are several benefits to keeping educator journals. First, journals are a medium that can represent the educator's experience—problems, puzzles, excitements—of practice to themselves (Ball, 2000). Second, educator journals can also aid in bringing readers into the implicit goals and rationales that the educator faced and what they did with the learners. Third, journals are a way to track how the practice changed over time.

Approximately two to three hours after each session, I watched video footage of the explicit modeling interactions and responded to previously specified questions. This process generated 29 separate teacher educator journal entries. The intention was to create a space that would gather information from the teacher educator's perspective on what was involved in the explicit modeling, what opportunities and challenges that the

teacher educator felt explicit modeling opened up for the teacher-learners, and what assumptions lied behind the choices the teacher educator made before, during, and after the explicit modeling interaction.

The prompts that I responded to after each session were:

1. Was there a reason why I deployed 'transparent modeling' for this practice? What triggered my choice?
2. What happened when I employed 'transparent modeling'? What did the practice look like?
3. What do I seem to be trying to make visible here? How? Are there aspects of what I am modeling that I do not seem to explain, or don't come up?
4. Was there anything about this that was difficult to do? What was it? Why was it difficult?
5. How do the teachers seem to be attending? Do any of them say or do anything that affects what I am doing?

While the journal was maintained after each session, entries were not reviewed until after the field research was complete. These retrospective reports were a way to closely monitor the explicit modeling practice in a systematic way. They created a space for me to become a research informant by responding to static questions that were established at the outset and remained the same throughout. An example entry has been placed in Appendix 2.

Limitations of the Data

The purpose of this study is to explore what is involved in a teacher educator's explicit modeling and what teacher-learners make of it while they are engaging with it. While the study allowed me to develop theories about the work of explicit modeling, and the learning opportunities and challenges it provides, the design of this study limits potential claims. The design of the study was constrained in such a way that forced me to attend to the nature of explicit modeling, the processes involved in employing it, and teacher-learners' role in the instruction. Had I designed the study differently—for example followed the teachers into their own classrooms to assess some form of uptake into their practice—then some causal claims may have emerged. However, this was not my interest for this particular study, nor did I have the opportunity to immerse myself in their classrooms. For future studies, tracking what teacher-learners do with what they are

learning through explicit modeling may play a part. However, to do so, is not a trivial matter. In designing this study, it seemed that a useful first step might be to research the work involved *in* explicit modeling thereby providing a better conceptualization of the practice that might later be traced into teachers' practice. Moreover, a focused study might yield rich data on a single teacher education practice, offer a research-based window into what teacher educators do with learners, and contribute to the conversation on what are some of the means of practice-based teacher education.

A second set of limitations is with respect to data construction. The stimulated recall interviews changed over time. That is to say, that the first iteration of the interview and the last were not carbon copies. This limitation was brought about because of the necessary changes that the research assistant and I felt were needed for the interviews to be useful sources of information. In spite of piloting the protocol, the teacher-learners in the main study were not grasping the questions in similar ways, which in turn shifted their responses. In some cases, a teacher may have responded about something other than the explicit modeling practice, or the responses seemed perfunctory. The information generated from these interviews is still quite relevant, I only draw attention to this shift in the interview protocol to demonstrate my awareness of it and also so that readers can come to know that information was gathered through a protocol that shifted over time. Another limitation with respect to data construction is that all of the explicit modeling interactions do not have all the requisite information from all of the data sources. Most of the episodes include information from the stimulated recall interviews, the video recordings, and the teacher educator journal. Some, though, do not have the stimulated recall interviews. This was a result of time constraints. There were days where the workshop would run long, and three or four instances of explicit modeling occurred. On those days, the research assistant and I made the decision to limit the volunteer teachers' time by focusing only on two instances of explicit modeling. This meant that I explicitly modeled an instructional practice 29 times, but only have 24 stimulated recall interviews. This is important in that each explicit modeling instance does not have the same amount of relevant information attached to it. However, this does not mean that the amount of generated data overall has been diminished. The reality is that for a study on a particular practice there is ample information from which to derive meaning. The varied data sources

offered rich data from multiple vantage points in multiple settings, and with several participants. This was a decision, however, that as a researcher in the midst of the research I felt would be best for the research participants. Missing out on five opportunities to query participants about the explicit modeling practice doesn't necessarily hamstring the entire effort.

A third limitation is that the explicit modeling practice is not isolated. Instructional practices are interrelated and the web of interactions between content, instruction, and the learners is always present. Disassociating a particular practice from the entire teacher education effort is complicated and tenuous. I would argue, however, that such fine-grained efforts that attempt to zoom in on the particulars of instruction can help strengthen the web of interactions that undergirds teaching and learning. Magdalene Lampert and her colleagues recently published a similar effort focused specifically on the teacher education practice of rehearsals (Lampert et al., 2013). A final limitation is maturity. The study overall is limited by time. Educators' work with learners evolves over time. Certain norms and processes are informally agreed upon and relationships deepen. This affects instructional practice. Long-term engagement would unquestionably influence this study.

Despite these limitations, this study adds to the emerging literature on teacher education practices, and probes the boundaries of what typical teacher educator modeling can afford learners. It also brings up questions about what constitutes viable and instructive research on particular practices. The complexity of conducting grounded research in government higher primary schools in India created some hurdles. But the richness of the information that I have been able to work into data has helped me to understand this phenomenon in instructive ways.

The Evolution of Tentative Assertions (Methods of Analysis)

The process of analysis and the evolution of themes are central to this research. In this section, I discuss how the themes evolved through three phases: proto-analytical work, analytical work, and negotiating work. By proto-analytical work, I mean the process of taking the generated potential information and reconstituting it as data for empirical research. By analytical work, I mean the evaluation, interpretation, and dissection of the data to help understand the phenomenon in varied ways. And by negotiating work, I mean,

the necessary process of having one's research arbitrated by peers and colleagues. In what follows, I detail the steps I took through these three phases.

Proto-Analytic Work

Analysis began the day I began the research design. But to avoid the pitfall of my research being a simple replay of what I did and to create distance from my intuition, I had to set up measures that would press me to separate myself from the information I had gathered: a principle of first-person research. Furthermore, what had been observed and collected was only information. For it to be instructive, I needed to create data, which could then be analyzed.

Generating the Empirical Package

The first step in this proto-analytic work was to generate an empirical package. This entailed two processes. The first was to organize the information into a database and the second was to generate secondary data. During fieldwork, information was organized based on school site. Each school had its own electronic folder consisting of subfolders based on the session day (see Figure 3). Within those folders were audio file folders from the stimulated recall interviews, multiple video recordings of the entire session from the various viewpoints, photos, and the field notes in audio and written form. The teacher educator journal was kept in a running fashion from session to session in a single document. All of this information was organized by day, by school, and not by explicit modeling instance.

Drawing Minutes to Create "Episodes"

To begin my organizational efforts, I started with the video recordings. I needed to take the two-hour videos from each session and draw minutes around what was pertinent to the explicit modeling interactions. Video can be an asset for accounting for potential information. As Erickson notes, however, there is a "tradeoff":

> Videotape must be watched and listened to carefully, but it provides (as does the original social interaction that was recorded) much more potential information than can be assimilated from moment to moment

> by a: humanly limited information processor. This flooding of information instantly overwhelms the analyst, and so the analyst must develop strategies for focusing attention on some phenomena and disattending to others across a series of successive moments in time, usually replaying the video many times. (Erickson, 2006, p. 178)

Erickson's comments reflect the problem with video records, if not distilled. As Erickson warns, strategies need to be developed to help manage the flood of information that can inundate a researcher. I made analytical decisions about the importance of the events leading up to the explicit modeling and the events that follow, which helped me draw minutes around what was pertinent to my central research questions. I extracted the portions of the video that were concerned with the explicit modeling practice. Each video excerpt was then collated with the multiple camera angles creating one composite video for each of the 29 modeling instances. These were then considered "episodes," and constituted the anchor for "episode packages."

Creating "Episode Packages"

After creating the composite videos, I collected all of the pieces of information that were related to that video. This included a cover sheet detailing the logistical features of the modeling episode, the related teacher educator journal entry, the audio file and the transcripts of the relevant stimulated recall interview, the composite video and its accompanying transcripts, and a description. By collecting all of the relevant artifacts into a well-organized database, I was well positioned to become more fluent with and create data (see Figure 3).

The description was an effort to generate secondary data about the episode. I reviewed each composite video and crafted a narrative description about the opening of the explicit modeling episode, the context, the modeling and its subsequent discussion, and how the episode concludes. These descriptions were organized in such a way that someone who was looking closely at the data could get a refresher on what went on. They served as a researcher's dispassionate view of the situation without reactions or reflection. Simultaneously, I memoed on the core construct. Weekly, I would write fresh my thinking on what explicit modeling was and what it entailed.

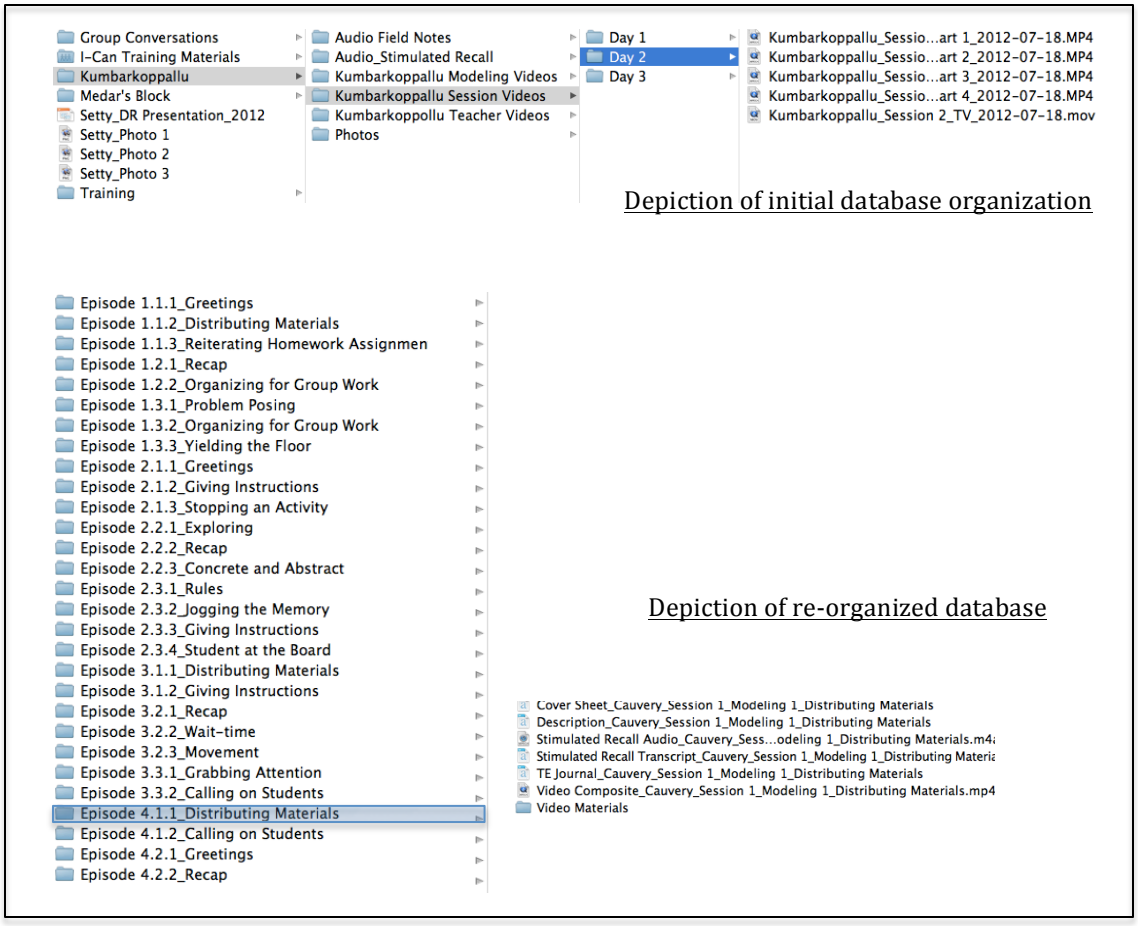


Figure 3: Generating the Empirical Packages

Generating the secondary data also served another purpose. Taking this step allowed me to become intimately re-acquainted with the data, and facilitated my getting more fluent with the data. It forced me to get close to the data again, but this time from an outside view. This work entailed indexing the episodes in basic ways, such as categorizing them by type, by the teachers' level of familiarity with the modeled practice, and order of occurrence by session. These indices allowed me to generate data that fostered my thinking on ways to categorize, code, and tag the data. Based upon this proto-analytic work, my intention for coding was not to help me count or quantify elements of the explicit modeling, but rather to help me unearth something that might have been hard to find otherwise. This effort was supplemented with memoing about my research process and emerging ideas.

Analytic Work

All data from the stimulated recall interviews, the composite videos, and the teacher educator journals were imported into the Dedoose web-based qualitative data analysis software platform.[34] Because of its capacity to excerpt short specific sequences within my already short videos, the platform seemed helpful. Furthermore, this platform allowed me to compress the data into tabular forms expeditiously, allowing me to count and quantify details. My intention in doing this was to see if something could surprise me, because as a researcher I strive to get something out of the data that I don't already know. Furthermore, the platform served as a mechanism to try different analytical approaches. At the same time, the platform constrained the space available for tentative patterns and claims to emerge. The intuitive drag and drop format led me to tagging excerpts within each video. While I was generating a significant amount of coding records, it was unclear what this work was telling me. In what follows, I detail the analytical trials that I went through with and without the Dedoose platform.

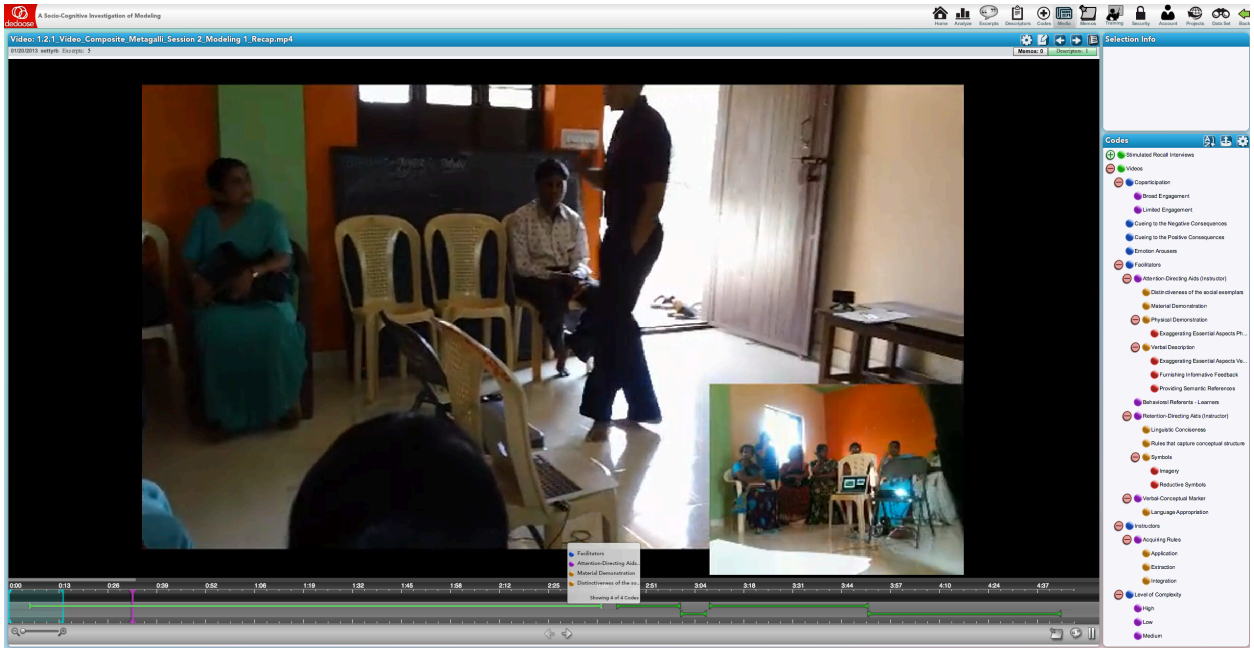


Figure 4: Example of a coding process in Dedoose platform for one episode of dialogic modeling

[34] Dedoose is a relatively new platform that researchers have been using to facilitate the management and analysis of the data that come from qualitative research. The platform offers tools for coding and analyzing video records and audio records, in addition to more typical document records. Dedoose also offers visualizations and ways to filter and excerpt data.

Analytic Trials

In working with the data I have used multiple analytic orientations that can best be categorized into two approaches. The first analytic turns took a more "grounded" approach, and the second a more "dialectical" approach.

Grounded Approaches

My initial venture was to read across the data and try to make sense of what was going on in each episode. For weeks I examined the episode-specific stimulated recall interviews, videos, transcripts of the videos, and the teacher educator journal. I first read through the transcription, then watched the composite video with the transcription checking for discrepancies in the transcription. In spite of the composite videos averaging three to nine minutes, this process took three to five full runs. I would then watch the video two to four times without the transcription to look at reactions and interactions among all the parties in the composite videos. Since each composite video consists of both a teacher educator view and a teacher-learner view, I focused my attention on the teacher-learners at the outset. After this, I read through the teacher educator journal for that particular episode. Then, I read through the transcript for the stimulated recall interview. Following that, I listened to the stimulated recall interview with the transcription. Generally, I needed to do this two to three times per interview. Throughout all of these steps I jotted down ideas and questions that came to mind. Then I crafted a coherent memo from the jottings with the following question in mind: How does my review of the data from this episode help me to think about the questions I am asking and the claims I am trying to make? I would then look across the episodes to see if there were patterns or ideas that coalesced. This process took about 2 to 2 ½ hours per episode, which range from 2 to 9 minutes.

This analytical procedure created a predicament. On the one hand, I was able to look across the data derived from multiple sources in an ordered way. This allowed me to construct a narrative from what went on when the explicit modeling practice was deployed to what the participants said they were thinking when it was going on. On the other hand, this type of record was raising some disconcerting questions. Was I only realizing something that I already knew? Could I have come to these conclusions without writing this dissertation? Was I disciplining the work in such a way that I was actually giving myself an

opportunity to be surprised by the data? These questions led me to consider a more deliberate analytic procedure.

Conversation Analysis

The next analytic trial consisted of two phases: initial and focused coding, which occurred in two separate iterations. Following Kathy Charmaz, I take coding to mean, "naming segments of data with a label that simultaneously categorizes, summarizes, and accounts for each piece of data" (Charmaz, 2006, p.43). The segments that I turned to first were from the video data. How to go about coding, though, was still a question. It seemed that two options lay before me: a conversation analysis or a discourse analysis.

Harvey Sacks argues that conversation analyses provide an opportunity to study naturally-occurring talk and show the systematic order of spoken interactions. The methods of such an approach closely follow from Harold Garfinkel and Erving Goffman's conceptualizations, which aimed to determine the resources that participants use and rely on to produce "interactional contributions" and to make sense of others' contributions (Sacks in Atkinson and Heritage, 1984, pgs. 21-27). A discourse analysis, on the other hand, might afford me a different opportunity. John Gumperz argues that discourse analyses allow researchers to examine the "production of an interaction" from a vantage point external to participants' reasoning and understanding about their lived circumstances and their interpersonal communication. A discourse analysis could still take up the role of language in careful ways. To operationalize this a researcher might take an Interactional Sociolinguistics approach, allowing analysis to focus not only on linguistic forms such as words and sentences, but also on subtle cues such as prosody and register that signal facets of the contextual experiences of the participants. As Gumperz notes, these context cues are "culturally specific and usually unconscious" and require a formal look that research can provide (Gumperz, 1982).

Weighing the options between engaging in a systematic way about the way the interactions unfolded, or the way the participants' circumstances influenced the explicit modeling practice pushed me back to my orienting research questions. Considering that one of the central constructs was the "work" involved, and my interest was in investigating what was meant by "work," it seemed that an analysis that focused on the interactions

between the educator and the learners might be more suited. Furthermore, instead of trying to portray meanings and actions in a way that a discourse analysis might yield, the richness of the interactions pulled me towards a conversation analysis. For these reasons, I pursued a conversation analysis.

I went through each composite video and the correlated transcription and conducted a line-by-line analysis of the interactions. Initial codes in this process sought to describe what was present in the interactions. The codes tended to be about the different turns of talk, characterizing the different types of comments, responses, and questions that the teacher-learners made, and creating typologies for each. Initially, I wanted to attend the teacher-learners' as opposed to the teacher educator, because I felt that it was important to get me away from thinking about my own practice, and ultimately I was looking for the activities of learning in order to get a portrait of what the learners are up to during the explicit modeling. Furthermore, doing so would help me to focus on what the work of learning is—as in the active thing to be doing, and not a product.

The conversation analysis offered me the opportunity to understand what was going on as explicit modeling unfolded through the lens of what the learners were doing and saying. However, once I had gone through the entire data set, I stopped to consider what this process had helped me to see. Basically, I had gone through all 29 composite videos and their transcripts and tagged the data. The tags didn't capture much, or capture it very well. I had been able to determine that there was generally some form of an I-R-E interaction, where the teacher educator would initiate a discussion by asking a focused question about his practice. This solicited a response, and in turn the response was evaluated. What was this helping me understand? I was seeing a likely pattern, which was not surprising, and not necessarily instructive about the work involved in explicit modeling or the learning opportunities and challenges that it provided. I tried to create coding breakdowns, where next to a code I inserted a column about what that code helped me to see, and another column that specified the basis of keeping a code in or discarding it from the analytic frame. The result of this process helped me to determine the worthwhileness of coding this way, and I determined that this was not as advantageous as I had hoped. It wasn't offering me the analytical leverage that I needed to unpack what was going on for the teacher-learners while the explicit modeling practice was going on.

The analysis did, however, have two positive outcomes. First, it gave me much more fluency with the data corpus. I had been able to go line-by-line through every episode and familiarize myself with the interactions at sentence, word, and utterance levels. Second, it gave me a way to talk about the nested nature of the explicit modeling practice. The *modeling practice* was the teacher educator's modeling constituted by some physical display and the discussion, while referring to the *modeled practice* became a way to talk about what was modeled—such as distributing materials, organizing for small group work, recapping a previous lesson, or teaching through problems. These referents did not emerge from the participants; i.e. emic categories, but rather were imposed by the researcher; i.e. etic categories.

ID	Depth	Title	Description [35]
62	1	Teacher Learners	Things the teacher-learners say or do.
63	2	Questions	A sentence worded or expressed so as to elicit information.
64	3	Clarification Questions	Questions asked to make a statement or situation less confusing and more comprehensible.
65	3	Objecting Questions	Questions asked to express opposition or disagreement.
66	2	Responses	A reply to a question.
67	3	Lack of Response	
68	3	Confirming Response	A response that upholds or is in-line with the teacher educator's expectation.
69	3	Mass Response	A response offered by multiple teacher-learners at the same time and often in chorus.
70	3	Delayed Response	A response that occurs after the expected window.
71	3	Prompt Response	A response that is contributed without delay and within the expected window.
72	3	Comments	Words or sentences that express opinions or reactions.
73	4	Naming Comments	Comments that contribute a discourse marker (i.e., ideas are put into their own terms and picked-up by others).
74	4	Linking Comments	Comments connecting to practices that teacher-learners already do or have seen done by others.

Table 3: Excerpt of Conversational Analysis Codes

[35] In this excerpt from the coding matrix, green indicates a container, purple indicates a parent code, mustard indicates a child code, and white indicates a sub-code for the respective child code.

Facial Action Analysis

The tumult of jettisoning the conversation analysis had an added benefit. It pressed me to consider how I was defining *learning*, and what might serve as indicators that learning—as a process—was going on. Or put another way, what might I take as evidence that teachers were actively thinking during the explicit modeling? To respond to this question, I turned to nonverbal measures.

In particular I began to use a facial action coding system, or FACS. FACS has been used for some time in research on clinical psychology, and it is grounded in the theory that there is an interrelationship between emotion and cognition (Basch, 1988; Izard, 1984; Lewis, Wolan-Sullivan, & Michalson, 1984; Zajonc, 1980); and attention to nonverbal behavior, particularly facial expression, creates a way to empirically study emotion (Ekman & Oster, 1979). Some research argues that non-verbal behavior, such as gestures, may anticipate verbal content (Manusov & Milstein, 2005). In spite of this, Martha Davis and Dean Hadicks research argues that while body movement has been recognized as an important source of clinical information, replicable coding practices that ascribe meaning to complex patterns of position and gesture have been difficult to develop (Davis and Hadicks, 1990). A facial expression, however, consists of one or more motions or positions of the muscles in the skin. These movements convey the emotional state of the individual to observers. In short, facial expressions are a form of nonverbal communication that allows for multivariable analyses, and are more suited that body movement (Ekman, Friesen, & Ellsworth, 1972).

While not widely used in research on teaching and learning, this approach seemed viable, as it offered me a mode through which I could find evidence, or disconfirming evidence, that learning was going on. I could use the facial action coding system to code and categorize the different ways that emotion was being displayed, which in turn

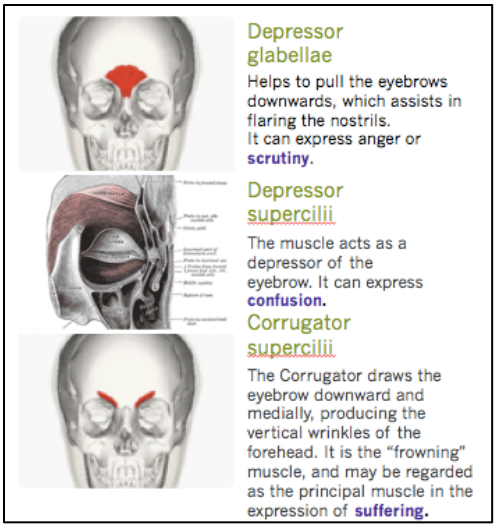


Figure 5: Brow Lowerer Function in FACS

would allow me to make some claims about cognition. I began by freezing frames in the composite videos and coding for such things as eye tracking, eyelid tightening, jaw dropping, eyebrow gathering, lip pursing, brow lowering, head nodding, and head shaking. Each of these facial movements occurs as a result of multiple muscles moving, and specific neurons firing.

The codified nature of the FACS stands on decades of empirical cross-cultural research. Over time researchers argue that they have been able to determine that specific muscles movements illustrate specific emotional expressions. For example, when a teacher-learners' brow is lowered, this is the result of three different muscles being engaged. The first, the depressor glabellae helps to pull the eyebrows downwards, which assists in flaring the nostrils. This muscle movement can express anger, or scrutiny. The second, the depressor supercilii, acts as a depressor of the eyebrow, and can express confusion. The third muscle, the corrugator supercilii, draws the eyebrow downward and medially, producing the vertical wrinkles of the forehead. It is often referred to as the "frowning" muscle, and may be regarded as the principal muscle in the expression of suffering (Eckman, Friesen, Hager, 2002).

From the select frames that I froze I tried to quantify what I was seeing across the episodes. Table 4 depicts part of this effort.

Example	Portrayal	Facial Action	% of Total Displays
After TE asks, "Did you notice…?"	Remembering	Eyes close; look off to onse side	45 %
After TE asks, "What are some other ways to …?"	Thinking	Eyebrow raise or lowerer; pulling back of mouth corners	40%

Table 4: Example of FACS Used with Data

In spite of having specified a coding structure and begun thinking about the implications of this analysis, I had doubts about this trajectory. I was finding that this type of work was extremely difficult, labor intensive, and was incumbent on high quality video to examine closely. Beyond these technical limitations, though, the applicability of this approach to my research questions seemed tenuous. If I were to follow this pathway, then I would find myself examining frames and sequences of frames to see where certain facial actions from the teacher educator intersected with the facial actions of the teacher-

learners. Moreover, I would need to account for multiple learners' facial actions, as opposed to just one. The clinical psychology work where FACS has had traction is done in one on one settings, where high quality video is taken of the practitioner and the patient. The complexity of doing this work across 29 episodes, each with over an estimated 150 worthwhile frames to analyze seemed daunting, and potentially unreliable. The effort, though, was not without its merit. Pushing into a research orientation that had a definite theory of learning and playing with the tools that this orientation brought to bear helped refine an important question for me: What was the theory of learning that I was bringing to the data?

Dialectical Approaches

This question prompted me to consider a few formal articulations of learning theories, and the potential of taking what Matthew Miles and Michael Huberman call a *dialectical approach* to the data (Miles & Huberman, 1994; Maxwell, 2005). A dialectical approach integrates existing theories with grounded data (cf. Cobb, 1994; Greeno, Collins, and Resnick, 1996; and Palincsar, 2002). In what follows, I attempt to orient readers to my analytical thinking that evolved as a result of adopting this approach and some of the decisions I have made that helped foster the emerging themes. Chapters 5 and 6 take up another dialectical approach, one that helped me explore the structure of the phenomenon.

Socio-cultural Analysis

Intermittently throughout the process sketched above, I returned to the work of socio-culturalists (e.g., Wertsch; Vygotsky) and researchers associated with situated cognition (e.g., Lave and Wenger). Vygotsky's thinking on learners' Zone of Proximal Development, which describes a process of intellectual development starting with observation and eventually moving to internalization, provided a lens through which to articulate the work of explicit modeling and the learning opportunities that it afforded. To the best of my knowledge, Vygotsky (and his translators) do not use the specific term "modeling," but the ideas about observational learning seem relevant in the literature.

Considering this Vygotskian theory along with other socio-cultural conceptions of teaching and learning, I tried to draw out a coding structure from my data that would align. For example, I took "participation" as a token, and "legitimate peripheral participation" and

"co-participation" as types. I tried to apply these codes, and develop other ones with this theoretical frame in mind. Again, I faced a similar problem as I had during my conversation analysis. This analysis, also, wasn't showing me anything that I didn't already know from before. Additionally, I was uncertain of how the coding related to the research questions. There were norms of participation that could be construed, but those norms didn't tell me much about how the teachers and the teacher educator are making sense of the modeling as it unfolds, and how the learning opportunities are being enhanced or limited. Part of this could have been due to the nature of the data. The episodes that I had constructed were short and excerpted out from the whole of the instruction. By extracting the explicit modeling, I abstracted the practice from the situation in which it was being used. I had constrained the boundaries of the activity and the context, which in turn may have marginalized opportunities to derive potential evidence of cognitive apprenticeships and the culture of learning that may have been associated with the explicit modeling. These considerations pushed me to re-consider my research questions and my interests in pursuing this line of inquiry.

My reflection, however, reminded me that my research intention was not to explore the totality of practice. Rather, this inquiry sought to contribute to a list of potentially generative teacher educator practices, where the potential was anchored by research. This research was about a particular practice that had potential, yet, seemed underspecified. Going into this research project I knew that it may only have limited purchase beyond the work of practicing teacher educators, but I surmised that it would create a conceptual terrain for me to derive some understanding of the overall work of teachers' education, and the limits and constraints to teachers' improvement. Constraining the data—by drawing minutes around the episodes—was in line with my interests, aims, and goals for this work. Removing these self-imposed boundaries seemed to counter what I had set out to do.

Socio-cognitive Analysis

I chose to keep the categories and codes from the socio-cultural analysis as I continued, since I felt they might yet contribute. It seemed that individual's participation could be the backdrop for the cognitive organization that goes on during explicit modeling. From this point of departure, I continued to work on ways to develop a system of inquiry

that would help me attend to my research questions and goals.

To begin, I read across Albert Bandura's writing on modeling. I had encountered his work when developing the proposal, but did not actively pursue any connections. Initially, I was skeptical of the applicability of psychology-oriented lab-tested theories to a study bounded and informed by many contextual factors; e.g., Indian government schoolteachers, a foreign-born/educated teacher educator, issues with the research environment regarding differential roles of power, and the variability in the language used, to name a few. Moreover, Bandura's work, and its antecedents/descendants deal with modeling between teachers and students, or parents and children, and not modeling as it is employed in teacher education. This was disconcerting, at first, because of my tentative distrust that pedagogy and andragogy operate in the same way. However, studying Bandura's research and thinking on modeling in the classroom, while simultaneously exploring this study's data generated some helpful ideas about the teacher education effort I am studying.

Bandura argues that there are four processes that govern modeling's influence on children's observational learning: Attentional Processes, Retention Processes, Production Processes, and Motivational Processes. The figure below illustrates these processes and the sub-processes that constitute them, according to Bandura.

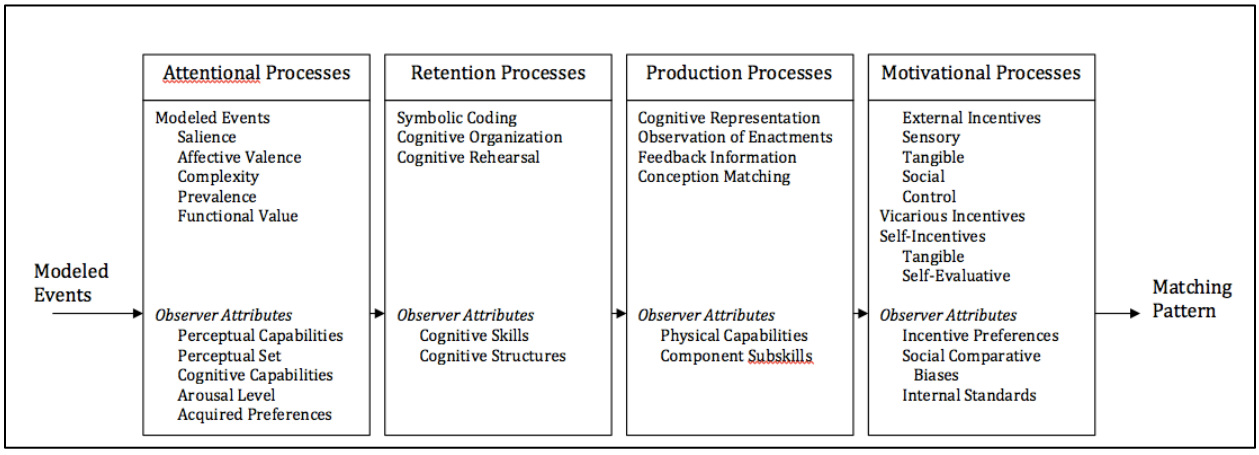


Figure 6: Subprocesses governing observational learning (Reproduced from Bandura, 1986, p. 52)

Bandura's model seemed helpful, in that its constituents offered possible points of reference around which the modeled practices, the teacher educator's modeling, and the teachers' observational learning may be intersecting in this study. However, it is the

determinants and mechanisms of these processes—not specified in the figure above—that became more helpful in thinking with the data.

From Tagging to Themes

Categories, such as "facilitators," "inhibitors," and "instructors," derived from Bandura's articulated conceptual framework were tried out against the video data, and as a result study-specific definitions evolved for the categories, as did certain types that went in them. For example, I looked for what in the episode was potentially guiding observational learning activities; i.e. "facilitators." Through the data coding process certain attention-directing aids, retention-directing aids, and behavioral referents emerged as "facilitators." Two examples of retention-directing aids that emerged are: (1) a discussion of rules that attempt to capture the conceptual structure of a modeled practice, and (2) the use of symbolism (verbal or imaginal). These then became some of the codes that helped me to derive meaning from and interpret the data.

Working dialectically between Bandura's theories on modeling and my data on explicit modeling in teacher education raised questions such as: What might be the processes that are discernable from this data? And, what did it mean to be a learner in these settings, and in relation to these processes? Was there a structure to the way explicit modeling unfolded? These questions guided me to stay close to the data and to continue working with them.

As a result some tentative categories emerged as I reread across the data sources with some preliminary assertions in mind.[36] For example, I conjectured that the teacher educator was actively and intentionally trying to procure the learners' attention, and whether what was being said and done could be construed as retention-directing aids. Also, I inferred from this initial testing of the data that certain cues and signals were being expressed about the positive and negative implications of the modeled practices. With these preliminary assertions in mind, I worked comprehensively through the data corpus looking for confirming evidence, but also looking for counterexamples to the categories such as attention-directing aids, retention-directing aids, cueing, and acquiring rules that

[36] Definitions of all socio-cognitive analysis codes can be found in Appendix 3.

were forming.

These efforts raised several questions. The follow-on dialogue was creating opportunities to talk about the modeling, but was it yielding opportunities to think for teacher-learners? And if there were opportunities to think, could it be construed that the teacher-learners were involved in processes where they were creating, considering, or refining their theories of action; i.e. their preferred modes of teaching and associated rationales? In what ways was it important if the modeling was pre-meditated? Were there affordances when it was not? Could modeling serve as a "representation" in the same way that teacher educators use videos and case studies? How could it be different? In order to help me think through these questions, to find things that would challenge these emerging categories, and manage the emerging assertions that I wanted to make, I returned to the data and kept in mind the following question: What counterexamples of the processes and the structures can you see? I continued reviewing the data and revising my categories, and my assertions until there was a fit between my assertions and the data.

In reviewing the data I created multiple indices that structured the episodes in different ways. For example, I drew out all of the questions from all of the episodes and categorized them into (1) questions to solicit naming of the modeled practice; (2) questions intended to ascertain what the teacher-learners noticed about the modeled practice; (3) questions hoping to find out information about their practice; (4) questions meaning to create an interactive context through the interrogative marker "why"; (5) questions to try and determine a value for the modeled practice; and (6) questions intended to prompt consideration of alternatives. Doing so revealed that there were important nuances to the questions in the follow-on dialogue that were not just attempts to get teacher-learners to talk about the modeled practice. Rather, there seemed to be a trajectory of sorts. I, also, developed substantive and theoretical categories from initial codes, and put them in table layouts. This work led me to deliberately describe how the codes and categories I was establishing related to Socio-cognitive theory, and what possible contribution they might make to my thinking about dialogic modeling. Such work guided me in seeing the ways in which my interpretations fit, or did not fit, with existing theories about modeling. These table layouts were instructive, but they lacked the cohesiveness that could help me articulate my thinking. Therefore, I began elaborating these categories by naming them and

memoing about their dimensions and the relationships between the categories. This was followed by several attempts to create concept maps and data displays. Following Maxwell,[37] the concept maps I created were sketches and visual representations that laid out the elements that I felt were bearing on dialogic modeling, and the possible relations among them. I created displays, as well, where a category would be across the top, sub-categories down the side, and then episodes across the second row. I created displays where assertions were laid out with respect to a certain category and relevant evidence was in a parallel column. The visualizations allowed me to compare data unit to data unit, and data unit to code/category, and code/category to code/category. The data displays led me to craft excerpt-analytic commentaries, some of which were case-focused (or episode specific) where I explored how an assertion was manifest in the individual episode, and others were issue-focused, where I would look at multiple episodes to see if the assertion was present across. Some examples of these preliminary assertions include: (1) The processes were affording the teacher-learners opportunities to confer, puzzle, push back, and probe the teaching practices being modeled; (2) the groups were involved in developing what Charles Goodwin might call a "professional vision" (Goodwin, 1994); (3) teacher-learners were engaged in a professional discourse; one in which teachers were talking about teaching, and focusing on decisions and dilemmas; and (4) teacher-learners were having an arduous time attending to their learning.

Following Kathy Charmaz, I crafted informal memos that (a) defined the category, (b) explicated the properties of the category, (c) specified the conditions under which the category arises, is maintained and changes, (d) described its consequences, and (e) showed how the category relates to other categories (adapted from Charmaz, 2006, p. 92). These memos evolved though as—following Emerson, Fretz, and Shaw—I tried to consider certain questions in the writing of the commentaries. They write

> It is generally helpful when writing analytic commentaries to consider such questions as the following: What are the implications of the events or

[37] As Maxwell writes, "A concept map of a theory is a visual display of that theory—a picture of what the theory says is going on with the phenomenon you're studying. These maps do not depict the study itself, nor are they a specific part of the research design or a proposal….Rather concept mapping is a tool for developing and presenting the conceptual framework for your design. And like a theory, a concept map consists of two things: concepts and the relationships among these" (Maxwell, 2012, p. 54).

> talk recounted in the excerpt? What nuances can be teased out and explored? What import does this scene have for the analytic issues addressed in the paper? Indeed, ethnographic writers often develop such commentary by exploring the tension set up between the focused idea and the more textured and complex fieldnote (Emerson, Fretz, and Shaw, 2011).

Even in this phase, I continued to try and challenge my assertions. I continued to search for disconfirming evidence, and I consulted colleagues and argued for counterfactuals to my emerging assertions. These were attempts to try and enable and disable my preconceptions, to consider alternative explanations, and push me to question the warrants that were leading me to argue that what I was seeing in the data was typical.[38]

Creating indices, creating codes, making concept maps, creating displays, and crafting informal memos taught me much about the generated data. Each step led to the next, and each was necessary in coming to the interpretations I finally reached and discuss in the chapters that follow. In this section I have deliberately chosen to provide only a sketch of what I did during this portion of the analytical work, rather than provide a robust explication. I have done so to keep the analytic processes close to the interpretations that emerged from them. Therefore, readers can find indices on pages 128-129, and definitions and categorizations of codes in Appendix 3, and coding examples and their significance throughout Chapter 4. Doing so is an attempt to situate the readers as "co-analysts" (Erickson, 1986), so that they will be able to capably judge my evidentiary warrants. With these tentative assertions and narrative commentaries in hand I began the third phase of analytical work: negotiating.

Negotiating Work

The process of a dissertation is unlike others, and to elide the fact that others guide one's thinking and help to make decisions about when certain ideas are "ready" would be to diminish the influence that the process of negotiating has on the analytical effort. As a researcher I repeatedly ask myself, "Have I done all of the analytical work that my conclusions imply I did?" While my responses varied throughout, as a doctoral student I

[38] Anna Neumann's (2006) comments on her work reflect my sentiments better than I can: "These concepts and perspectives did not lead or limit me as much as they sensitized me to the kinds of things I could look for relative to contextualization. As noted earlier, I sought "to hold lightly" these concepts and perspectives, even while relying on them to illuminate analytic possibilities." (Neumann, p. 391)

had the luxury of others to help me respond to this question. In a similar spirit, Michael Quinn Patton articulates the role of the doctoral student's committee

> Savvy graduate students learn that to complete a degree program, the student's committee must approve the work. The particular understandings, values, preferences, and biases of the committee members come into play in that approval process. The committee will, in essence, evaluate the student's contribution, including the quality of the methodological procedures followed and the analysis done. (Patton, 2002, p. 11)

The final phase of analysis is one that is on going. Until this dissertation is printed—and in fact beyond—I will continue the analytical work of negotiation. "Negotiating" is not a pejorative term. Rather, it is a term that describes how this work has been enriched. Negotiating the work can include principled dialogues about emerging assertions, or interpretive discussions on data units. It includes multiple meetings with the dissertation chair, and informal and formal exchanges with committee members. It includes presenting on the work in various stages with interested and invested peers. It requires formulation of the ideas in different formats, such as powerpoint or poster presentations, both of which constrain the way one can talk about the work. Patton's comments reflect that the approval of the committee is more than an evaluative function. Their efforts signal a phase of the study that entails an interaction of understandings and scholarly preferences among other things. All of these efforts inform my analysis and the product that I am able to deliver.

A Note on Language

The nature of this research being conducted in India, with second language English learners, and by a researcher/teacher educator proficient in both English and Kannada created some interesting analytical challenges. Language features as an important part of this research study in two ways: first, in terms of analysis; and second, in terms of representations. The information that was generated through the video recordings and the stimulated recall interviews came in multiple languages. All participants switched between English and Kannada fluidly, often using both languages within the same sentence. My facility with Kannada allowed me to not have to translate, or have translated, any transcriptions, or view the videos with a fluent speaker of Kannada. In transcribing, there

were times when I would consult online dictionaries, or contact the research assistant, but for the most part the distillation of the language was of my own doing. Sherry Simon has argued that translation is more than just choosing words from dictionaries. Rather it is about making decisions on meaning:

> The solutions to many of the translator's dilemmas are not to be found in dictionaries, but rather in an understanding of the way language is tied to social realities, to literary forms and to changing identities. Translators must constantly make decisions about the cultural meanings which language carries, and evaluate the degree to which the two different worlds they inhibit are 'the same'. These are not technical difficulties, they are not the domain of specialists in obscure or quaint vocabularies. They demand the exercise of a range of intelligences. In fact the process of meaning transfer has less to do with finding the cultural inscription of a term than in reconstructing its value. (Simon, 1996, pp.137-138)

A concern that Simon's comments raise is that any translation work that is done by someone other than the researchers is generating secondary data, since meaning is being made from the naturally-occurring talk, rather than directly found in the language. This is not to say, however, that decisions were not made on the meaning of certain terms and phrases that the participants used. To be able to work with the data, I was moving terms back and forth from English to Kannada to test what I felt was being said. The need for this stemmed in part due to the teacher-learners' sometimes low to medium level of fluency in either language. But this is also because Kannada doesn't necessarily translate smoothly into English. In Bogusia Temple, Rosalind Edwards, and Claire Alexander's cross-language qualitative research they found that their Bangladeshi field researcher had to make choices about what was trying to be conveyed so that it could be recognized for interpretation

> And there is a common phrase that people use. Use that. But if you try to back-translate raw Bangla it has not got any sense. … [That phrase] means courts and offices. Although people have never been to courts and offices, it is a phrase people use when they say 'all the public offices are closed today'. They mean all the public offices when they say it…so… when they say 'I have been to … the courts and offices', but they have never been to court …Even like when we drink ... when we say in village language [we] say we 'eat' even if you drink. We say we eat. (Temple, Edwards, & Alexander, 2006)

Parallel issues continually came up for me during this research. Teacher-learners

used words and phrases that had a deeper context-specific meaning, or as can often be the case, unidentifiable meaning to an outsider. Therefore, for analysis I took the position that translating the information into English would alter the meaning in ways that might take away from the local meaning. And I maintained the integrity of the data set by analyzing the data in its naturally occurring form.

Representation on the other hand requires some level of translation. In my representing of the social interactions that occurred during my research, I have chosen to present what was said the way it occurred, and to provide the native written form of the spoken Kannada, followed by the English translation. Below is an example of this representation.

> Did you notice my teaching? Eega nann teaching mathadthaidru. (ಈಗ ನನ್ನ teaching ಮಥದನ್ಥ್ಯೈದನ್ರು; *We were just talking about my teaching*.)

I have chosen to do this not for any theoretically informed reason, but for practical reasons. My intention for this dissertation is that it provides multiple audiences an opportunity to consider the implications of teacher educator modeling, and the work involved in explicit modeling. For this reason, I anticipate that some interested readers may have fluency in Kannada, and others may not. For those that do, I provide the text in its Kannada form, so that they can see better what was being said. For those that do not, I provide my English translations. The transliterated text also provides a window into my analytical thinking, as this was the text that I originally worked with during my analysis.

Summary

Developing a clear understanding of the work involved in explicit modeling was a process that took many twists and turns. However, it seems that I have been consistently doing three types of work: proto-analytic, analytic, and negotiating. I began with a grounded approach that kept me close to the data, but my inexperience prompted several missteps. This learning prompted me to organize data and generate empirical packages that would support me in mediating pitfalls of first-person research. With this organization, I moved to a more dialectical approach, which allowed me to draw on the data I had

generated, while simultaneously looking to outside literature. The intellectual history of this dissertation research reflects the constant interaction between the data, theories of learning, and my conceptualizations. I recount it because one's research methods influence what can be seen and what can be imagined as improving teacher education. More of this story will unfold in the chapters that follow.

In chapter five I return to methods of analysis to explicate the second set of analytical tools employed in this study. In chapters four and six, I present and describe my analyses of the work that is involved in explicit modeling, and the opportunities and challenges that affords. The discussion includes two distinct, yet interconnected, conceptual assertions anchored by empirical results. Thus, chapters four and six can be read as the interpretive representations of this research, where I present warrants for my assertions for the processes of dialogic modeling, and its symmetrical chiastic structure.

Chapter 4:
Characterizing Dialogic Modeling

Introduction

In this chapter I provide an interior, or "micro-analytic view," of dialogic modeling. To do so, I discuss the constituents that my analysis brought forward. In chapter six I explicate dialogic modeling from a more synoptic view. This chapter is an effort to unbundle dialogic modeling as it occurred in the data I generated. By doing so my aim is to provide initial warrants for claims that this dissertation seeks to make: Modeling can involve teacher-learners in deliberate study of principled practices. And, it can provide a resource for a teacher educator to use in ways that help teacher-learners consider and question the exportability of modeled practices. This chapter unfolds in two parts. First, I argue that there were particular processes and means to dialogic modeling, including garnering attention, encoding, and cueing to consequences. And second, I discuss their relevance as mechanisms for teachers' education. My effort in this chapter is to respond to the first research question for this study: What is the work involved in enacting explicit modeling of teaching practices?

As an opening to this discussion, I offer a sketch of an analysis for a particular episode from this data set. In Box 2 below, the dialogically modeled practice is listening. In the episode, the group is having a conversation about the teacher educator's recently modeled practice. The group has been working in small groups to review each other's teaching videos and to practice having collaborative conversations. As they are wrapping up, the teacher educator is having a conversation with one of the teacher-learners about the types of questions that they can ask each other when analyzing teaching video. The ideas are something that the teacher educator wants others to hear, so he asks everyone to turn towards each other. The teacher educator then employs the practice of listening as Sureka tells the group what they just talked about in their side conversation. Following Box 2, I disaggregate what is involved in engaging in the deliberate study of modeled principled practices, and the ways in which modeling is used as a resource by the teacher educator to help teacher-learners consider the exportability of modeled practices. As I will argue throughout this chapter, the constituents that I identify heightened my awareness of the work involved in dialogic modeling and the opportunities to learn that it provided.

Box 2: Episode 1.3.3 - Metagalli Session 3_Modeling 3_Listening

1		The teacher educator takes a seat at the front of the room and starts to tell the teacher-learners about the conversation, but then he stops. He asks the teacher-learner instead to recount the conversation to the group. She agrees and then stands and tells everyone what they discussed. As she is doing this, the teacher educator stands up, takes a drink of water, checks in on the electronic equipment, and then returns to his seat. The teacher-learner continues to address her colleagues directly, and every so often makes eye contact with the teacher educator. Once she finishes making her comments she returns to her seat. After her comments, the teacher educator introduces the next activity. Before the next activity begins, though, the teacher educator initiates a discussion on what just happened.
2	TE:	Adakke munche nanna ondu prasne ide. Ega, ma'am, we had a conversation, munche navu matadiddivi, and nanu ellaru karadiddini. ellaru eega matadona. e bagge matodona. Naanu start madidini, enagide, start madidini, then I stopped. I stopped. Then I asked her to tell you, avaru heltaidare, alva? Naanu enu madidini? What did I do? Did you notice? (ಅದಕ್ಕಕೆ ಮುಂಚೆ ನನ್ನ ಒಂದು ಪ್ರಸ್ನೆ ಇದೆ. ಏಗ ma'am, we had a conversation. ಮುಂಚೆ ನಾವು ಮತದಿದ್ದಿವಿ, and ನಾನು ಎಲ್ಲರು ಕರಡಿದ್ದಿನಿ, ಎಲ್ಲರು ಈಗ ಮಾತಾಡೋಣ, ಎ ಬಗ್ಗೆ ಮತೊಡೋಣ, ನಾನು start ಮಾಡಿದಿನಿ, ಏನಾಗಿದೆ, start ಮಾಡಿದಿನಿ, then I stopped. I stopped. Then I asked her to tell you. ಅವರು ಹೇಳ್ತಿದಾರೆ ಅಲ್ವ? ನಾನು ಏನು ಮಾಡಿದಿನಿ? What did I do? Did you notice?; *Just before that, I have one question. Just now, Ma'am, we had a conversation. Just now we were talking, and I called everyone over to talk. "Let's talk about this topic," I said. I started, then I stopped. I stopped. Then I asked her to tell you. She talked with you, didn't she? What did I do? What did I do? Did you notice?*)
3	Varuni:	You observed.
4	TE:	I observed.
5	TE:	Illi, naanu bandidini, yellaru karadidini, yes? Okay. Naanu ekade bandidini, okay, yellaru ede matodana. I sat down. Naanu explanation kodlilla. Yaroo explanation kotru? (ಇಲ್ಲಿ, ನಾನು ಬಂದಿದೀನಿ, ಎಲ್ಲರಉ ಕರಡಿದಿನಿ, yes? Okay. ನಾನು ಇಕದೆ ಬಂದಿದೀನಿ, okay, ಎಲ್ಲರು ಇದೆ ಮಾತಾಡೋಣ. I sat down. ನಾನು explanation ಕೊಡಲಿಲ್ಲ. ಯಾರೂ explanation ಕೊಟ್ರು?; *I came here, and called everyone over, yes? I came over here, okay, and told everyone we would talk about something. I sat down. I didn't give the explanation. Who gave the explanation?)*
6	Sureka:	Naanu. (ನಾನು; *I did*.)

7	TE:	Okay, naanu enu madidini? (Okay, ನಾನು ಏನು ಮಾಡಿದೆನಿ?; *Okay, what did I do*?)
8	Teachers:	**Kailsu**. (ಕೈಲ್ಸು; *Listened*.)
9	TE:	Kooru admale, **kailsu,** aramage kutkotaidini, alva? Adu olleda, ketta? (ಕೂರು ಅದ್ಮಲೆ, ಕೈಲ್ಸು, ಅರಮಗೆ ಕುತ್ಕೊತೈದಿನಿ, ಅಲ್ವ? ಅದು ಒಳ್ಳೇದ, ಕೆಟ್ಟ?; [*Sitting, cupping ear, and putting feet up*] *After I sat down, I listened, and I sat here quietly, didn't I? Is that a good thing, or a bad thing*?)
10	Ramamani:	**Listening** olledu, alva? Neevu hellidenu **kailiskobeku**, alva? Amele matadbeku. Addake olledu, sir. (Listening ಒಳ್ಳೇದು, ಅಲ್ವ? ನೀವು ಹೇಲ್ದೆನು ಕೈಲಿಸ್ಕೊಬೇಕು, ಅಲ್ವ? ಆಮೇಲೆ ಮಾತಾಡಬೇಕು. ಅದ್ದಕೆ ಒಳ್ಳೇದು, sir.; *Listening is a good thing, isn't it? You are saying that we should listen, aren't you? Then talk. For that reason, it is a good thing, sir.*)
11	Teachers:	oonhh.
12	TE:	Okay, yes, naanu **kailtini**. Naanu ella helabahudu, alva? Ovaru helubahudu, alva? So, ovaru heladre enu benefit ide? (Okay, yes, ನಾನು ಕೈಲ್ತಿನಿ. ನಾನು ಎಲ್ಲ ಹೇಳಬಹುದು, ಅಲ್ವ? ಓವರು ಹೇಳುಬಹುದು, ಅಲ್ವ? So, ಓವರು ಹೇಳದ್ರೆ ಏನು benefit ಇದೆ?; *Okay, yes, I listened. I could have said everything, couldn't I? But she could tell you, right? So, if she tells you instead of me, then what is the benefit of that?)*
13	Raghu:	Avaru helidre, avaru samana, onde vrutti nalli iroavaru, but nevu swalpa melu mattadalli eno suggestion kodoke bandavre, suggestion kodtare, namage ondatara bhaya irrate, navu ivaru eno suggestion share madkondare adaralli bhaya irodilla. (ಅವರು ಹೇಳಿದ್ರೆ, ಅವರು ಸಮಾನ, ಒಂದೇ ವೃತ್ತಿ ನಲ್ಲಿ ಇರೊಅವರು, but ನೀವು ಸ್ವಲ್ಪ ಮೇಲು ಮಟ್ಟದಲ್ಲಿ ಏನೋ suggestion ಕೊಡೋಕೆ ಬಂದವರೆ, suggestion ಕೊಡ್ತಾರೆ, ನಮಗೆ ಒಂದತರ ಭಯ ಇರ್ರತೆ, ನಾವು ಇವರು ಏನೋ suggestion share ಮದ್ಕೊಂದರೆ ಅದರಲ್ಲಿ ಭಯ ಇರೋದಿಲ್ಲ.; *If she does the talking, she is equal to us, she is from the same profession, but if someone who is above our level gives us a suggestion, then we have some kind of apprehension that it might not be relevant or work. If the suggestion comes from our peer then that sort of worry won't be there*.)
14	TE:	Good. That is great. Adu ondu olle point. Inondu? Inodndu, naanu rest tagobahudu. Adide. (Good. That is great. ಅದು ಒಂದು ಒಳ್ಳೆ point. ಇನೊಂದು? ಈನೊದ್ನ್ದು, ನಾನು rest ತಗೋಬಹುದು. ಆಡಿದೆ.; *Good. That is great. That is one nice point. Another? Another… I can take rest. That is there.*)
15	Teachers:	[Laugh]

16	TE:	But naanu **kailde**, naanu matadi, matadi, matadi, naanu **kailsagolla**. Naanu enu matadtaidini gotagalla. Naanu sumne matadtini. (But ನಾನು ಕೈಲ್ದೆ, ನಾನು ಮಾತಾಡಿ, ಮಾತಾಡಿ, ಮಾತಾಡಿ, ನಾನು ಕೈಲ್ಸಗೋಲ್ಲ. ನಾನು ಏನು ಮಾತಾಡ್ತಿದೀನಿ ಗೊತಗಲ್ಲ. ನಾನು ಸುಮ್ನೆ ಮಾತಾಡ್ತೀನಿ.; *But, I was listening. If I talk, talk, talk, then I can't listen. I won't even know how what I am saying is being heard. I'm just talking*.)
17	Ramamani:	Adakke, ovaru enu helodanna **kaileskobekalva**? (ಅದಕ್ಕೆ, ಒವರು ಏನು ಹೇಳೋದನ್ನ ಕೈಲಿಸ್ಕೊಬೇಕಲ್ವ; *For that reason, we should listen to what others are saying, shouldn't we?*)
18	TE:	Ade, neevu ollede heluthidiya. If you take the student position, then elarge gotagatte a student enu **keltaidare**. Naavu sumne teachers positionnalli ninthkolodadare, student position martogtivi. Yestu varsha agide, alva? So, ondu sarti kutko bahudu. (ಅದೇ, ನೀವು ಒಳ್ಳೆದೆ ಹೇಳುಥಿದಿಯ. If you take the student position, then ಏಳರ್ಗೆ ಗೊತಾಗತ್ತೆ ಅ student ಏನು ಕೆಲ್ತಯ್ದರೆ, ನಾವು ಸುಮ್ನೆ teachers ಪೊಸಿತಿಒನ್ನಲ್ಲಿ ನಿನ್ಥ್ಕೊಲೋದದರೆ, student position ಮರ್ತೊಗ್ತಿವಿ. ಎಷ್ಟು ವರ್ಷ ಆಗಿದೆ, ಅಲ್ವ? So, ಒಂದು ಸರ್ತಿ ಕೂತ್ಕೋ ಬಹುದು.; *What you are saying is a wonderful point. If you take a student role, then everyone will follow our example and listen. Also, if we just stay in the teacher's role, we forget what it is like to be a student. It's been so many years, hasn't it? So, once in a while we can just sit*.)
19	Sureka:	Experience madkobahudu. (Experience ಮಾಡ್ಕೋಬಹುದು; *We can experience it*.)
20	TE:	Experience madbahadu. Avaru explanation helbahadu. Adu nimma level, adu ondu. Naanu **kailiskobahudu** adu inondu. Mooru, naanu rest tagobahudu. (Experience ಮಾಡಬಹದು. ಅವರು explanation ಹೆಲ್ಬಹದು. ಅದು ನಿಮ್ಮ level, ಅದು ಒಂದು. ನಾನು ಕೈಲಿಸ್ಕೊಬಹುದು ಅದು ಇನೊಂದು. ಮೂರು, ನಾನು ರೆಸ್ಟ್ ತಗೋಬಹುದು; *You can experience it. They can give the explanation. That it will come from your peer. That is one benefit. I can listen, that is another. Three, I can take some rest*.)
21	Teachers:	[Laugh]
22	Raghu:	Matte TTT (teacher's talk time) less agatte, STT (student talk time) more. (ಮತ್ತೆ teachers' talk time less ಆಗತ್ತೆ, TTT (teacher's talk time) less, STT (student talk time) more.; *Then, TTT will be less, and STT will be more*.)
23	TE:	Exactly, exactly.

In this episode, the teacher educator has chosen to yield the floor to a teacher-learner, Sureka, so that she may take an extended turn of talk. Implicit in his actions is the modeling of ambitious teaching—teaching that necessitates facilitating opportunities for learners to interact with each other and with content by endeavoring to make learners' ideas available for public discussion (Cohen, 1998; Lampert & Graziani, 2009; Lampert et al., 2013). Following this, the group takes up what it was that the teacher educator modeled when he yielded the floor. The teacher educator opens the dialogue by asking, "Did you notice what I just did? What did I do?" One teacher-learner responds, "You observed" (Line 2). Then several teacher-learners respond, "Kailsu": in English, "You listened." The teacher educator pushes back and remarks that he just sat there, and didn't say or do anything; then questions whether this was appropriate, or not. Ramamani, a senior member of the group and the assistant principal of the school, assertively responds that listening is a good thing (Line 9). She goes on to say, that we should *listen* first and talk later; implying that listening is a part of teachers' work. Others agree. Ramamani adds that it is important to listen to what others are saying (Line 16). Then, the teacher educator poses a question about other benefits to listening, yielding the floor, and having a student do the talking, to which four contributions are offered.

1. Teachers should listen then talk (line 9).
2. Providing a learner an opportunity to talk takes the fear (bhaya) out of the situation (line 12).
3. If the instructor keeps on talking and talking, then there is no opportunity to hear children's thoughts (line 15).
4. Providing opportunities for students to take the floor limits teacher talk time and increases student talk time (line 21).

Not far below the surface of what I have just discussed sits an operating order that drove the explicit modeling practice that I have come to refer to as dialogic modeling. In the span of 1 minute and 42 seconds, the teacher educator *garners* the teacher-learners' *attention*, collectively the group *encodes* the practice as "listening," and together the group lays out multiple affordances of the modeled practice, which *cues* them to the benefits of this practice when teaching children. After the opening question, the teacher educator then guides the teacher-learners to zoom in on a particular practice by posing a series of *steering questions*; underlined in lines 1 thru 7 in Box 2. As he is talking—in line 8—the

teacher educator reenacts the practice through exaggerated *physicalizations*. These questions and this reanimation prompt *naming the practice*—"listening"—by a teacher-learner. Members of the group pick up on this and *repeat the name* throughout the rest of the dialogue (represented in bold). In lines 4 and 8, the teacher educator presents the *conceptual structure* of what he modeled: he moved to an open space in the room, asked for everyone's attention, sat down, prompted a teacher-learner to speak, quietly listened, and did not give his own explanation. In line 11, the teacher educator poses a question about the benefits of this practice—*cueing them to consequences*. Members of the group then point out four potential consequences for yielding the floor and listening in their own classrooms.

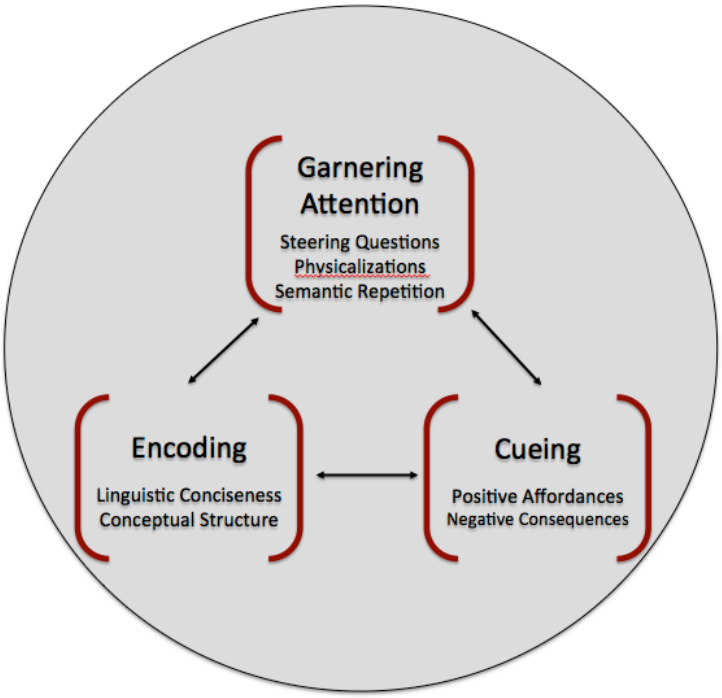


Figure 7: Processes and Sub-processes of Dialogic Modeling

Although limited in scale, the work of dialogic modeling seems to be deep in scope. Teasing apart the multiple processes and means that are occurring in such a short frame of time is necessary to understand the work that was involved in dialogic modeling. As in any instruction, these processes and their constituent means were intricate, nested within each other, and imperceptible in real time. They bubbled up through my analysis. The steering questions and the physicalizations at the beginning, coupled with the semantic repetition later on are attempts to garner and focus attention on the modeled instructional practice. The naming of the practice and the articulation of the conceptual structure encode the practice. And the final question provides an opportunity for the group to cue each other to the positive consequences of the practice. These three processes—garnering attention, encoding, and cueing—spiraled through multiple sub-processes and constitute my interpretation of the work involved in dialogic modeling. These processes involved teacher-learners in

deliberate study of the modeled practices. And they constitute the ways in which modeling was used as a resource. Figure 7 illustrates the interrelated and nested nature of these processes.

In this chapter, I first present my analytical interpretations of all 29 dialogic modeling interactions that helped to reveal the substance of the practice. Then, I discuss how these interpretations prompt a consideration of what it takes to enact dialogic modeling—the central focus of the first research question for this dissertation. Finally, I touch upon the ways in which modeling is leveraged through dialogue, and how those opportunities can help teacher-learners appraise the modeled practices for their exportability from the professional learning setting to their own practice.

Three Processes and their Sub-processes of Dialogic Modeling

As discussed in the preceding chapters, dialogic modeling was enacted 29 times at four different sites with four different groups of teacher-learners. The practice emerged within the context of weeklong professional learning workshops. Appendix 4 provides the salient background information for each of these episodes, wherein I specify the instructional practice, when and where it occurred, how long it lasted, and to what extent the teacher-learners were familiar with the practice. To examine how dialogic modeling enabled teacher-learners and the teacher educator to work together and study the social and intellectual dynamics of teaching practices, my approach to the analysis represented in this chapter attended specifically to the conversation that followed after the modeling. As the teacher-learners were not primed for the physical model, e.g., "Now pay attention to how I do this," I use the label "representative modeling" as a marker for the physical performance, and "follow-on discussion" to reference that portion of dialogic modeling.

My analysis plan was to attend to the particulars of the specific practice, and draw out from this analysis a nuanced understanding of what was involved in the interactions belonging to enactment of the practice, from a robust data set. After coding and categorizing each episode, I then created displays and matrices to help me visualize my interpretations. In the interest of space and time, I provide a categorical coding matrix below for two of those 29 episodes. In the gray columns are the processes and means that I identified. In the white columns are the running transcripts from Episode 3.2.3 – Movement

from Kumbarkoppallu GHPS, and Episode 4.1.1 – Distributing Materials, from Cauvery School. Expansions of the abbreviations are on page two of the table.

Although much of my presentation in this chapter relies on these two episodes, the interpretations are guided by my analysis of the entire data set. Providing readers with access to two full episodes, as I have bound them, is intended to provide a window into the analytical thinking that guided me to the themes and assertions I specify throughout the rest of this chapter. My intention is to sketch the contours of the circumstances that I argue were present in the dialogic modeling practice in detailed and tenable ways.

Table 5: Categorical Coding Matrix –Processes and Means			
Processes	**Episode 3.2.3 (Movement)**	Processes	**Episode 4.1.1 (Distributing Materials)**
Garnering Attention (SQ) (Lines 1 -9)	*1 The teacher educator and the teacher-learners are discussing the tone of a conversation that just occurred. During this discussion, Priya turns to talk directly to the teacher educator, who happens to be seated next to her. Her voice is soft and quiet. While she is talking, the teacher educator stands up and moves towards the front of the room. Once he arrives there, he asks Priya to repeat what she was saying. She does so, much louder this time, and the discussion about the tone continues with the whole group.* 2 TE: Did you notice what I did…I was sitting here and we were talking, and then what did I do?	*Garnering Attention (SQ) (SR) (Lines 1-5)* *Encoding (CLR) (Lines 1-5)*	*1 It is the beginning of the workshop and the teacher educator has just framed the session. He comments that before they go into more details he would like the teacher-learners to take a "pre-test." For the pre-test, he asks them to watch a short video and jot down what they notice. For this he distributes half-sized blank sheets of paper to each person; starting with the front row and then moving towards the back. After, he moves back to the front of the room to offer some directions for the pre-test.* 2 TE: Now before I show you the video I have one question to ask. Did you notice how I distributed the papers just now? What did I just do? [pause] Lilly. What did I do just now? How did I distribute the papers?
Encoding (CLR) (Line 9)	3 Priya: You asked me to repeat whatever I shared with you. 4 TE: That was you.		3 Lilly: You just passed it. 4 TE: How did I distribute it? **5** Teachers: **One-by-one.**
Cueing (PC) (Lines 10-11)	5 Rekha: You stopped her. With friendly answers. 6 TE: Amele (ಆಮೇಲೆ; *Then*)? 7 Rekha: Then you two were discussing. 8 TE: Adhadhmele (ಅಧಧ್ಮೇಲೆ; *After that)*, then after we were discussing there, then what did I do? 9 Priya: You went there. 10 TE: Very good. I came here. Naan yaake (ನಾನ್ ಯಾಕೆ; *Why did I*), why do you think I came here? 11 Sundaramma: Discussionalli nammana serskolloke(ಡಿಸಿಸ್ಚುಸಿಸ್ಸಿಒನಲಲ್ಲಿ ನಮ್ಮನ ಸೇರಿಸ್ಕೊ ಲ್ಲೋಕೆ; *To include us all into your discussion*). 12 TE: Right, ellarna sersbeku naanu summne alli koothre, naavibhru maathadthivi. Mathe awru englishalli bega bega maathadthare, naavella… (ಎಲ್ಲರನ ಸೇರಿಸ್ಬೇಕು ನಾನು ಸುಮ್ಮನೆ	*Cueing (PC) (Lines 6-14)* *Garnering Attention (SR) (Lines 6-14)* *Encoding (CS)* (Lines 15-17) *Cueing (NC)* (Lines 15-17)	6 TE: **One-by-one**. Is there a benefit to doing it this way? Why do we do that? Sometimes we do that. We distribute **one-by-one**. 7 Kavitha: No one is missing. 8 TE: Make sure no one is missing? 9 Lilly: Yes, yes. 10 TE: You mean like attendance? What do you mean?... Oh, to make sure no one misses a paper. Make sure each one gets one. Right. Right. Ok, that's one. Any other benefits? 11 Jyoti: You can see each face. 12 TE: You can see each face, especially, if you have new faces. So you can see every face. Then? 13 Ameena: Identify. 14 TE: Identify. Make eye contact. It's more personal. 15 TE: What is the limitation of this; doing it **one-by-one**? There are benefits we said, but there are also limitations. 16 Teachers: Time constraint. 17 TE: Mmmm. In your classes with 40, 50, 60 students, can

Garnering Attention (P) (Line 12) *Encoding (CS) (Line 13)* *Cueing (PC) (Line 13 and 14)*	ಅಲ್ಲಿ ಕೂತರೆ, ನಾವಿಬ್ರು ಮಾಥಡ್ತ್ಹಿವಿ.ಮತ್ತೆ ಅವರು ಇಂಗ್ಲಿಷಲ್ಲಿ ಏನು ಬೇಕು ಮಾತಾಡ್ತಾರೆ, ನಾವೆಲ್ಲಾ …; *Right, we need to include everyone. If I just sat there, then just two of us would be talking. Plus, she speaks English very quickly. All of us…*) 13 [Moving while talking] But I come here, then if I am here and naavibhru maathadthivi (ನಾವಿಬ್ರು ಮಾಥಡ್ತ್ಹಿವಿ; *we two are talking*), you are all struggling, "Eenu helthaidhare?" (ಏನು ಹೇಳ್ತ್ಥೈ ಧರೆ; "*What are they saying"?*) [Cups ear] Right? And you were talking very softly, also. If I come here [Moving while talking] then you have to speak loudly and it includes everyone. 14 TE: Just a small detail. A very small detail. I thought what she was saying was important and I wanted everyone to hear what she was saying so I moved, so she could… so she had to speak loudly. She could not whisper any more. She had to speak loudly, because I came here. Because she was so loud, everyone was in the conversation.	*Encoding (CS) (Lines 18-30)* *Garnering Attention (SR) (Line 31)* *Encoding (CS) (CLR) (Line 31)* *Cueing (PC) (Line 31)*	you go one by one every time? Probably not. 18 TE: What are some other ways to distribute materials? 19 Madhavi: Pass on the papers. 20 Jyoti: Give it to the students. 21 TE: So, I could give it to the students. 22 Ameena: Give it to one, and tell them to pass it **one-by-one**. 23 TE: Ahh. Give them out bench wise. Go up to a bench, give it to one student and ask them to distribute to the class. Any other ways? 24 Teacher: Row wise. 25 TE: Row wise, bench wise… 26 Aadya: We can keep it here and ask the kids to come and pick one each. 27 TE: That's right, that's right. 28 Kavitha: It will take time, no sir? 29 TE: It also takes a little bit of time. 30 Kavitha: Yes. 31 TE: Good. Ok. This is just an example. This is a very small detail, but it can have big implications. They are not going to have an effect. By going around one by one you can make the personal connection. But if you put them up in the front you may not have that. But if going around one by one you lose time. But if you put them up in front or give them row wise it might be appropriate. These are all decisions we make as teachers. In any given class a teacher makes over a thousand decisions in one session. Most of them we don't realize we are deciding, when we make all these decisions in any class, over a thousand decisions. So that is an example—the distributing papers—that we will be talking more about this week. How to notice these little things. Eewaga artha aiyitha? (ಈವಾಗ ಅರ್ಥ ಐಯಿಥ?; *Do you understand what I just said?)*

SQ = Steering Question; P = Physicalization; SR = Semantic Repetition; CLR = Concrete Linguistic Referent; CS = Conceptual Structure; PC = Positive Consequence; NC = Negative Consequence

Garnering Attention

"Garnering Attention" emerged as a theme across the data set, and it occurred in multiple forms. My analysis helped me sort these forms into three main means: steering questions, physicalizations, and semantic repetitions.[39] Steering questions took the form of interrogative prompts that focus teacher-learners' attention and attempt to pinpoint the practice to be discussed. A physicalization might include an exaggerated reanimation of the modeled practice, while semantic repetition might include the repetition of concrete linguistic referent, or the exaggerated use of it.

As discussed in Chapter 2, much of what we know about learning from modeling comes from the work of Albert Bandura. In Social Cognitive Theory, attention is part of what determines observational learning. Bandura argues that certain behaviors and actions on the part of the model can heighten observers' engagement, and their noticing of what is being modeled (Bandura, 1986). Bandura calls these "facilitators." Facilitators constitute some of the attentional processes that are part of generative observational learning. While Bandura's findings came from laboratory studies done with children, the notions of attention and facilitating that attention are useful to consider here. Steering questions, physicalizations, and semantic repetition seem to serve as the necessary facilitators of attention in dialogic modeling that the representative modeling may have been unable to provide. In what follows, I explicate these three sub-processes as they occurred in the data.

Steering Questions

The left side of Table 5 presents Episode 3.2.3 – Movement. In this episode, the teacher educator launches a discussion by asking the teacher-learners, "Did you notice what I did…I was sitting here and we were talking, and then what did I do?" The question serves as a pivot point to turn back to the instructional practice that was represented through the teacher educator's actions. By asking this question, the teacher educator draws attention to his earlier movement. Two responses are offered, but they aren't concerned with the

[39] My data analysis suggests that these three are central to garnering attention, as they occurred across most of the 29 dialogic modeling episodes generated for this study. As I probed the data corpus for counter cases to force me to revise or reject my emerging hypothesis, other examples such as, "material demonstrations" and "distinctive social exemplars," emerged. However, these occurred less frequently than the three processes proposed here. Thus, I do not discount that there may be other means that play a part in garnering attention, but in the data I was able to generate, these three seem central.

particular time point that the teacher educator is asking about. He pushes the responders to think about what happened after these points. Priya comments that the teacher educator went to where he is standing now (Line 8). The teacher educator affirms and reiterates this response. Rather than simply stating what he just did, the teacher educator poses a series of questions that provoke the teacher-learners to consider what happened in the recent past (lines 1-9).

These data suggest that part of what is going on in the enactment of dialogic modeling is providing supports for the teacher-learners to recall the teacher educator's recent actions. The teacher educator follows his opening question with other questions asking the teacher-learners to consider what they noticed about his actions. He pushes until a particular response is offered: "You went there," which he then affirms and revoices. Through a question-response dialogue, the teacher-learners and the teacher educator reconstruct the narrative of the representative modeling, thus allowing the shared experience of the teacher educator's modeling of movement to be the basis of the discussion going forward.

In Episode 4.1.1 – Distributing Materials, similar steering questions are evident. The teacher educator, starting with the front row and then moving towards the back, hands half-sized blank sheets of paper to each teacher-learner for the next activity. After this, he returns to the front of the room to offer some directions. Moments after giving the directions, the teacher educator steers the group back to his practice, " Did you notice how I distributed the papers just now?" This is immediately followed by a direct question to one of the teacher-learners: " What did I just do, Lilly? How did I distribute the papers?" Lilly responds that he distributed the papers one-by-one.

This interaction (lines 1-6) parallels the opening interaction in Episode 3.2.3 – Movement, in that the teacher educator does not state what he just did. Rather, he uses a question to pivot back to his practice and prompt the teacher-learners to consider what they noticed about what happened in the recent past. In Episode 4.1.1, however, the question is more targeted— " Did you notice how I *distributed the papers* just now?"— asking them about what they noticed, thereby steering the teacher-learners' attention specifically to the representative modeling of distributing the papers. By doing so, the teacher educator garners the teacher-learners' attention onto a specific modeled practice,

which will be further scrutinized. Another small distinction between these two episodes is that the teacher educator directs his follow-up question to an individual teacher-learner when discussing the practice of distributing materials. By directly soliciting a response, the teacher educator narrows the space for other teacher-learners to contribute. Even though the space is limited, the narrative of distributing materials still gets reconstructed. Thus, allowing the shared experience of what was modeled to be the basis of the discussion going forward through a dialogue.

Below, Table 6 shows the first question of each follow-on discussion, which prompted teacher-learners to consider the modeled practice. Invariably the work of "noticing" (van Es and Sherin, 2002) was funneled through a question, came at the beginning of the dialogue, and led to the "decomposition" (Grossman et al., 2009) of the instructional practice. In the discussion section of this chapter I take up these efforts and relate them to other efforts to support the ongoing education of teachers.

Physicalizations

A second way attention was garnered in dialogic modeling is through physicalizations. In many dialogic modeling episodes the discussion was supplemented with the teacher educator reenacting what occurred, thereby symbolizing what was previously modeled. For example, in Episode 1.3.2 – Organizing for group work, Episode 2.1.2 - Giving instructions, and Episode 3.2.2 - Wait-time, physicalizations were part of the reconstruction of what was modeled during dialogic modeling. Sometimes physicalizations were limited to hand gestures, others were more demonstrative. Some episodes did not lend themselves to physicalization at all, such as Episode 1.3.1 - Problem posing and Episode 2.2.3 - Concrete and abstract. The common feature of the representative modeling in these episodes was that they both relied on material objects and graphics.

An example of an exaggerated physicalization in an effort to garner attention is evident in the last part of the discussion (Line 13) in Episode 3.2.3—Movement, shown above in Table 5 included earlier in this chapter. During the discussion the teacher educator reanimates what was previously modeled while pointing out the impact of the practice.

Table 6: Initial Steering Questions by Episode	
Episode	**First Discussion Question**
1.1.1 - Greetings	Did you notice how I greeted each person?
1.1.2 - Distributing Materials	Did you notice how I distributed the papers?
1.1.3 -Reiterating Homework Assignment	Why did I tell you about the homework two or three times?
1.2.1 - Recap	What did I just do?
1.2.2 - Organizing for Group Work	Did you notice how I put you in groups?
1.3.1 - Problem Posing	Why do we start with a problem?
1.3.2 - Organizing for Group Work	Did you notice, how did I make the groups?
1.3.3 - Yielding the Floor	Did you notice what I did while she was talking?
2.1.1 - Greetings	Did you notice what happened when you came in the room?
2.1.2 - Giving Instructions	Why did I ask you to write down the questions on the board?
2.1.3 - Stopping an Activity	Did you notice what I was doing when you were reading?
2.2.1 - Exploring	Did you notice how we started today's session?
2.2.2 - Recap	Did you notice what I just did?
2.2.3 - Concrete and Abstract	Do you know the difference between abstract and concrete?
2.3.1 - Rules	Did you notice how I gave some rules for this session?
2.3.2 - Jogging the Memory	Did you notice how I started the video conversation?
2.3.3 - Giving Instructions	Did you notice how I gave the instructions?
2.3.4 - Student at Board	Why did I ask Sir to write up on the board?
3.1.1 - Distributing Materials	Did you notice how I distributed the papers?
3.1.2 - Giving Instructions	Why did I give you the instructions before showing the video?
3.2.1 - Recap	Did you notice what I just did?
3.2.2 - Wait-time	Did you notice in my teaching how we were interacting?
3.2.3 - Movement	What did I do after our discussion?
3.3.1 - Grabbing Attention	Why did I have the video going?
3.3.2 - Calling on Students	What did I just do?
4.1.1 - Distributing Materials	Did you notice how I distributed the papers?
4.1.2 - Calling on Students	After I asked the questions, then what did I just do?
4.2.1 - Greetings	Did you notice what I did when you all entered the room?
4.2.2 - Recap	What did I just do?

13 [Moving while talking] But I come here, then if I am here and naavibhru maathadthivi (ನಾವಿಬ್ರು ಮಾಥಡ್ತಿವಿ; *we two are talking*), you are all struggling, "Eenu helthaidhare?" (ಏನು ಹೇಳ್ತಿದ್ದಾರೆ; "*What are they saying"?*) [Cups ear] Right? And you were talking very softly, also. If I come here [Moving while talking] then you have to speak loudly and it includes everyone.

As he makes a few points, the teacher educator reenacts the movement; moving quickly back and forth from his position at the front of the room to his previous seated position and exaggerating his physical movements through his pace and pronounced steps. The reanimation of the modeled practice that occurred just moments before, directs and focuses the teacher-learners' attention back to the modeled practice of movement. Exaggerating essential aspects of what was modeled directs attention back to the modeled practice. Physicalizations, such as this one, were mechanisms to garner attention that were evident in my analysis of the 29 dialogic modeling episodes.

Semantic Repetition

A third type of garnering attention identified in the data is semantic repetition. Across the episodes, the teacher educator uses keywords or phrases repeatedly in a short amount of time, suggesting that the teacher educator may be trying to focus attention on the practice through linguistic choices. The pronounced use of exaggerated or repeated linguistic choices is evident in episodes that take up complex facets of practice, such as in Episode 2.2.3 - Concrete and abstract and Episode 2.2.1 - Exploring. And it is even more pronounced in episodes such as Episode 4.2.2 - Recap and Episode 1.1.1 - Greetings. My analysis indicates that this may have been due to the teacher-learners' familiarity with these practices. In Episode 4.1.1 – Distributing Materials, the group linguistically marks the way the teacher educator distributed materials as "one-by-one," and picks this up (marked in bold in Table 5 included earlier in this chapter).

The teacher educator, in this case, is not the one that brings the term "one-by-one" into the conversation. The teacher-learners do (line 5). However, he does pick it up and uses it repeatedly: as shown in line 5 and then again in lines 14, 16, and 30. We see evidence of one teacher-learner's use of this term when she introduces another way to distribute papers later in line 21. Thus, in the span of 1 minute and 47 seconds this term is used 7 times.

Common referents are important because they confer meaning on cognitive abstractions. In studies on modeling with children, exaggerating or repeating linguistic choices was shown to heighten engagement, and facilitate the learning activity (Bandura, 1986). By consistently referring to what was modeled as a "one-by-one" procedure, the teacher-learners' attention was focused through the linguistic referent onto the way the modeled practice unfolded. The frequent semantic repetition suggests an attempt to instantiate some typology as well. A repeated linguistic marker can not only garner attention, but also it can help simplify an observed practice, a point discussed in the section below.

These three sub-processes—steering questions, physicalizations, and semantic repetition—are what I interpret to be part of the work involved in garnering teacher-learners' attention to the modeled practice. Relying on the cognitive skill, or other powers of perception, without garnering attention in the professional learning settings would have influenced what exploration was possible and what kinds of opinions could be generated on what was modeled. To rely on the representative modeling alone would have left much to chance. Attention is uncertain, and the properties of the representative modeling may or may not have been well crafted. These arrangements influenced what was made available for learning through observation. Dialogic modeling seemed to entail drawing the teacher-learners' attention to particular aspects or features of the modeled instructional practice and how the practice was taken advantage of in the setting. Although the focus of this study was not on what teacher-learners actually attended to, this analysis supports the claim that dialogic modeling consists of discernable efforts to garner teacher-learners' attention on the modeled practice. Moreover, by its very nature—as a dialogue between learners and educator—teacher-learners were involved in the instruction as much as the educator, and therefore it is probable that at least those speaking during the discussion were paying attention to the modeled practice. In the discussion section of this chapter, I elaborate on these points above to discuss how garnering attention—and these three means in particular—helped prime teacher-learners for deliberate study of the modeled practices, and, helped position the modeling as a resource for the group to consider whether the modeled practices might be exportable.

Encoding

Data analysis brought out a second prevalent process of dialogic modeling: encoding practices. Encoding in the 29 episodes occurred by way of two means: (1) deriving a conceptual structure, and (2) the naming of a practice, or some attribute of it. Naming and decomposing through defined language choices, conceptual rules, or symbols put the representative modeling to work. Both Albert Bandura and Barbara Rogoff agree that passing experiences of modeled practices can be maintained in a teacher's permanent memory if they are transformed into verbal symbols. The symbols provide the material for concept matching, generating rules, and creating standards to judge by. The process of retention, however, is also a process of appropriation that entails an interpretation of the representation, which mediates future actions and activities (Bandura, 1986; Rogoff, 1995). Therefore, in Episode 4.1.1—Distributing Materials, the manner in which the routine was carried out allowed the group to propose different ways to distribute materials that contrasted with the modeled one; e.g., row-wise, bench leader. In this section, I take up these two sub-processes of encoding—naming the practice and specifying its constituent parts—which constituted part of the work involved in studying modeled practices.

Deriving Conceptual Structure of an Instructional Practice

Across the 29 episodes, teacher-learners were engaged in the process of recalling the practice that was composed during the representative modeling, and they then broke the practice that they observed into constituent parts, just as they do in the excerpt below. Distributing materials (Episode 3.1.1) was also dialogically modeled at Kumbarkoppallu GHPS.

1	TE:	Ok. Before we start, ondhu prashne idhe (ಒಂದು ಪ್ರಶ್ನೆ ಇದೆ; *I have one question*). Did you notice how I distributed the papers? Eega naanu papers kottidhini (ಈಗ ನಾನು papers ಕೊತ್ತಿದಿನಿ; *Just now I gave you some papers*). Did you notice how I distributed them?
2	Priya:	Yes.
3	TE:	How did I do it?
4	Priya:	First, you gave papers to two of them, and they distributed the papers.
5	TE:	So, I gave the papers to two people and they distributed them. Good. Thank you. You noticed.

By asking, " Did you notice how I distributed the papers?" the teacher educator creates a space for the group to decompose the steps involved in the routine practice of distributing papers. This routine practice, although functional, is a requirement that precedes many activity structures that teachers provide. Priya's decomposition of what was modeled— step 1: "you gave papers to two of them;" step 2: "they distributed the papers"— applies a name to a routine practice that they have done as teachers, and highlights the constituent parts of that practice. Priya's response reflects two things: her noticing of the practice as well as the teacher educator's instructional choice, and her ability to parse practice into constituent parts. The initial decomposition leads to the listing of four alternatives to what was modeled.[40]

A second example of the group deriving a conceptual structure from the modeling of a single instructional practice emerged in my analysis of Episode 4.1.2 – Calling on Students at the Cauvery School. In this episode, the dialogic modeling of calling on students begins at the end of a "fishbowl" conversation with one of the teacher-learners. In the fishbowl, others were watching the teacher educator and the teacher-learner from the outside, refraining from commenting, and taking notes on the interaction. Following this, the teacher educator prompts a whole-group discussion on the three questions he had asked the group to attend to during the "fishbowl" conversation: (1) What were the questions he was asking?, (2) What were her responses?, and (3) What was the tone of the conversation? The dialogic modeling of calling on students centered on this final question.

After the teacher educator asks the group, "What was the tone of the conversation?," he then waits for several seconds, then he calls on one teacher-learner directly. The teacher-learner responds, and the teacher educator extends her response. Two other responses are given, unsolicited this time, and the teacher educator extends or probes these responses. The teacher educator then returns to the teacher-learner who was participating in the fishbowl, and asks her for her thoughts on the tone of the conversation.

[40] In spite of the routine being extracted out of the totality of instruction and then further broken down into micro-elements for scrutiny, the interaction is limited in what it offered the teacher-learners. In other episodes this initial decomposition into constituent parts leads to another dimension of the practice being decomposed. However, this discussion doesn't take the teacher-learners into a dialogue about the affordances or limitations of distributing materials in certain ways, nor does it provide a rich sense of the instructional implications of any of these options. The intent, it seems, is to provide an example of the type of work that the group will be engaged in over the course of the week, and not much more.

From this point, the teacher educator initiates a discussion about this interaction that just happened.

1	TE:	Before I wrap up I have one question, eega (ಈಗ; *just now*) we were talking, then I asked a group, ellarge keliddhu(ಎಲ್ಲರ್‌ಗೆ ಕೇಳಿದ್ದು; *I asked everyone*) what was the tone of the conversation. Remember this? Then what did I do? (pause) After I asked the question, "what was the tone of the conversation?" Then what did I do? Naan enu maadidhini? (ನಾನ್ ಏನು ಮಾದಿದಿನಿ; *What did I do*?) What did I do after? Naan prashne keladhmele naan enu maadidhini? (ನಾನ್ ಪ್ರಶ್ನೆ ಕೇಳಿದ್ಮೇಲೆ ನಾನ್ ಏನು ಮಾದಿದಿನಿ; *After I asked the question, then what did I do*?) Good, you are all thinking. Do you remember? Lilly do you remember?
2	Lilly:	You pointed at me.
3	TE:	I pointed at you. Very good. That's right. I specifically asked you. I asked a question to the group, I waited, then I specifically asked her. What's the benefit of asking one specific person?

In this interaction the teacher educator draws out and specifies the modeled practice as having a three-step process: (1) "I asked the group;" (2) " I waited;" and (3) "I specifically asked her." In so doing, the teacher educator specifies particular parts of his practice where he attempted to elicit a response from the group, and then waited for a response, and when no response was offered he solicited a particular learner to respond.

The practice of calling on students is one of the "invisible" parts of teaching and its import is often missed, but calling on students to respond to posed questions or to contribute their ideas is integral in ambitious teaching and the way in which a teacher carries this out has instructional implications. Making sense of this practice from a model when you are in the middle of it is difficult. It is reasonable to think that in facilitating a discussion on the modeled practice of calling on students, teacher-learners were presented with an opportunity to add nuance to what may have felt like quite a familiar procedure. Relying on the familiar, however, can lead to one's own practices going unchallenged. One way to alter or augment this is to draw out the conceptual structures of what is observed. These structures may or may not resemble the teacher's own existing conceptualization, yet when the two structures are set next to each other, then a concept matching process

ensues. Such a process aids in retaining aspects of the modeled exemplar. Psychological studies examining children's learning from modeling have shown that providing informative rules of a behavior produce faster changes than having the observer infer the rules (Bandura, 1986). As the informative rules; i.e., conceptual structure, of the modeled practice in this episode were specified, it can be inferred that this encoding provided an opportunity to decompose and simplify the modeled practice; making it potentially more available for consideration. I take up the implications of the process of encoding further in the discussion section of this chapter.

Naming Practice

The second means of encoding practice evident in the data is the naming of practice. While tagging a practice with a label, may not seem dire on the face of it, providing a linguistic referent for a practice that is otherwise unnoticeable can provide a formative learning opportunity. Recently, Magdalene Lampert and her colleagues argued that common language enables teacher-learners to develop shared meanings about practice, thereby supporting them in learning about what counts as a problem and what constitutes an appropriate solution (Lampert, Boerst, & Graziani, 2011). Their research implies that finding and employing a common *concrete linguistic referent* supports teacher-learners to consider practice. Above, I discussed how a key linguistic referent—"one-by-one"—was repeatedly used to garner attention. In Episode 4.1.1 – Distributing Materials, a second key linguistic referent was employed as well, which served to name the practice.

In this episode, the teacher educator names the modeled practice with the verb "distribute."

1	TE:	Now before I show you the video I have one question to ask. Did you notice how I **distributed** the papers just now? What did I just do? Lilly. What did I do just now? How did I **distribute** the papers?
2	Lilly:	You just passed it.
3	TE:	How did I **distribute** it?
4	Teachers:	One-by-one.
5	TE:	One-by-one. Is there a benefit to doing it this way? Why do we do that? Sometimes we do that. We **distribute** one-by-one.

Through a *concrete linguistic referent* the practice was symbolically reduced and a common vocabulary was made available, such that it could be used flexibly throughout the rest of

the interaction. When the modeled practice was tagged with this term that reduced and symbolized the practice, the teacher-learners and the teacher educator were engaged in the process of encoding the practice. My analysis of the 29 episodes indicated this symbolic reduction of practices seems to be an integral condition of dialogic modeling.

This case is representative of what occurred in many episodes in this data corpus, where the practice was named and teacher-learners and the teacher educator used that name flexibly throughout the interaction. For example, across all four sites the teacher educator employed dialogic modeling to explore the practice of reviewing material previously covered at the start of the session. When the second and third sessions of the workshop started the teacher educator reviewed what previously happened when they had met in the preceding session or sessions. Each time during the dialogic modeling of that instructional practice, the term "recap" quickly became the common referent and was used repeatedly throughout the conversations. The common linguistic referent here anchored a shared meaning about a particular instructional practice, thereby providing an entrée into the problems and solutions associated with this instructional practice.

Critics might argue that "recaps" and "distributing materials" are simple and manageable teaching practices, or as I have cast them "routines" and "strategies" that readily lend themselves to be named. This argument may not consider that recaps are an important part of making content explicit for students and that distributing materials can serve to organize the learning environment in such a way that maximizes time, minimizes disruptions, and can help students in knowing what to expect, thereby providing a more safe comfortable learning environment. In the data I generated, however, there is also evidence of encoding via a concrete linguistic referent in other dialogically modeled practices, such as "problem posing" and "listening," which in many ways are less wieldy.

In Episode 1.3.3—Listening, the teacher-learners and teacher educator collectively construct the name for the modeled practice.

7	TE:	Okay, naanu enu madidini? (Okay, ನಾನು ಏನು ಮಾಡಿದಿನಿ?; *Okay, what did I do*?)
8	Teachers:	**Kailsu**. (ಕೈಲ್ಸು; *Listened*.)
9	TE:	Kooru admale, **kailsu**, aramage kutkotaidini, alva? Adu olleda, ketta? (ಕೂರು ಅದ್ಮಲರೆ, ಕೈಲ್ಸು, ಅರಮಗರೆ ಕುತ್ಕೊತೈದಿನಿ, ಅಲ್ವ? ಅದು ಒಳ್ಳೆದ, ಕೆಟ್ಟ?;

		[*Sitting, cupping ear, and putting feet up*] *After I sat down, I **listened**, and I sat here quietly, didn't I? Is that a good thing, or a bad thing*?)
10	Ramamani:	**Listening** olledu, alva? Neevu hellidenu **kailiskobeku**, alva? Amele matadbeku. Addake olledu, sir. (Listening ಒಳ್ಳೆಯದು, ಅಲ್ವ? ನೀವು ಹೇಳ್ಲಿದೆನು ಕೈಲಿಸ್ಕೊಬೇಕು, ಅಲ್ವ? ಆಮೇಲೆ ಮಾತಾಡಬೇಕು. ಅದ್ದಕೆ ಒಳ್ಳೆಯದು, sir.; ***Listening** is a good thing, isn't it? You are saying that we should **listen**, aren't you? Then talk. For that reason, it is a good thing, sir.*)
11	Teachers:	oonhh.
12	TE:	Okay, yes, naanu **kailtini**. Naanu ella helabahudu, alva? Ovaru helubahudu, alva? So, ovaru heladre enu benefit ide? (Okay, yes, **ನಾನು ಕೈಲ್ತಿನಿ. ನಾನು ಎಲ್ಲ ಹೇಳಬಹುದು, ಅಲ್ವ? ಓವರು ಹೇಳುಬಹುದು, ಅಲ್ವ?** So, **ಓವರು ಹೇಳಿದ್ರೆ** ಏನು benefit **ಇದರೆ**?; *Okay, yes, I **listened**. I could have said everything, couldn't I? But couldn't she also tell you? So, if she tells you instead of me, then what is the benefit of that?)*

The teacher educator, through a steering question, draws the teacher-learners' attention back to what he did. The teacher-learners cast his actions as "listening." From that point the label "listen" is picked up and attached to the practice. This is a practice that the teacher-learners have familiarity with, and Ramamani's assertion—" Listening is a good thing, isn't it?"—is affirmed by others. The teacher educator steers the teacher-learners to consider the value that they have placed on the practice, which situates the practice as an entity for further scrutiny.

This interaction (presented in full at the beginning of this chapter in Box 2) illustrates the presence of a concrete linguistic referent in the dialogic modeling of a complicated instructional practice. Not only is the practice complicated to enact with students in effective ways, but also it is complicated to see this generic activity as part of professional practice. My interpretation of this linguistic conciseness is that the group is engaged in the process of encoding the practice of eliciting individual student thinking.[41] Before the dialogic modeling discussion, when the teacher educator turned to Sureka to tell the group about some salient point they had just discussed, he chose to create a space for her to share her thinking about the content the group was focusing on. The intent was to surface the

[41] Eliciting and interpreting individual student's thinking has also been identified as a "high-leverage practice." (http://www.teachingworks.org/work-of-teaching/high-leverage-practices - #3)

ideas they had discussed such that others could benefit. Rather than providing the details himself, he yielded the floor as a way to draw out her thinking. Such a practice is not simple, yet, when done well can be highly effective in classrooms. The label of "listening" was this group's way of encoding this practice in terms that they could relate to and knew.

The comments that Sureka made before the dialogic modeling discussion were rich and thought provoking. What the teacher educator was doing; i.e., the practice of eliciting a learner's thinking, in those moments could have gone unnoticed. In essence, to the unguided eye, the teacher educator lazily sat down. However, the dialogic modeling discussion steered the teacher-learners towards his practice, and the naming of his actions cast it in more definite terms. As with Episode 4.1.1 – Distributing Materials, a reductive term symbolized the practice. In this case, teacher-learners named the practice as listening, and the group appropriated that term throughout the rest of the interaction. In so doing, the group was collectively engaged in a process of encoding practice.

In the discussion section of this chapter, I discuss the implications of encoding practices in teacher learning. For now, it is important to highlight an important feature of the two encoding processes and sub-processes I have just described. Social Cognitivists have argued that partial familiarity with what one observes enables the memory to play a part in the appropriation of modeled practices (Bandura, 1977). Retention improves when the novel is integrated with the already well known. If a teacher-learner is familiar with what they observe, then some form of concept matching may go on. If a teacher-learner is unfamiliar with the modeled practice, then this may inhibit the integration between what they observed and what they know. What this means is that from a social cognitive perspective, some integration between the experiences of the modeled practice and the teachers' existing experience and practices could have been going on, because of their familiarity with what they were observing. Ramamani's assertive comments about the importance of listening and the teachers' affirmation of this (lines 10 and 11) imply that the teacher-learners may have some familiarity with this part of the work of teaching. Thus, their familiarity seems to facilitate their capacity to label the practice, and ostensibly retain it in such terms. This could have occurred even if the group did not collectively bend their attention back to the modeled practice. However, learning and improving one's teaching requires regular analysis of instructional practices and their effectiveness. Bearing witness

to the complex interactions that constitute ambitious teaching alone may not have afforded a sufficient opportunity to do the analytical work required. Furthermore, relying on the teacher-learners' powers of observation wouldn't have leveraged the collective environment and the shared knowledge that the professional learning setting hoped to provide.

Cueing to the Positive and Negative Consequences

My analysis indicated a third process evident in the dialogic modeling episodes. I return to Episode 3.1.1 – "Movement" from the beginning of this chapter (Table 5) as a way to establish this premise and to help explicate the process of cueing learners to the consequences of an instructional practice. In this episode, the teacher educator repositioned himself in order for others to hear Priya's comments about a previous interaction. Early in the follow-on discussion the teacher educator asks, "Why did I come here?" To which, Sundaramma responds

> 10 Discussionalli nammana serskolloke. (Discussionಅಲ್ಲಿ ನಮ್ಮನ ಸೇರಿಸ್ಕೊಳ್ಳೋಕೆ; *To include all of us in the discussion*).

This comment begins the process of cueing teacher-learners to positive and negative consequences. When the teacher educator poses the question, "Why did I come here?," he creates an interactive space to discuss the purpose of the movement. "Why" serves as an interrogative marker that queries the intentions of an instructional decision. Sundaramma asserts that the movement brought others into the conversation. Later on in the discussion, the teacher educator expands on this idea when he ends the discussion:

> 14 TE: I thought what she was saying was important and I wanted everyone to hear what she was saying so I moved, so she could … so she had to speak loudly. She could not whisper any more. She had to speak loudly, because I came here. Because she was so loud, everyone was in the conversation.

The meaning drawn out externalizes the teacher educator's thinking and *cues*—either signals or reminds—the teacher-learners to the positive consequences of purposeful movement.

Cueing to the positive consequences is also evident in Episode 4.1.1 – "Distributing Materials" (Table 5). In line 5, the modeled practice of distributing materials is characterized as "one-by-one." The teacher educator affirms this (start of line 6), then poses another question to the group:

6	TE:	One-by-one. Is there a benefit to doing it this way? Why do we do that? Sometimes we do that. We distribute one by one.
7	Kavitha:	No one is missing.
8	TE:	Make sure no one is missing?
9	Lilly:	Yes, yes.
10	TE:	You mean like attendance? What do you mean? ... Oh, to make sure no one misses a paper. Make sure each one gets one. Right. Right. Ok, that's one. Any other benefits?
11	Jyoti:	You can see each face.
12	TE:	You can see each face, especially, if you have new faces. So you can see every face. Then?
13	Ameena:	Identify.
14	TE:	Identify. Make eye contact. It's more personal.
15	TE:	What is the limitation of this, doing it one by one? There are benefits we said, but there are also limitations.
16	Teachers:	Time constraint.
17	TE:	Mmmm. In your classes with 40, 50, 60 students, can you go one by one every time? Probably not.

In response to the teacher educator's question about the benefit of distributing materials one-by-one, three comments are offered from around the room—make sure everyone receives the materials, see each face, and make eye contact. The question, "Is there a benefit to doing it this way?" prompts the articulation of ostensible positive consequences to distributing materials one-by-one. As the teacher educator fielded these comments, he steers the conversation towards criticizing the practice. The limitation of distributing materials one-by-one is obvious to these teacher-learners: time. Sympathizing with their predicament, he notes that distributing materials one-by-one with class sizes over 50 students is impractical. Identifying this limitation serves as a gateway to consider alternatives to what was modeled and experienced. The discussion continues:

18	TE:	What are some other ways to distribute materials?
19	Madhavi:	Pass on the papers.
20	Jyoti:	Give it to the students.

21	TE:	So, I could give it to the students.
22	Ameena:	Give it to one, and tell them to pass it one by one.
23	TE:	Ahh. Give them out bench wise. Go up to a bench, give it to one student and ask them to distribute to the class. Any other ways?
24	Kalpana:	Row wise.
25	TE:	Row wise, bench wise.
26	Aadya:	We can keep it here and ask the kids to come and pick one each.
27	TE:	That's right, that's right.
28	Kavitha:	It will take time, no sir?
29	TE:	It also takes a little bit of time.
30	Kavitha:	Yes.

The question, " What are some other ways to distribute materials?" (line 18), creates a space for teacher-learners to contribute their own ideas and draw from their own experiences. By inquiring into alternatives multiple options emerge such as, "Row wise," "Give them to one student and tell them to pass it one-by-one," and "You can keep the materials here and ask them to pick it up." To this last response, Kavitha comments that this method might take more time, too. By questioning the utility of this last alternative, Kavitha seems to be associating a conceptual rule from earlier in the discussion when the teacher-learners said en masse, "Time constraint." Alternatively, she may be drawing on her own experience. Either way, she is highlighting how time can be a factor when deciding which way to distribute materials, and that there are potential limitations to certain ways. This discussion closes with the teacher educator's summary:

31	TE:	Good. Ok. This is just an example. This is a very small detail, but it can have big implications. Going around one-by-one you can make a personal connection. But if you put them up in the front you may not have that. If you go around one-by-one you lose time. But if you put them up in front or give them row wise it might be appropriate. These are all decisions we make as teachers. In any given class a teacher makes over a thousand decisions in one session. Most of them we don't realize we are making--over a thousand decisions. So that is an example— the distributing papers— that we will be talking more about this week. How to notice these little things. Eewaga artha aiyitha? (ಈವಾಗ ಅರ್ಥ ಐಯಿತ?; *Do you understand what I just said?)*

In ending the discussion, the teacher educator reinterprets the limitations and affordances of the options that the teacher-learners put forward during the discussion. He recasts Jyoti and Ameena's comments (lines 11 and 13) as making a "personal

connection"—a positive consequence. And he depicts the teacher-learners' comments (line 16) of "time constraints" as "losing time"—a negative consequence. By interpreting and summarizing the discussion, the teacher educator provided supplementary cues about the positive and negative consequences of the modeled practice, thereby attempting to reinforce the cues that emerged through the discussion. The teacher-learners and the teacher educator, in these brief comments, are highlighting some of the relational work of teaching, and considering the means to strategically build relationships with students. Their short discussion points to the ways opportunities were created in dialogic modeling to analyze the modeled practice and extract this meaning.

In sum, my analysis of these examples suggests that cueing to consequences is part of the work that constitutes dialogic modeling. It has been argued that observational learning can be improved by informing observers in advance about the benefits of adopting modeled practice rather than waiting until the observers happen upon the affordances when they test them out. My analysis suggests that the extraction and signaling of these types of consequences could also be interpreted as having provided some structure to the modeled practice, thereby ostensibly aiding in retention. By distilling out plausible consequences, teacher-learners were engaged in a process of determining whether similar actions might cause a particular effect. By posing questions about the benefits and limitations of a practice, and prompting the group to weigh the alternatives, the teacher educator created a space for the teacher-learners to derive and attach—in this case—a cause-and-effect structure. By deriving a structure, learners had the opportunity to acquire rules, guidelines, or principles.

In this chapter I have argued that garnering attention toward the modeled practice is a process of dialogic modeling that came through the follow-on discussion. This process unfolded through one of three sub-processes, or through a combination of these. The teacher educator steered the teacher-learners' attention back towards the modeled practice through a series of questions. Or, the teacher educator may have physically reenacted what was modeled as a way to set them up for further consideration of the modeled practice. Or, a third way to garner attention was through the repeated use of certain key words or phrases that highlighted the practice from the rest of the instruction. The work of garnering and steering the teacher-learners' attention through these three

sub-processes brought the modeled practice into focus, thereby, abstracting it and bringing teacher-learners' attention back to the modeled practice for further scrutiny. Encoding practice was also a process that occurred during the follow-on discussion. This process tended to be undertaken by both the teacher educator and the teacher-learners. When the group developed a common concrete linguistic referent by naming a practice, it reduced the practice into something that was identifiable, representable, memorable, and therefore portable. When governing principles were externalized, then this too provided teacher-learners an opportunity to encode the practice. Cueing to affordances and consequences was the third process of the 29 episodes of dialogic modeling explored in this study. As with the other processes, cueing occurred during the discussion and was carried out by either the teacher educator or the teacher-learners. Signaling positive and negative consequences provided an opportunity for teacher-learners to develop some cognitive control over what was modeled; a point I take up in the discussion below. These three processes hung together to buttress dialogic modeling. They served as the means and mechanisms for how dialogic modeling unfolded, and they were its drivers. My analysis in the first part of this chapter brought to bear the manner in which these processes were operating, and in the discussion that follows I take up what can be inferred from such an analysis.

Discussion

Modeling is a conventional resource generically available in teacher education settings. As David Cohen, Stephen Raudenbush, and Deborah Ball (2003) have argued, though, in teaching resources only matter when they are noticed and used. A similar premise is applicable in teacher education. If the resource of modeling remains unleveraged, then its implications and import are uncertain. Relying on the observational experience alone is limiting. Undoubtedly, experiencing the modeling on its own could merit some general impressions that could be acted upon. However, harnessing that experience through explicit and deliberate means makes it a resource for the study and learning of professional practice.

Dialogic modeling was enacted in such a way so that teacher-learners and the teacher educator could work on the analysis of instructional practices together. The work involved deliberately attending to the practices of the teacher educator. It created opportunities to leverage the experience of the representative modeling, and draw out the expertise of the teacher-learners in the follow-on discussion. It was designed to offer opportunities to weigh alternatives and scrutinize ostensible consequences. The teacher-learners sometimes took on these jobs, and at times the teacher educator steered them towards this work. In doing so, teacher-learners and the teacher educator were collectively engaged in the important work of analyzing a range of instructional practices. Analysis took the form of moving back and forth from the modeled instructional practice to the dialogue, and it stimulated an oscillation between the learners' experiences as teachers to their experience of the modeled practice as learners. My intention for this work was to find out how the enactment of what I have come to call dialogic modeling operated and what opportunities for learning it provided. I found that the practice was relatively consistent, a point which I further explore through other analyses discussed in chapter 6, and that the teacher-learners were engaged in the thoughtful kind of analysis that often appear in larger teacher education endeavors, such as video analysis, simulations, and case study work (van Es & Sherin, 2002; Dieker et al., 2008; Shulman & Shulman, 2004). My findings concerned with the three processes point to three types of investigative work that the literature supports as generative vehicles for analyzing instructional practices: noticing, decomposing, and analogic reasoning.

Noticing

Noticing was a key part of the work involved in the dialogic modeling enacted for this study. Noticing, in general terms, is about becoming aware or recognizing some facet of an experience. Everyday, we take note of our surroundings, our interactions, or of particular things that catch our eye. However, noticing in teacher education means more. Two researchers, Elizabeth van Es and Miriam Sherin[42] have helped to organize thinking

[42] My intention in forefronting van Es and Sherin's work is not an effort to minimize their predecessors' efforts. I recognize that in the U.S. John Dewey prepared the field by guiding teachers to attend to children's outer and inner attention (Dewey, 1904), and that the child study movement of the 1930's (e.g. Stern, 1930) urged teachers to develop their observational powers. Furthermore, as Frederick Erickson has written,

about this construct. Building upon the efforts of linguistic anthropologist Charles Goodwin (Goodwin, 1994), van Es and Sherin proposed that noticing in teacher education involved: (1) identifying what is important in a teaching situation; (2) making connections between specific classroom interactions and broader principles of teaching and learning; and (3) using knowledge of teaching contexts (students, school, subject) to reason about a situation (van Es and Sherin, 2002). The literature on teacher noticing has made major strides in the decade since van Es and Sherin's work. As a result, the construct of noticing has received much attention. Noticing within the midst of teaching, noticing details in the work of others, and noticing through mediating tools such as video, have all become essential foci of teacher education (NRC, 2000, Mason, 2002, and Sherin, Jacobs, and Philipp, 2011). In short, noticing has become a fundamental way to do the complicated work of decomposing practice so that it is learnable (Ball in Sherin, Jacobs, and Phillip, 2011).

In dialogic modeling, as well, noticing the particulars of the experience seems to have been foundational for the decomposition of practice. Across the episodes, after the teacher-learners experienced the representative modeling, they were prompted to consider what they noticed about their experience. In some cases the practice was named, such as in Episode 1.1.1—Greetings and Episode 1.1.2—Distributing Materials, and in others the question was more open ended, as in Episode 2.1.1—Greetings and Episode 2.2.2—Recap. Throughout, though, it seems that noticing, through the lens of steering questions (see Table 6), was invoked as the mechanism that helped teacher-learners transition from their experience of the representative modeling to a collective decomposition of it.

My analysis highlights that such steering questions were not the only means to provide for noticing instructional practice. Additionally, physicalizations and semantic repetition were part of the work of guiding teacher-learners' attention in the 29 times dialogic modeling was enacted. Through these endeavors to focus attention, the teacher

---

teacher educators at the Bank Street Laboratory for Educational Experiments were explicit in their efforts to direct teacher-learners' attention to children's activities and interests. Also, several efforts were focused on building teachers' capacity for attentiveness at the Institute for Research on Teaching at Michigan State University in the early years of the 1980s (Erickson in Sherin, Jacobs, and Philipp, 2011). These were essential efforts. It seems, though, as there has been a groundswell of interest in professional noticing as a means for professional development (e.g., NRC, 2000, Mason, 2002, and Sherin, Jacobs, and Philipp, 2011) the construct is undergoing some useful refinement. And I find van Es and Sherin's articulation in 2002, particularly helpful.

educator leveraged physical and verbal means to provide teacher-learners the opportunity to focus their attention on the modeled instructional practice. What followed were conversations that decomposed the practice into constituent parts, aims, and consequences.

Decomposing

In research reported on by Pam Grossman and her colleagues in 2009, they identify "decomposition" as integral to the education of novices across several professions (Grossman et al, 2009). "Breaking down complex practice," they argue, is necessary for novice's development in professional practice. Some examples of breaking down practice include, "focusing on the elements of lesson planning in teacher education, teaching aspects of speech and delivery for preachers, or targeting the development of the therapeutic alliance during the preparation of therapists" (Grossman et al., p. 7). After their extensive cross-professional study, the research team concluded that "naming the parts" and "identifying components" was fundamental to learning teaching. If applied with some degree of integrity, argue the researchers, teacher-learners begin to develop a professional vision, which aids them in seeing and naming parts of practice (Goodwin, 1994 in Grossman et al, 2009). Grossman and her colleagues' work spurred an enthusiasm for decomposition in the field of teacher education (e.g., Lampert et al., 2013; McDonald, Kazemi, & Kavanagh, 2013; Windschitl et al., 2012).

In dialogic modeling, the teacher-learners both encoded the instructional practices and derived their conceptual structures. In doing so, they had the opportunity to delve into the complicated work of decomposing practices, and work on naming practices, breaking down practices into constituent parts, weighing alternatives to observed practices, and projecting both positive and negative consequences. These opportunities to analyze practices also afforded an opportunity to hear what colleagues had to say, and to put words to and give voice to some of their own ideas. They also heard back from the teacher educator, who relayed scholarly research and practice through his own interpretations. They had the opportunity to engage in these ways over various types of practices as well that took such forms as organizing for group work, reviewing previous lessons, and providing learners an opportunity to explore materials on their own terms.

Learning from experiences requires some cognitive organization (Bandura, 1977). Engaging in encoding practices and cueing each other to the positive and negatives consequences, can be interpreted as helping teacher-learners impose structure on their experiences, which produce flexible and functional mental representations (Nelson in Ben-Peretz, 1995). Scholars have argued through their own work that engaging in such work can provide the necessary contexts and abilities to see the consequences of instruction and enable them to develop shared meanings about appropriate ways to support student learning (Lampert et al., 2013; Sleep, 2012; Lampert, Boerst, & Graziani, 2011; Lampert & Graziani, 2009; Lewis, 2007). What runs through the frames of the 29 dialogic modeling episodes discussed above is guided and principled decomposition in order to facilitate the cognitive organization of experiencing modeled instructional practices.

Part of the work of decomposing practices in the 29 dialogic modeling episodes was an effort to decompose the bundled representation of modeled instructional practices into constituent parts. At times colloquial names of practices, such as "recap," "greetings," and "wait-time" emerged quickly. And in some cases, the label emerged through a slower collective discourse that teased out and repeated in pronounced ways "listening," "exploring," and "teaching through problems." Specifying the structures of the observed practices furthered these efforts. In my analysis of Episode 4.1.2 – Calling on Students, I presented the distillation of the conceptual structure of the modeled/observed practice, which entailed a three-step process: (1) "I asked the group"; (2) " I waited"; and (3) "I specifically asked her." In so doing, the dialogic modeling of this instructional practice provided an opportunity to reconsider what was observed and to specify it in targeted terms. My analysis shows that teacher-learners and teacher educators collectively engaged in this work, and were successful in finding possible contours of fine-grained instructional practices.

Importantly, the teacher-learners and the teacher educator built upon these efforts to decompose the constituents by decomposing the representative modeling in terms of aims and potential consequences as well. Decomposing the aims, the integrated steps, and the consequences of a practice together constitute an important opportunity to study and potentially learn about modeled principled practices. If teacher-learners' and the teacher educator only attended to the integrated steps, then the decomposition would only concern

the technique, rather than the practice. The risk would be that the practice would be pulled away from its purpose. As teaching is a purposeful activity, other dimensions of practice need to be decomposed. The consequentiality of explicit modeling practices, of the type that I discuss here, it seems, is in its capacity to provide teacher-learners opportunities to acquaint themselves with more than just the constituent parts of practices.

Dewey argued for firmer connections between aims and ends. Knowing an aim not only provides direction to a learning activity, argued Dewey, but it influences the steps taken during the activity. Furthermore, knowing the aim is necessary in foreseeing possible consequences. For Dewey, such foresight functions in three ways. First, careful observation of present conditions allows one to see what means are available and what might hinder the reaching of a goal; second, foresight can help order and sequence the available means; and third foresight makes choosing alternatives possible (Dewey, 1916).[43]

Dewey's argument urges me to think that without active engagement with the aims and potential consequences in the decomposition of practices, then a teacher's flexible control over the practice may be limited. With such limited meaning, a teacher that has learned about a practice may simply "steam ahead," without an ability to adjust and adapt. If attention is only given to the constituent parts of an instructional practice, and aims are neglected, then I find myself agreeing with Dewey that this may not afford intelligent

[43] In his own terms, Dewey writes

> Of course these three points are closely connected with one another. We can definitely foresee results only as we make careful scrutiny of present conditions, and the importance of the outcome supplies the motive for observations. The more adequate our observations, the more varied is the scene of conditions and obstructions that presents itself, and the more numerous are the alternatives between which choice may be made. In turn, the more numerous the recognized possibilities of the situation, or alternatives of action, the more meaning does the chosen activity possess, and the more flexibly controllable is it. Where only a single outcome has been thought of, the mind has nothing else to think of; the meaning attaching to the act is limited. One only steams ahead toward the mark. Sometimes such a narrow course may be effective. But if unexpected difficulties offer themselves, one has not as many resources at command as if he had chosen the same line of action after a broader survey of the possibilities of the field. He cannot make needed readjustments readily. The net conclusion is that acting with an aim is all one with acting intelligently. To foresee a terminus of an act is to have a basis upon which to observe, to select, and to order objects and our own capacities. (Dewey, 1916, p. 57)

action. If the intention of decomposition is to foster intelligent observation, selection, and ordering of instructional practices, then aims should not be elided.

This explication aligns with previous discussions in this dissertation about the conceptualization of practices. Practices are not only the constituent tasks of instruction, such as handing out papers one-by-one, making eye contact, and being quick and efficient about it. They also concern beliefs and commitments, such as wanting to convey to students that each of them is important to the teacher, and that they have a relationship. Practices are not only about technique, but also larger educational aims (Ball & Forzani, 2009; Lampert & Graziani, 2009; Cohen, 1988). In the 29 episodes of dialogic modeling, the teacher-learners and the teacher educator name some guidelines, structures, or principles about the modeled practices, such as timing, sequencing, and relevant language. However, part of the utility of decomposing the practices was also in the distillation of what might happen if such practices were deployed in a classroom situation with students.

In my presentation of Episode 1.1.3-Listening in Box 2 from the beginning of this chapter, I discussed the four ostensible consequences that the teacher-learners drew out from the representative modeling and the follow-on discussion. Ramamani led off with the assertion that teachers should listen then talk. Then Raghu explained that providing a learner an opportunity to talk, instead of always having the teacher do the talking, takes the fear (bhaya) out of the classroom. The teacher educator contributed to the listing of positive consequences by remarking that if the teacher monopolizes the floor, then there is no chance to discern what sense children are making out of the lesson. Raghu, then, draws out a final consequence in very functional terms: "TTT (teacher's talk time) will be less, and STT (student talk time) will be more."[44] Such work is an example of how dialogic modeling

[44] Raghu's framing of this final point bears noticing. He uses very succinct language to express his ideas, which also echo the teacher educator's thoughts. The language resembles, and was conveyed in such a way, as if it were coming from rote memory. It is reasonable to think that Raghu, a senior member of the teaching staff at Metagalli, had attended several government sanctioned professional development workshops. In the workshops that I attended in preparation for this research, the work of teaching and learning was often reduced into such simple acronyms. The educational landscape in India is rife with these: CCE (Continuous and Comprehensive Evaluation), ABL (Activity-Based Learning), TLM (Teacher Learning Materials), ALM (Activity Learning Materials). Packaging practice in precise terms is a culturally appropriate practice in India. While, the work discussed in this section was not necessarily to solely label activity structures and tasks, encoding practices in the ways I have described fits with cultural and professional norms, and is a custom that teachers are familiar with from in-service teacher training.

provided opportunities to develop interpretable images of what ambitious teaching can look like in their own practice.

Analogic Reasoning

To deliver on the promises of drawing teacher-learners' attention to modeled instructional practices and taking deliberate efforts to decompose those practices, there still remains a challenge to the learning opportunities that dialogic modeling provided. Dewey argues

> As matter of fact, the more [one] confines [oneself] to noticing and fixating the forms of words, irrespective of connection with other things (such as the meaning of the words, the context in which they are habitually used, the derivation and classification of the verbal form, etc.) the less likely is [one] to acquire an ability which can be used for anything except the mere noting of verbal visual forms…The scope of coordination is extremely limited…. In the ordinary phraseology, it is not transferable. But the wider the context—that is to say, the more varied the stimuli and responses coordinated—the more the ability acquired is available for the effective performance of other acts; not, strictly speaking, because there is any "transfer," but because the wide range of factors employed in the specific act is equivalent to a broad range of activity, to a flexible, instead of to a narrow and rigid, coordination. (Dewey, 1916, pgs. 37-38)

Although Dewey's commentary speaks to rote learning and the methods that accompany it, his ideas serve as an analog for me on the limitations of noticing and decomposing. His argument raises concerns that if dialogic modeling solely fostered attention and provided opportunities to decompose modeled practice, then the best outcome would be to acquire verbal forms of the visual representations. This is a necessary but not sufficient goal. Dewey's remarks press me to consider in what ways dialogic modeling created supports for teacher-learners to navigate the "transfer" problem. And there is another looming concern. What of the calcified practices and conceptions of practice that these experienced practicing teachers may have had? Miriam Ben-Peretz argues "The formation of teachers' own concept categories derived from past experiences over time may yield fairly stable taxonomic structures that are not easily changed" (Ben-Peretz, 1995, p. 126). Was there scope in dialogic modeling for the teacher-learners to interrupt their default thinking about instructional practices?

Researchers have generated a vast body of knowledge about the transfer of learning in contexts with school-aged children (Pelligrino et al., 2011; Renkl, 2005; 2011; Schworm & Renkl, 2007). One important finding from those works is that transfer is possible when learners understand underlying principles of what they observe. These principles take the form of a mental model, as learners mentally "represent" what is presented by integrating the visual and verbal cues from the present experience with past and imagined ones. Learners, in these studies, first identified structures in the material, and then over time the structures became more nuanced and refined. These structures enabled individuals to build more precise mental models that guided them in appropriating and applying what they were exposed to during their experience.

In scholarship on teachers there is less information to work from, but many strong theories. Freema Elbaz (1981) speculates that images are the most-inclusive structures of practical knowledge. These are "brief metaphorical statements of how teaching should be" (Elbaz, p. 61), and are based on the teachers' past experience, theoretical knowledge and personal beliefs. Elbaz points out, though, that these images should be "hard-won." The work involved in dialogic modeling leveraged the representative modeling through particularly demonstrative ways, and the intent of the dialogue was to capitalize on teacher-learners' experiences as classroom teachers. The knowledge base for the consequences discussed arose from similar situations that they experienced.

My analysis of the 29 episodes of dialogic modeling highlighted that the decomposition of the modeled instructional practices entailed specifying the consequences of the practice. In some situations limitations were drawn out; e.g., "time constraint" as in Episode 4.1.1—Distributing Materials, and in others ostensible positive consequences emerged. The extent to which codes for cueing emerged across the data set demonstrates this was a strong feature of the dialogic modeling episodes. It also demonstrates that decomposition of consequences not only broke down the practice for its constituent parts, but teacher-learners drew out possible affordances of the practice, or they posed alternatives. Such work ostensibly provided cues for teacher-learners to "imagine" what might happen if this practice were deployed in their classrooms.

Similar ideas were generated through the research of Matthew Ronfeldt and Pam Grossman (2008), who wrote about this notion of mental representation in their study of

the professional preparation of clinical psychologists. Ronfeldt and Grossman found that intending therapists used their professional learning opportunities to imagine their "possible professional selves." While Ronfeldt and Grossman's work concerns issues of identity and identity formation, their identification of imagination playing a part in professional learning is salient here.

Bandura also argued that when learners are cued to affordances and limitations by models, there is a natural tendency to consider these implications and whether they might unfold in the same way in contexts that they know (Bandura, 1986). This consideration is what scholars who study problem solving have referred to as "analogic reasoning." Stella Vosniadou, for example, argues "reasoning by analogy involves the transfer of structural and surface information from a source to a target system" (Vosniadou, 1989, p. 414). For this to occur, Vosniadou argues that some similarity between the seen and the projected needs to be perceived. This may be discernable through some superficial properties or some deeper structural features, she argues. She goes on to point out that "salient similarities" like those that deal with implications help to generate and retrieve analogs. There is substantial empirical research demonstrating that the likelihood of accessing an analog during problem solving is improved when there are simple shared descriptive features (Gentner & Landers, 1985; Holyoak & Koh, 1986; Ross, 1984 in Vosniadou & Ortony, 1989). John Bransford makes a similar argument to Vosniadou's in his work on problem-based teaching. Bransford and his colleagues Robert Sherwood, Nancy Vye, and John Rieser found that instruction that employed problem solving formats created opportunities for information to be stored as problem-solution sets, which made them more likely to be accessed in similar situations (Bransford et al., 1986). Furthermore, Rand Spiro and his colleagues Paul Feltovich, Richard Coulson, and Daniel Anderson posit that explicit analogies afford more opportunities for enhanced learning, and to rely on learners' capacities for analogic reasoning can lead to misconstrued and simplified performances (Spiro et al., 1989 in Vosnaidu and Ortony, 1989).

In dialogic modeling significant portions of each of the follow-on discussions were dedicated to discussing alternatives, and considering possible, or experienced, positive and negative consequences. My analysis showed that in the follow-on discussions constituents and consequences of the observed instructional practice were not only decomposed but

also fused; i.e., explicitly coordinated, and there were articulations of both structural and descriptive features. As the routines, strategies, and principles modeled approximated classroom teaching in sufficiently similar ways, my findings imply that the follow-on discussions could prompt anticipation, thereby providing an opportunity for the teacher-learners to generate and access analogs of the modeled practices. Teacher-learners were provided an opportunity to anticipate outcomes that may arise from their own employment of a practice, thereby potentially lessening the perception of risk, and increasing the likelihood that the instructional practices could be characterized as exportable.

Vosniadou (1989) speculates that for children simply engaging in this process of analogical reasoning makes knowledge more flexible and "usable." Although usable is a comparable, and popular, term in the field of professional development, it has been pinned to characterizing curriculum materials and technology (e.g.: Schlager et al., 2009; Gomez et al., 2008; Rich and Hannafin, 2009). For example, a lesson planning template, or a new web-based program might be considered usable items. However, more materials don't constitute the only possible take-aways from professional development. Usable material can be about knowledge-in-practice, where connections are made between what teacher-learners know, what they come to know, and what they want to do (Cook & Brown, 1999). Also, what is minimized in the term usability is that a teacher takes something across domains—from the professional learning context to the classroom context. Exportability implies that there is distance—physical and conceptual—between the sites, and provides an advantageous metaphor providing a visualization for bridging the divide between contexts. Furthermore, the notion of usability does not lay out linearly enough the process required in studying the materials or practices in ongoing professional education. For a practice to be deemed usable most likely requires some cognitive processing. Usability implies an observed practice could jump from one context to another, and doesn't account for much in between. Whether or not a practice is deemed usable rests on teachers' consideration and questioning of its *exportable* properties—properties that identify the practice as something to be taken up and out of the professional learning setting to the classroom—that a deliberate process can facilitate. Considering whether practices are worthy of export or not entails questions about whether the practice is wieldy,

advantageous, and if there is an application for it. Deeming whether a practice is suitable for export also necessitates speculating on how the item will fare elsewhere. Furthermore, to deem a practice exportable or not can involve seeing the practice in action, breaking it down to inspect its ingredients, and considering how it would fare in one's own context.

Noticing a practice, then decomposing the practice, and finally reasoning about the practice by accessing images of past and possible practice may be interpreted as opportunities to consider and question exportability. As practicing teachers, these teacher-learners, regardless of years of teaching experiences, came with a catalog of images of instructional practices. Dialogic modeling provided an opportunity to work with these images by looking from those images back to the modeled practices, and looking forward to their own attempts to institute the practices. This continual oscillation from the teacher educator's practice to their practice is typical in professional development programs. Teacher-learners consider the implications of what they are experiencing in their own practice. Bandura argues that when individuals are exposed to modeled events cognitive processing occurs even before any future performances and does not necessarily require tangible rewards (Bandura, 1986). However, even if teacher-learners were considering the implications of the representative modeling in their own practice, the intervention via the follow-on discussion provided an additional opportunity to grasp the structures and features of modeled practices in such a way that might afford such projecting. This interpretation became convincing for me through my analyses of the video data from the episodes as well as from the stimulated recall interviews.

As discussed in Chapter 3, part of my data collection efforts entailed stimulated recall interviews conducted by a research assistant. After each session, she interviewed pairs of teacher-learners; thus six different teacher-learners were interviewed from each school for a total of 24 interviews. Immediately after the session, the teacher-learners reviewed excerpts of the dialogic modeling—both the representative modeling as well as the follow-on discussion—that occurred that day. In these interviews the teacher-learners provided their perspective on the teacher educator's modeling. I present them here as a way to close this chapter, and to represent more fully some of the data that suggested to me

the interpretations I have presented here on analogic reasoning.[45]

> Without the visual…seeing it was great and helped us to follow. What we used to do as resource persons was that we would go and model some detail, but we couldn't ever go into this much detail. (Sundaramma discussing the dialogic modeling of giving learners time to explore materials)
>
> During the session, I found myself thinking back to my class and comparing the way [the teacher educator] was talking about recaps with how I recap in my lessons. (Priya discussing the dialogic modeling of recaps)
>
> The way he modeled was necessary. It was good to know what were the limitations of what he did and what was the use of that so that we can apply it in our own classrooms. (Deepa discussing the dialogic modeling of distributing materials)

Sundaramma, Priya, and Deepa raise different points about what they made of the practice of dialogic modeling. While Deepa found herself looking forward to how she might apply what she was learning in her own teaching, Sundaramma and Priya found themselves considering the past. In Sundaramma's case dialogic modeling prompted her to think about her work as a teacher educator, and how she may adapt her practice of modeling, while Priya's thinking was about her current classroom practices. All three comments reflect themes that consistently came up across the stimulated recall interviews with teacher-learners: dialogic modeling provided opportunities to look back on their own existing teaching practices, consider their efforts as teacher educators or consumers of teacher education, and wonder about ways to augment their teaching practice. Deepa's comments, in particular, highlight the pertinence of cueing teacher-learners to the consequences of a modeled practice. For Deepa, discussing the affordances and limitations of the teacher educator's modeling provided an opportunity to consider the implications for her own practice. Before even entering her classroom, Deepa had already begun imagining how such a change in her practice might unfold with her students.

---

[45] While these perspectives stimulate thinking about what dialogic modeling might afford, my coding and categorizations of them didn't offer much analytic purchase on what the work of dialogic modeling entails, or in what ways and to what extent the practice fostered, and limited, learning opportunities. Therefore, I have not relied on them for my interpretations, however, I find that I cannot discount them in accounting for the analytical story of this dissertation.

Decomposing practices and approximating practices are two pillars in practice-based endeavors of teacher education. And there is a groundswell of support from leaders in the field anchoring these two pedagogical approaches to teacher education (Ball & Forzani, 2009; Franke, Kazemi, & Battey, 2007; Grossman et al., 2009; Grossman & McDonald, 2008). The long-term implications of specifying the complex and integrated work of teaching so it can be studied, analyzed, and rehearsed seem reasonable. However, the distal implications of doing such work are being worked through, the immediate ones remain unresolved in my mind. This point bears further consideration, which I will expand upon in chapters 6 and 7. In chapter 6 I move from this micro-analytic view of dialogic modeling to a more synoptic view of the practice. In chapter 7, I develop on the main claim for this dissertation by bringing the two views into conversation with each other. For the moment, however, I want to propose that imagining—and the analogic reasoning that it guides—seems to be a generative space that sits between decomposing practices and performing them. This line of thinking prompts me to think that there are particular features to explicit modeling that can help modeled principled practices seem more nuanced, flexible, and familiar, which may contribute to skepticism and perception of their exportability. The three processes—garnering attention, encoding, and cueing to consequences—that I have argued constitute part of the work of dialogic modeling seem to be tenable candidates.

Chapter 5:
Methods of Analysis

Introduction

In this chapter I discuss a second set of analytical methods, which I employed as a means to help me understand the phenomenon of dialogic modeling as a whole, and to develop the means to respond to the second research question for this dissertation: What kinds of opportunities to learn might dialogic modeling present for teacher-learners? The intent for this auxiliary chapter on methodology is to help readers develop a sense of the ground rules that I use to draw warrants and assertions I explicate in chapter 6, and as a means to "verify their sturdiness" (Miles & Huberman, 1984, p. 16). In chapter 6, I argue that dialogic modeling provides opportunities to learn through experiencing, noticing—constituted by decomposing and steering to the "pedagogical point"—and recomposing, and that when taken together the work involved in this sequence fosters opportunities to consider and question the exportability of the modeled instructional practices. For considerations of research design, information on settings and participants, and data construction, such topics were taken up in chapter 3; all of which still apply here. In what follows, I introduce chiastic structure theory, my dialectical engagement with it and the data, and I describe my analytical process with the data, which informed my analytical interpretations.

A Dialectical Approach with Literary Theory

To explore my second research question—what kinds of opportunities to learn might dialogic modeling present for teacher-learners—I turned to literary theory for methodological support. I was guided by an interest in finding useful ways to think about the structure of dialogic modeling, and supplementing the emerging view from my more conventional qualitative analyses. The turn was not immediate or planned. Yet, over time and through close work with the data, I have become intensely committed to its prospects.

My interpretations of dialogic modeling's structure emanated from a dialectical engagement with theories about chiastic structures and the data I generated for this study. The New Oxford American Dictionary defines chiasmus (literally marking an X from the Greek letter chi, or X) as a grammatical structure where the concepts are repeated in

reverse order in the same or modified form; thus creating symmetry. In short, a chiastic structure is a literary device commonly used to make a point at the beginning and return to it at the end. This means that in a text that consists of a symmetrical chiastic structure a writer/speaker provides some exposition at the beginning of their narrative, which can be taken as unit A. After this, the writer/speaker then provides a second unit of text—B. These two units then are circled back to at the end of the narrative and marked as B' and A' (read B prime and A prime). This forms two pairs of parallel inverted units, or expressed concepts.

AB/B'A'

Between both of these sets lies a point of emphasis, or essential point, which is marked as C.

AB/C/B'A'

The central point creates what is often called a "ring structure," which the A/A' and the B/B' sets are oriented around.

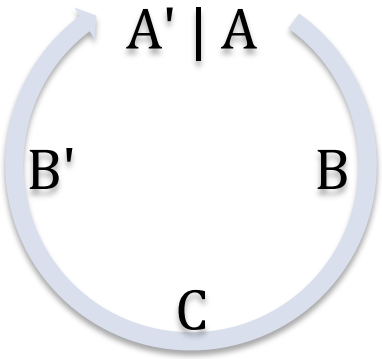


Figure 8: Symmetrical Chiastic Structure

A simple example of this structure comes from the Bible: Isaiah 6:10:[46]

[46] My intention in showing this simple example is not to argue that chiastic structure analysis is a phenomenon restricted to Biblical studies. It is only to provide a clear example of chiasmus in order for readers to engage more fully with the subsequent discussion. In fact there is ample evidence of chiasmus in Sufi and Islamic texts. For example, much has been made of symmetrical chiastic structures in the Sufi story of Madhumalati (see Weightman (1992), Doniger (2012), Behl and Weightman (2001)) and in the Qu'ran (e.g. Ernst, 2012). However, these efforts distill the macro-chiastical structure—taking on whole chapters and entire suras, which unfortunately does not display easily for this purpose.

A "Make the *heart* of this people fat
B and make their *ears* heavy
C and shut their *eyes*; lest they see with their eyes,
B^1 and hear with their *ears*
A^1 and understand with their *heart*, and return, and be healed."
(Ludlow, 1982)

While many narrative constructions return to the beginning at the end, the inverted order of the parallel points, and the central idea are distinct in chiastically-structured texts. For example, a chiastic reading of the text above sets out the central point of the passage: that our eyes impede what can be known.

The late anthropologist Mary Douglas, in her work, *Thinking in Circles: An Essay on Ring Composition* sets out seven conventions identified in symmetrical chiastic structures:

1. An introductory narrative or prologue sets the stage and foreshadows the turning point.
2. The composition is split into two halves, one moving towards the central point, and the other away from it.
3. Parallel units, or sections within these halves, match up on either side of the composition.
4. The parallelism is set out through keywords, repeated formulas, alterations, and other devices.
5. The central point is the mid-turn point of the text. The meaning of the text is centrally loaded onto this unit. The mid-point should be unmistakable, and often emphasizes keywords from the prologue, and similar wordings may also be found in the ending.
6. Longer texts can feature rings within rings.
7. When closure is achieved the ending will also call upon notable keywords, ideas, or actions from the prologue.

(Adapted from Douglas, 2007) [47]

---

[47] The intentionality of chiastic structuring of texts seems to still be in debate. Welch, for example, in argues that it is a fallacy to believe that any discernible chiastic pattern was intentionally designed (Welch and McKinlay, 1999). Mary Douglas on the other hand seems dubious that poems where chiastic structures are recognizable are unlikely to have just occurred without anyone knowingly creating such a structure (Douglas, 2007). She does go on to point out, however, "I can think of very short chiastic forms arising spontaneously in compositions or in snatches of conversation" (Douglas, p. 32). She follows this with an example from her childhood in rural England, where countryman would speak chiastically with a message in the center and two sets of parallel lines. She remarks that she believes this was spontaneous. My interest is not to enter into this debate. However, it is important to note that scholars seem to be getting comfortable with the notion that chiastically-structured speech does occur without design. They attribute this in part to the form being ingrained in religious, cultural, and artistic writing. In contemporary works, chiasmus has been identified in everything from presidential speeches—think, "Ask not what your country can do for you, but what you can do for your country—to Martin Luther King Jr.'s "I Have a Dream" speech. Douglas' reservation is that the field of chiasmus scholarship was trending towards micro-compositional efforts; i.e., identifying chiasmus in single lines, or in single passages. She urged scholarship that took on the complex work of macro-

Through a synthesis of centuries of research, Douglas asserts that chiastic structures have been interpreted to be in Homer's *Iliad* and *Odyssey*, the New and Old Testaments, the *Avesta* of Zarathustra, Rumi's *Masnavi*, pre-islamic Arabic poems, and pre-modern Chinese literature. She writes,

> Ring composition is found all over the world, not just in a few places stemming from the Middle East, so it is a worldwide method of writing. It is a construction of parallelisms that must open a theme, develop it, and round it off by bringing the conclusion back to the beginning. It sounds simple, but, paradoxically, ring composition is extremely difficult for Westerners to recognize. (Douglas, 2007)

Building from Douglas' work, Carl Ernst in his monograph *How to Read the Qur'an* argues that a linear reading of the Qur'an—as scholars tend to do—does not treat the work in its original form: as an evolving dialogue between the Prophet Mohammed and his audience. Ernst's interpretation is that when the suras are read as dialogues in the order in which they occurred—from early Meccan, through middle and late Meccan, to Medinan periods—multiple chiastic forms are evident: simple chiasmus, mirror constructions, parallel sequences, concentric constructions, and rings within rings (Ernst, 2012).

Carl Ernst's argument rang in my mind for many weeks during the course of my coding and categorization of the three processes discussed in Chapter 4. I began to worry that reading the "text" of each of the dialogic modeling episodes linearly was limiting. And I wondered what applying the construct of chiasmus to data that was not ancient and not written, but living and spoken, might look like.

Concisely, Douglas characterizes symmetrical chiastic structures:

> Essentially, ring composition, is a double sequence of analogies. First, a sequence is laid down, then at a certain point the sequence stops and the series turns around and a new sequence works its way backward, step by step toward the beginning. This puts each member of the new series parallel to its opposite number in the first series, so the return journey reverse the order of the outgoing journey. (Douglas, p. 34)

---

compositional analysis, such as examining an entire book or longer pieces, such as Paul's Letter to the Galatians, for symmetrical chiastic structure.

This explication resonates with my knowledge of teaching practice. After having worked with the data pursuing the coding and categorizing, I suspected that like most teaching there was a beginning, middle, and end. It was likely that the beginning was the representative modeling and the end was a summation of the ideas that closed out the dialogues. But, I hadn't looked closely at the linguistic choices for evidence of parallelism, and I had assumed that the pedagogical point was something that I brought out with some urgency at the end.

Analytic Process

For some time I had been incubating a question about the structure of dialogic modeling. Structure, it seemed, was a useful way to think about how a practice worked. Furthermore, I struggled with the idea of relying on a single analytical angle to explicate a phenomenon. With this mindset I worked to see beyond the three processes specified in chapter 4, and instead treated what I was seeing in phases. One interpretation that emerged was that dialogic modeling consisted of a five-phase structure: (1) an unconditioned experiencing phase; (2) a noticing phase; (3) a decomposing phase; (4) an evaluating phase; and (5) a persuading/summarizing phase. This interpretation was valuable for my thinking. However, I worried that if my analyses ended here, then this interpretation might seem unsurprising. But more than anything else, I was driven by an interest to develop a complex level of understanding; an abstraction of sorts that would help to explain the fundamental features of the practice. Consequently, I began to work with a few episodes to see what might emerge when I took a chiastic structure lens to the data.

Two questions drove my analyses: (1) In what ways and to what extent are there symmetrical chiastic structures in the data?; and (2) Is there disconfirming evidence of this framework within and across episodes? To consider the first question, I worked with a small subset of the episodes (11 out of 29) to see what, if any symmetry was evident in the language.[48] The following steps outline my process. Examples run throughout the next chapter.

---

[48] Such pilot analyses have been advocated by Ian Dey (1993) and Barney Glaser and Anselm Strauss (1967).

1. I reorganized an episode's transcript into a four-column visual display that I could work with. Across the top of each column were line number, text, unit, and rationale.

2. Using the methodological resources provided in Douglas's and Ernst's works and bridging them with qualitative analysis methods that I am more familiar with, I segmented subsequent turns of talk as a numbered line, and then began to consider the "unitization"[49] of the turns of talk. The first unit I tried to discern were those containing the essential point made during the discussion, which would also serve as the mid-turn according to Douglas and Ernst. In most of these early cases the essential point was recognizable in the transcripts based on linguistic cues and the content of the utterances.

3. The next step was to identify the units that enclosed these tentative essential points. Working outwards from the central point, I would look to the interaction just before and bracket the possible starting point for the unit. I would then look to see whether there were analogous or distinct topics taken up in the dialogue that came just after the essential point. For example, decomposing the instructional practice into constituent parts often led to the articulation of the essential point. Once this point was articulated the discussion often examined the practice by looking to alternatives, naming the practice, or construing the possible consequences. If this was the case, I interpreted the two units that came just before and just after the essential point, or mid-turn, as parallel. If it was not the case, then I searched for alternative explanations, or marked this episode as discrepant or distinctive.

4. I would then move outwards from those parallel units closest to the essential point towards the beginning and the end of the episodes. I took the representative modeling to be the first unit of the structure. I did so, because this was the starting point for the opportunity to learn, and was the substance and material for the subsequent dialogue. To omit it would be to diminish its importance in the composition of the practice. Then I looked to see whether there was some parallel dimension or mirror articulation that came at the end, or whether the summation took up completely different points. In some cases, the topic shifted dramatically or was curtailed during the ending. However, in many of the endings the initial modeling was reenacted, or a move-by-move replay was provided.

Throughout this process sketched above, I cross-referenced the transcripts of each particular episode with the video of that episode in an effort to look for disconfirming evidence in the visual data. In some instances the video data did not corroborate or dissuade. In others though, the essential point was accentuated by what was perceptible in the video because of some distinct characteristic, such as a long pause after the statement, repetition from the same individual, or vocal emphasis. In some cases features to help identify essential points or parallelism were not clear in the transcripts. For example, in my

[49] I borrow this term from qualitative researchers Labov and Fanshel (Labov and Fanshel, 1977) and Lincoln and Guba (Lincoln and Guba, 1985), as their linguistic choice seems accessible. Also, James Gee in his approach to discourse analysis, segments speech into units that he calls "lines" and "stanzas," based on both linguistic cues and the content of the utterance (Gee in Maxwell et al., 2008, p. 465).

analysis of Episode 1.1.2, no obvious symmetrical pattern was evident in the transcript. I could discern the essential point, but I didn't see how the remarks at the end paralleled those at the beginning. Once I turned to the video the pattern became very clear. Towards the end of the dialogue I mimicked the distributing of materials that I had done at the beginning. Without the video, I wouldn't have seen this, and in turn missed the pattern. In the example below, the bracketed comments signify what became clear upon reviewing the video.

34 TE:	Yes, like similar to the greetings-type you can also make eye contact [mimics eye contact]. Elarge koda bahudu (ಎಳರ್‌ಗೆ ಕೊಡ ಬಹುದು; *You could give to everyone*)[walks around and mimics distributing].

I then turned to my teacher educator journal to see if I had featured a different salient point that may have been raised. I also iteratively turned to the stimulated recall interviews to help me understand some of the comments and actions and discern corroborating evidence for what I was unitizing from the teacher-learners' points of view. This initial reading across a subset of the episodes resulted in notes and memos on the relationships across the three data sources regarding the essential points.

After this initial work with the data, I held lightly the notion that symmetrical chiastic structures were evident in 9 of these first 11 episodes in this pilot analysis. I deliberately stopped my analysis at this point and returned to the rest of the data with this lens and these methods in mind two months later. The rationale for this analytical decision is discussed below.

When I returned to this analysis, I came back with fresh eyes to the data and took up analyses with the remaining eighteen episodes. Analysis entailed the same activities, such as reorganizing the transcripts into the four column visual display and working to distill out the essential points and unitize other sequences. I moved selectively through the episodes jumping from an episode from one school to an episode in another, or from an episode that took up an instructional routine, such as greeting learners, to one that took up a pedagogical principle, such as providing time for learners to explore materials. Instead of simply moving sequentially through the data corpus, moving more deliberately helped me

to challenge my thinking about what I was seeing in the data and whether there actually were parallels within episodes and pushed me to consider the accuracy of my interpretations about what constituted the essential point. Throughout this second phase of data analysis, I continually asked myself, "Is there disconfirming evidence to the framework in this episode?"

I took this question to each episode, and sought counter, instead of confirmatory, evidence to my interpretations. By the end of my analyses, there were six discrepant cases that did not conform to the symmetrical chiastic structure. These cases are discussed in detail in chapter 6. Analyzing the entire data set was necessary for this study. Discerning the discrepant cases and the distinctive ones helped me to refine and adjust my assertions that appeared in my pilot analyses. Furthermore, these cases helped me to manage "premature typification" (Erickson, 1986). These cases were cautionary and forced me to continue to be diligent and analyze the entire data set repeatedly, and they improved my skill at discerning the symmetrical chiastic structures, as they pushed me to consider alternative explanations.

In episodes 2.3.3 and 3.2.1, there were abrupt endings, or other issues that complicated the interaction. For example, in Episode 3.2.1-Recap, just after the pedagogical point, or mid-turn, Priya asks a question about how long classes are in the U.S. This question is not germane and disrupts the flow of the conversation. At the time, I didn't want to engage in a discussion about differences between the Indian and U.S. education systems. As a result, I curtailed the discussion of recaps, potentially impeding the fulfillment of the symmetrical chiastic structure.

Episode 2.3.3 – Giving Instructions provides another example of an unfulfilled symmetrical chiastic structure. My interpretation is that this episode has an A-B-C structure, and does not meet the criteria for a symmetrical structure for a few reasons. First, the teacher-learners struggled to recall the modeled practice of giving instructions. They couldn't recall when I had given the instructions, what the instructions were, or how many times I had given them. Getting them to remember something they didn't notice was difficult. It took some time to access their memories and required multiple lines of questions. This was something that I hadn't anticipated, and something that hadn't

happened in such an overt way before. In prior sessions, at least one of the teacher-learners noticed the modeled practice. My journal from that day speaks to this point.

> I think since my initial line of questioning wasn't getting the desired response, then I had to change my line of questioning. This wasn't something I had anticipated and made it complicated. I also think that since I wasn't getting what I expected, or had hoped for initially, then I may have cut this episode short. (Journal Entry from July 13th, 2012)

It seems that this feeling of unsuccessfulness may have led to the abrupt conclusion of the dialogic modeling; thereby precluding revisiting the representative modeling that typically occurred in other episodes.

Analysis of data also revealed distinctive cases, such as Episode 2.2.1-Exploring and Episode 2.1.1 – Greetings, which consist of an additional parallel unit and a ring within a ring structure, respectively. Both episodes are detailed further in chapter 6. Such exemplars illustrate the complex forms that symmetrical chiastic structures can take, but also that there is variation in the data I generated.

Limitations of this approach

In analysis I struggled with the practical reality of thinking in new ways with the data I had generated. Inventiveness is not always ideal in qualitative research, however, part of this need stems from the uniqueness of this inquiry into a single practice of teacher education from a first-person perspective. I was uninterested in replaying a short story of what I had done. I was more interested in teaching myself something that I did not know before I started the inquiry, and I wondered about the possibilities of conceptualizing a theory of how explicit modeling practices could function. Such goals pressed me to be creative in my qualitative inquiry and consider useful ways to employ chiastic structure theory.[50] However, this entails limitations.

---

[50] I take comfort for this perspective from qualitative methodologists, such as Michael Quinn Patton who promotes qualitative inquiry as both science and art: " Creativity seems to be one of those special human qualities that plays an especially important part in qualitative analysis, interpretation, and reporting. …The scientific part demands systematic and disciplined intellectual work, rigorous attention to details within a holistic context, and a critical perspective in questioning emergent patterns even while brining evidence to bear in support of them. The artistic part invites exploration, metaphorical flourishes, risk taking, insightful sense-making, and creative connection-making. While both science and art involve critical analysis and

The first limitation of this approach is that I alone carried out these analyses. In general, this can create problems, such as skewed interpretations (Richards & Morse, 2012) and raise questions about correctness or credibility (Maxwell, 2013). These concerns can be amplified when qualitative researchers study their own practice. When I completed my pilot analyses, I was concerned, more than relieved, by my initial interpretations. I worried that since there is a natural tendency for researchers to look for confirming evidence of their own hypothesis that this may have been what was happening in my analysis.

First-person research by its very nature is an effort to leverage insider knowledge in fruitful ways during analysis. Yet, at the same time the nature of the work can jeopardize interpretations if challenges are not built into the research methodology that would force one to be skeptical about these interpretations. Sometimes researchers have independent people look at the data. However, I was skeptical whether assessing the validity of my unitization of the qualitative data by asking others to replicate would be helpful. Janice Morse, in an editorial about the myth of inter-rater reliability, wrote

> The coding process is highly interpretive. The comprehensive understanding of data bits cannot be acquired in a few objective definitions of each category. Moreover, it cannot be conveyed quickly and in a few definitions to a new member of the research team who has been elected for the purpose of determining a percentage agreement score. This new coder does not have the same knowledge base as the researcher, has not read all the interviews, and therefore does not have the same potential for insight or depth of knowledge required to code meaningfully. Maintaining a simplified coding scheme will…simplify the research to such an extent that all of the richness attained from insight will be lost. (Morse, 1997, p. 446)

To ask an external coder to come into a first-person research study to verify analyses would strip the deep knowledge of the context that I carried with me into analyses.

Therefore, to escape the patterns that were coalescing in my procedures of analysis and in the initial units I established in one-third of the episodes I deliberately stepped away from this data analysis for two months. Once my analyses of these 18 episodes were

---

creative expression, science emphasizes critical faculties more, especially in analysis, while art encourages creativity" (Patton, 2002, p. 513).

complete, I returned to the initial 11 episodes—but not the analyses—which I analyzed two months earlier. To develop a systemic challenge to the data, I conducted a separate second round of analyses. My intent was to set up two time points for my analysis, which would in turn create an opportunity to explore the data from distinct perspectives, but in similar ways. (For an example of these analyses see Appendix 5.)

My reading of analysis is that interpretations are a function of temporality. *When* a researcher conducts his or her analysis has as much a part to play as *how* the analysis occurred. Separating analyses over time provided an opportunity to risk my judgments from the pilot analyses. In doing so I was trying to bring strength to my interpretations by conducting them at two different time points and then comparing them. In essence, I was trying to compose insight from distance.[51] Such work parallels cross-case analytic methods where findings from one case are successively tested with a series of other cases, or what Yin has called "replication strategies" (Yin, 2009). In this study, however, the "case" was a set of episodes, which I analyzed and developed interpretations for, and tried to replicate and disconfirm my interpretations at a later time. In some ways, this strategy also echoes Ruth Heaton's efforts discussed earlier in chapter 3, where Heaton employed the analytic strategy of "multiple Ruths" to create different vantage points from which she could analyze. The strategy that I employed emerged as a way to build for myself credibility in what was emerging, while providing an opportunity to simultaneously falsify my initial interpretations.

The second limitation of this approach is that my perspective could have been constrained by my singular focus. By working with the data through a chiastic structure lens, a concern could be that this narrowed my focus. Thereby, limiting the possibilities of what I might learn from the data. As a means to further question my interpretations, I posed another question to myself: Could my analyses be framed in a more fundamental way? I explored the data with two conceptualizations in mind. I wondered if analyzing the transcript and video data for an I-R-E format (where a teacher **initiates** a question, a learner **responds** with information or ideas, and the teacher briefly verbally **evaluates** the

[51] I borrow these terms from Deborah Ball (2000), who uses such phrasing in her description of the scholarly stance that first-person research provides: "Scholarly Stance: Composing Distance and Insight." While not a wholly related topic, I find the terms to be helpful for my thinking.

learner's contribution) might yield a useful interpretation (Mehan, 1979; Cazden, 2001 in Barker, 2012). Or, whether there might be an A-U-T structure, where the instructor's actions can be characterized by **authentic** questions, **uptake** of learner responses, and **time for discussion** (Nystrand & Gamoran, 1997). I was able to determine that these formats did exist in the data, however, I was unclear as to their analytical purchase. In all 29 episodes the discussion began with the teacher educator initiating a question, which seemingly did not have a pre-specified answer. This was then followed by a response, or a series of responses, which the teacher educator picked up on and used to frame new questions. And finally, some form of evaluation was offered through an open exchange of ideas. These formats helped to illuminate characteristics of the discussions, and some of the relevant efforts of the teacher educator. However, I found taking such heuristics to be limiting. I wasn't able to think beyond what I was able to report. And it seemed that this way of working was driving me to focus on form rather than content (Lieblich et al., 1998). On the other hand, the analyses of symmetrical chiastic structures were affording me the opportunity to focus on the relational order in the dialogue and the consequentiality of that dialogue.

The third limitation of this approach is that it doesn't account for maturation of the practice over time. By this I mean that a critic might argue that each episode was analyzed without regard to the teacher educator's practice improving over time; i.e., dialogic modeling in the fourth week at Cauvery went smoother than it did during the first week at Metagalli GHPS. This is a limitation to which I do not have an analytical counter. However, I hope to manage this concern through my reporting in the following chapter. Erickson writes of nine elements that must be included in analytic reports for readers to be equipped to asses the grounds of the analytical work. The first of which—the natural history of inquiry in the study—I have tried to present in this chapter. The following chapter features empirical assertions, narrative vignettes from analytic memos, excerpts from fieldnotes, quotations from interviews, synoptic data reports (i.e., frequency tables, figures), interpretive commentary framing particular descriptions, interpretive commentary framing general descriptions, and theoretical discussions. My effort in the chapter that follows is to provide sufficient detail for readers to serve as "coanalysts" of the reported cases (Erickson, 1986), so that they will be able to capably judge warrants.

Summary

This chapter has been an effort to develop readers' understanding of the methods I used to understand how dialogic modeling promoted opportunities to learn. Critics of this work may wonder how the analysis that I will detail is more than a semantic or syntactical analysis. Knowing the structure provides an additive understanding of the particulars that were unbundled in chapter 4 of this dissertation. George Guthrie highlights this point by noting, "No discourse simply consists of a collection of words or sentences [in such a way] that if you added up the semantic content of all the individual words and all the individual sentences, you could make sense of the discourse"(Guthrie, 2000 in McCoy, 2003). Any argument of potential exportability rests on the fundamental structure of dialogic modeling as much as it does on knowing the work involved. Furthermore, structure implies reliability, and knowing dialogic modeling's structure can minimize weak employment. Critics may agree with these points, and yet, still wonder why the turn to literary theory.

Pam Grossman once persuasively wrote, "As a field, research on teacher education has expended relatively little effort in building the tools of the trade. Having the right tools to investigate complex phenomena can make a difference in what we are able to see" (Grossman, 2005). My effort to operationalize this call is what I have explored here. Inquiring into a single practice in such a way that provided an additional view, did not simply replay my efforts, and did not devolve into a recipe, required the leveraging of some analytical tools that were not commonly trafficked in by educational researchers. Moreover, to encourage more discourse around what it takes to do these kinds of practices, I needed to not only do it, but also study it from multiple angles. To study something so small and fine-grained required multiple approaches that could atomize the practice even further, so that it was detailed, and also provide an analysis that would not leave it unmanageable. To understand dialogic modeling's constituents I turned to socio-cognitive theory. To understand dialogic modeling's structure I turned to literary theory, and dialectically gravitated towards chiastic structure theory.

What I tried to do in this dissertation was to run two sets of analyses, in an attempt to see parts of the practice that weren't necessarily apparent from a single perspective. Developing an atomized picture of this teacher education practice emphasizes the actual processes and activities involved in the work, yet, the interactivity of these constituents is

fundamental to understanding how dialogic modeling operates. Furthermore, instructional practice—teaching or teacher education—is comprehended well by reference to the whole, and when characterizations of its parts are intimately interconnected. For these reasons, I was drawn to applying the linguistic theory of symmetrical chiastic structures to my analysis of dialogic modeling. Using it provided me with a framework that brought to bear that the point of the dialogues sat at their heart; thus subordinating the beginnings and ends. It is these points that help frame the analysis and argument of chapter 6.

Chapter 6:
The Symmetrical Structure of Dialogic Modeling

Introduction

Thus far I have provided an interior, or "micro-analytic view," of dialogic modeling. However, such a singular focus would not settle the question of how the work involved in explicit modeling can foster opportunities to deliberately study modeled practices, which may in turn entail teacher-learners considering or questioning the exportability of modeled instructional practices. In pursuit of this, I explicate dialogic modeling from a more synoptic view in this chapter. To do so, I examine the structures of several episodes of dialogic modeling. By structure I mean the arrangement and relations of the parts that are present in this teacher educator practice. I don't intend to argue that there is a script for dialogic modeling, or that an analysis of structure can override the uncertain nature of instruction. However, my analysis indicates that there did seem to be a form—*not formula*—to dialogic modeling. Critics of this work may wonder why it is important to know the structure of a practice. My response: first, any argument of using modeled practice as a resource rests on the fundamental system that structures dialogic modeling; second, a structure implies reliability, and knowing dialogic modeling's structure can minimize weak employment; and third, knowing the structure provides an additive understanding of the particulars that were unbundled in chapter 4 of the dissertation.

This chapter unfolds in two parts. First, I argue that there was a form to dialogic modeling, by presenting my interpretation of the data. And second, I discuss why this form matters. My effort in this chapter is to respond to the second research question for this study: What kinds of opportunities to learn might dialogic modeling present for teacher-learners? By doing so my aim is to provide additional warrants for the claims that this dissertation seeks to make: Modeling can involve teacher-learners in deliberate study of principled practices. And, it can stand as a resource for a teacher educator to use in ways that might help teacher-learners consider whether the modeled practices are worthy of export.

As an opening to this discussion, I offer a sketch of an analysis for a particular episode from this data set. In Box 3 below, the dialogically modeled practice is wait-time. In the episode, the group is having a conversation about collaborative conversations. The group is debriefing what happened during a one-on-one conversation between the teacher educator and a teacher-learner about a video of the teacher's teaching. During that debrief, the teacher educator employs the practice of wait-time just after he poses a question to Lalitha, a 4th standard social studies teacher, as well as at a few other points in the episode. After the debriefing, the group returns to the representative modeling of wait-time. In what follows, I disaggregate the whole dialogue into units to help unpack how the work involved in dialogic modeling, such as steering teacher-learners' to a "pedagogical point," emerge and evolve through a structured set of arrangements. My analysis of this episode suggests this structure can be sub-divided into five units. Lines 1 to 46 represents the first unit (A), which I interpret as the representative modeling of wait-time; lines 47 to 67 represent the second unit (B), which I interpret as the noticing and decomposing of the modeled practice; line 68 the third unit (C), which I take as the central, or "pedagogical point"; and lines 69-71 consist of the final two units (B' and A'), serving to recompose the modeled practice.[52] As I will argue throughout this chapter, the structure that I identify heightened my awareness of the contours of dialogic modeling and the opportunities to deliberately study modeled practices that it provided.

[52] I explicate my use of these terms in detail in the discussion section of this chapter.

Box 3: Episode 3.2.2 – Kumbarkoppallu GHPS_Session 2_Modeling 2_Wait-time

The teacher educator asks the group what they think about the tone of the conversation. When he asks this question he references the screen where the same is projected, and repeats it in Kannada with his eyes lowered to the ground. He raises his eyes and looks directly at one of the teacher-learners—Lalitha. After a moment, making eye contact he gestures to prompt her response, and then directly asks her what she thinks about this question.

1	TE:	What was the tone of the conversation?
2		[*5 second pause*]
3	TE:	Madam?
4		[*4 second pause*]
5	Lalitha:	English barodhilla adhikke maunavagiddhe. (ಬರೋಧಿಲ್ಲ ಅಧಿಕ್ಕೆ ಮುನವಗಿದ್ಧೆ; *I don't know English, so I am hesitant*.)
6	Chitra:	Kannadadhalle heli. Paravagilla. (ಕನ್ನದಧಲ್ಲೇ ಹೇಳಿ ಪರವಾಗಿಲ್ಲ; *You can say it in Kannada. Its fine*.)
7	Priya:	It was not aggressive.
8	TE:	Ondhu nimisha. (ಒಂದು ನಿಮಿಷ; *Just a minute*.) What do you [gesturing to Lalitha] think?
9	Lalitha:	Neevu makklige … (ನೀವು ಮಕ್ಕಳಿಗೆ…; *With children…*)
10	Teachers:	… Makkludhalla. Ivaribbhara mathu. (ಮಕ್ಕ್ಲುಧಲ್ಲ. ಇವರಿಬ್ಭರ ಮಾತು; *Not about children. About their conversation.*)
11		[*5 second pause*]
12	TE:	Just think about it. I will go and come back. Ok? Wapas barthini. (ವಾಪಸ್ ಬರ್ತೀನಿ; *I'll come back to you*.) Yes, ma'am [walking towards Priya]?
13	Priya:	It was a friendly chat.
14	TE:	Ok.
15	Priya:	It was not aggressive, and it was not insulting.
16	TE:	Aggressive andhre kannadadhaalli? (Aggressive ಅನ್ಧ್ರ್ರೆ ಕನ್ನದಧಾಲ್ಲಿ; *How do you say aggressive in Kannada*?)
17	Priya:	Means … it's like… very rude.
18	TE:	Eega, Kannadadhalli heli. (ಈಗ, ಕನ್ನದಧಲ್ಲಿ ಹೇಳಿ; *What you just said, say it in Kannada*.)
19	Priya:	Aggressive means…?
20	Teachers:	[inaudible]
21	Priya:	Some harshness.
22	TE:	Aggressive andhre namge e thara: " Aaarrrgggghhhhhhhhhh!"

		[Raising his arms and growling like an animal] (Aggressive ಅನ್ಧ್ರ್ರೆ ನಮಗೆ ಎ ಥರ: "Aaarrrgggghhhhhhhhhh!"; *Aggressive means to me something like: " Aaarrrgggghhhhhhhhhh!"*)
23	Teachers:	Ooonhhhh. (*Yes*.)
24	Priya:	That's what we are telling. We didn't feel like that. You spoke politely.
25	Hema:	Polite.
26	TE:	So, not harsh. Harshitha? (So, not harsh. Harsh ಇತ?; *So, not harsh. Was it harsh, or not harsh*?)
27	Priya:	Not harsh.
28	TE:	So, it was not aggressive, not harsh. Anything else? Polite yaraa heldhru? (Polite, ಯಾರಾ ಹೇಳ್ಧ್ರು?; *Who said polite*?)
29	Hema:	Na nimge helidini. (ನ ನಿಮಗೆ ಹೇಳಿದೀನಿ; *I said it about you*.)
30	TE:	You said it. Good of you.
31	Teachers:	(laughing)
32	TE:	Ok ma'am what do you think? [referring back to Lalitha] What were you planning to say?
33	Priya:	When you talk negative things come up but here mostly positive things.
34	TE:	Mostly positive.
35	Priya:	That's what I feel. You try to say… this is what I think…you asked two or three questions, you were not asking questions like "Why did you say like this?" "Why did you say like that?"
36	TE:	Anything else? So you said not aggressive and…just tell me what you said again—eega naan ge helidhu. (ಈಗ ನಾನ್ ಗೆ ಹೆಲಿದು; *what you just told me*.)
37	Priya:	Ok, you didn't ask her or question her "Why did you do this?" "Why did you do that?" Instead of that your questions were simple, clear, and friendly. It was a friendly talk … not leading into a fight.
38	TE:	Ahh, jagle madlilla. (Ahh, ಜಗ್ಲೆ ಮಾಡಲಿಲ್ಲ; *Ahh, we didn't fight*.) Because that happens sometimes, alwa? Because gena BEO indha bandhre … (Because that happens sometimes, ಅಲ್ವಾ? Because ಗೆನ BEO ಇಂದ ಬಂಧ್ರೆ.; *Because that happens sometimes, doesn't it? Because some people from the BEO* [Board of Education Office] *may come….*)
39	Jyostna:	… Akadendha bandrhe. (ಅಕದನೆನ್ಧ ಬಂದ್ರ್ಹೆ; *Or come from abroad*.)
40	TE:	Ya ya. Ok. Good. Now, what we are going to do is, we are going to watch some other videos and we will have two groups. Adhu maadokke munche, (ಅದು ಮಾಡೋಕ್ಕೆ ಮುಂಚೆ,; *Before*

		we do that,) I have a question about my teaching. Nanna teaching bagge eega ondhu prashne idhe. (ನನ್ನ ಟೀಚಿಂಗ್ ಬಗ್ಗೆ ಈಗ ಒಂದು ಪ್ರಶ್ನೆ ಇದೆ; *I have one question about my teaching*.)
41	Hema:	She is telling something. [Referring to Lalitha]
42	TE:	You got it! Yes, tell me.
43	Lalitha:	Sir nimma prashne kelo reethi engithu andhre ibbrige gothildhene thamma mistakes na thidhkollo reethiyalli ithu. Kelodhu keltha kelthane adhanna manavarike maadkondu awaru adhanna thidhkobeku. (Sir, ನಿಮ್ಮ ಪ್ರಶ್ನೆ ಕೇಳೋ ರೀತಿ ಇಂಗಿತ ಅನ್ಧ್ರ್ರೆ ಇಬ್ಬರಿಗೆ ಗೊತ್ಹಿಲ್ದ್ಹೇನೆ ತಮ್ಮ ಮಿಸ್ಟೇಕ್ಸ್ ನ ತಿಧ್ಕೊಲ್ಲೋ ರೀತಿಯಲ್ಲಿ ಇತು. ಕೇಲೋಧು ಕೇಳ್ತಾ ಕೇಲ್ಥನೆ ಅಧನ್ನ ಮನವರಿಕೆ ಮಾಡ್ಕೊಂಡು ಅವರು ಅಧನ್ನ ತಿಧ್ಕೊಬೇಕು.; *Sir, the way you asked questions did not focus on her mistakes. It convinced me that this is a way to show that you care*.)
44	TE:	Oho.
45	Lalitha:	Hange nanige annsidhu. (ಹಂಗೆ ನನಿಗೆ ಅನ್ನ್ಸಿಧು; *That is what I realized*.)
46	TE:	Perfect.
47	Lalitha:	Mannaside novagdhene, manasige hurt aagdhene iwarige thidhkobeku aa thara prashnena kelidhira, antha nange ansthu. (ಮನ್ನಸಿದೆ ನೋವಗ್ಧೇನೆ, ಮನಸಿಗೆ ಹರ್ಟ್ ಆಗ್ಧೇನೆ ಇವರಿಗೆ ತಿಧ್ಕೊಬೇಕು ಆ ಥರ ಪ್ರಶ್ನೆನ ಕೇಲಿಧಿರ, ಅಂತ ನಂಗೆ ಅನ್ಸ್ತು.; *I realized that we have to think about how the questions we ask students can hurt them*.)
48	TE:	Ok. Thank you.
49	TE:	Did you notice my teaching? Eega nann teaching mathadthaidru. (ಈಗ ನನ್ನ teaching ಮಥದ್ಥೈದ್ರು; *We were just talking about my teaching*.) In my teaching, did you notice how we were interacting? So, before I was sitting there alwa, and naan enu maadidhini? (So, before I was sitting there ಅಲ್ವಾ, and ನಾನ್ ಏನು ಮಾದಿಧಿನಿ?; *So, before I was sitting there* [pointing to where he was seated]*, wasn't I, and what did I do*?) What did I do with…? What was your name again?
50	Lalitha:	Lalitha.
51	TE:	Right, what did I do with Lalitha? Naan enu maadidhini awru jothe? (ನಾನ್ ಏನು ಮಾದಿಧಿನಿ ಅವರು ಜೊತೆ?; *What did I do with her?*)
52	Jyostna:	You gave her a chance.

53	TE:	I gave her a chance…
54	Jyostna:	…To think.
55	TE:	What did I do? Naan enu maadidhini? Chance andhre? Hege? Hege? (ನಾನೇನು ಮಾಡಿದಿನಿ? Chance ಅಂದ್ರೆ? ಹೇಗೆ? ಹೇಗೆ?; *What did I do? What do you mean by chance?; How? How?*) How did I do it?
56	Priya:	You asked her opinion.
57	TE:	So, first I asked her opinion. Good. Good catch. I said what was your opinion. Then what did I do? Then she didn't have an answer.
58	Priya:	I interrupted.
59	TE:	You interrupted. (laughing) Good. That's true.
60	Teachers:	(laughing)
61	TE:	Then I said wait, I said wait. Then I went back to her. Then what?
62	Hema:	Then you asked again.
63	TE:	Then she was thinking.
64	Priya:	She had time to think.
65	TE:	She was thinking. Then what did I do?
66	Priya:	You came back to me.
67	TE:	Then I came back to you. And I said, "I will come back to you." I said, "I will come back to you." Then I went here , someone else had an answer, then I came here (pointing to the place he is now standing), and then she had something to say.
68	Poornima:	She got the time to think.
69	TE:	She got time. So there are two things there. One, in English we say wait-time. Wait-time. If I ask a question … (pause), I wait. Kaibeku… (ಕಾಯ್ಬೇಕು…; *I have to wait*…)
70	Hema:	Pause.
71	TE:	Awaru yochane maadthare. (ಅವರು ಯೋಚನೆ ಮಾಡ್ತಾರೆ; *They will think*.) You have to pause. Sometimes three or four seconds feels like it is ondhu gante. (ಒಂದು ಗಂಟೆ; *one hour*) But it's really three or four seconds. Just count till fifteen. Because fifteen seconds feels like a long time, but to think… fifteen seconds is a very short time. One is wait-time. Two is I came back to her. Marthoglilla. (ಮರ್ತ್ ಹೊಗ್ಲಿಲ್ಲ; *I didn't forget*.) She had an answer. You could see it on her face. She had an answer. She was thinking about what it was. Then we went around, and then we came back, so we didn't forget her. That's one thing you noticed.

The representative modeling of the practice of wait-time (lines 1-48), when taken as a whole, denotes the first structural unit—**A**. Within this unit there are two instances of wait-time. The first instance of wait-time starts when the teacher educator asks—"What was the tone of the conversation?—to the whole group. After he poses the question he waits (line 2). After a moment, he makes a small gesture directed at Lalitha, so as to ask what she thinks about this question. When asked directly, Lalitha responds that she is not comfortable responding in English. Chitra appeals to her. Lalitha thinks for a moment, and while she is thinking Priya interjects that the tone of the conversation was not aggressive. The teacher educator asks Priya to hold her thought for a moment. Then, Lalitha starts to talk about the interaction between the students and the teacher in the video. The rest of the teacher-learners jump in and say that the tone in question is not about the students and teacher in the classroom video, but rather the interaction between the teacher-learner and the teacher educator during the fishbowl. Then, between lines 9 and 11 is the second specific point when the teacher educator uses the practice of wait-time to give Lalitha time to consider her response. Moments pass, and there is no response. At that point the teacher educator urges her to think about her response, and let her know that we will come back to her in a minute. Moving from his seat next to Lalitha, the teacher educator stands up and moves to the front of the space. Turning back to Priya, the teacher educator asks about her previous comment. After several turns of talk, he returns to Lalitha and asks, "Ok ma'am, what do you think?" She smiles, but she doesn't have a response, yet. Others contribute more ideas and the teacher educator reiterates their points. Just as he is about to transition to the next activity, Lalitha begins to talk softly, which he misses. Someone signals to the teacher educator that Lalitha has something to say; at which point he moves closer to Lalitha and listens to her response.

This interaction surrounding the representative modeling of wait-time serves as the first structural unit, because it is the material of the dialogic modeling, and it is its starting point. During this interaction (lines 1-48), the teacher educator gives Lalitha space and time to formulate her thoughts and muster the confidence to articulate them. The group is a vocal one, and several teacher-learners have a strong command of English, while Lalitha does not. The teacher educator returned to her at different times throughout the whole group debrief, and in the end, she offers a contribution. The comment she makes is

accepted and affirmed. Then, her participation and the teacher educator's interaction with her is stepped out of the whole group debrief, and used as the material for a discussion on the practice of wait-time.

The second structural unit—**B**—follows. Once Lalitha completes her remarks, the teacher educator launches a discussion by posing the following question

49	TE:	In my teaching, did you notice how we were interacting? So, before I was sitting there alwa, and naan enu maadidhini? (So, before I was sitting there ಅಲ್ವಾ, and ನಾನ್ ಏನು ಮಾಡಿದಿನಿ?; *So, before I was sitting there* [pointing to where he was seated]*, wasn't I, and what did I do*?)

From this prompt, the group—quite quickly—pieces together small details of movement and phrases that were said in a lively interaction (lines 47-67). Jyotsna responds that the teacher educator gave Lalitha a chance to think. Then, the teacher educator presses Jyotsna and asks her what he physically did. Priya comments that the teacher educator asked her for her opinion. He affirms this response, and follows up by asking what happened after that. Priya responds that she interrupted. The group laughs. Then the teacher educator reconstructs the rest of the interaction and modulating his voice points out, "And I *said,* "I'll come back to you"" (line 67). The teacher educator emphasizes this even further by repeating it. He continues by listing the turns of talk, finally returning back to what Lalitha said. In this portion of the dialogue the group recalls and reconstructs the representative modeling and collectively pieces it back together. Taken together, I interpret this part of the dialogue (lines 49-67) to be the second unit in the sequence—**B**.

The third structural unit—**C**—follows from the final lines of **B**. At the end of B, the teacher educator mentions that Lalitha was thinking as part of the decomposition of the instructional practice. Soon after Poornima voices an important point for everyone to hear (line 68). In line 68 she says, "She got the time to think," which is the pedagogical point for this episode. The idea that Poornima raises is that Lalitha was given an opportunity to consider her thoughts because of the teacher educator's deliberate pauses, and also because he came back to her after others had an opportunity to comment. In doing so, Poornima collapses two instructional actions into one practice.

Following this, I label the practice "wait-time" (line 69), and reiterate what "wait-time" entails (line 71); i.e., how it operates and what are some ways to use it.

69	TE:	She got time. So there are two things there. One, in English we say wait-time. Wait-time. If I ask a question … (pause), I wait. Kaibeku… (ಕೈಬೇಕು…; *I have to wait*…)
70	Hema:	Pause.
71	TE:	… You have to pause. Sometimes three or four seconds feels like it is ondhu gante. (ಒಂದು ಗಂಟೆ; *one hour*) But it's really three or four seconds. Just count till fifteen. Because fifteen seconds feels like a long time, but to think … fifteen seconds is a very short time. One is wait-time. Two is I came back to her. Marthoglilla. (ಮರ್ತಗ್ಹೊಗ್ಲಿಲ್ಲ; *I didn't forget.*) …

In doing so, I echo the efforts to decompose the instructional practice that occurred earlier in the dialogue (lines 49-67). However, the explication is not specific to the representative modeling, but is applied in more general terms. This parallelism suggests to me that the similarities warrant labeling this structural unit as **B'** (read B prime).

The second part of this final summary line, I interpret as **A'** (read A prime).

71	TE:	… She had an answer. You could see it on her face. She had an answer. She was thinking about what it was. Then we went around, and then we came back, so we didn't forget her. That's one thing you noticed.

In this excerpt, the teacher educator retells how wait-time unfolded from his point of view. This retelling parallels the representative modeling in lines 1 through 46, where the teacher educator employed the practice of wait-time in multiple and varied ways.

This sketch of my analysis indicates that this episode can be sub-divided into five structural units. Learners are initially exposed to wait-time through the teacher educator's employment of it (A). They then participate in the decomposition of it (B), and following this reconstruction one teacher-learner voices the "pedagogical point" of wait-time (C). Then as a group they subsequently revisit the initial exposure to wait-time through the teacher educator's explication of the practice's constituent parts (B') and close with a final narration of how it unfolded (A'). The dialogue is split into two halves. The second half is

inverted, meaning it occurs in reverse order, and parallels the first half. Between the two halves sits a pedagogical point, which also serves as a mid-turn from the first to the second half. Thus, this episode can be characterized as having a symmetrical chiastic structure: **AB/C/B'A'**.

Applying this lens to analyses of dialogic modeling, the symmetrical chiastic structure for Episode 3.2.2 – Wait-time can also be represented this way, starting at the top and moving clockwise:

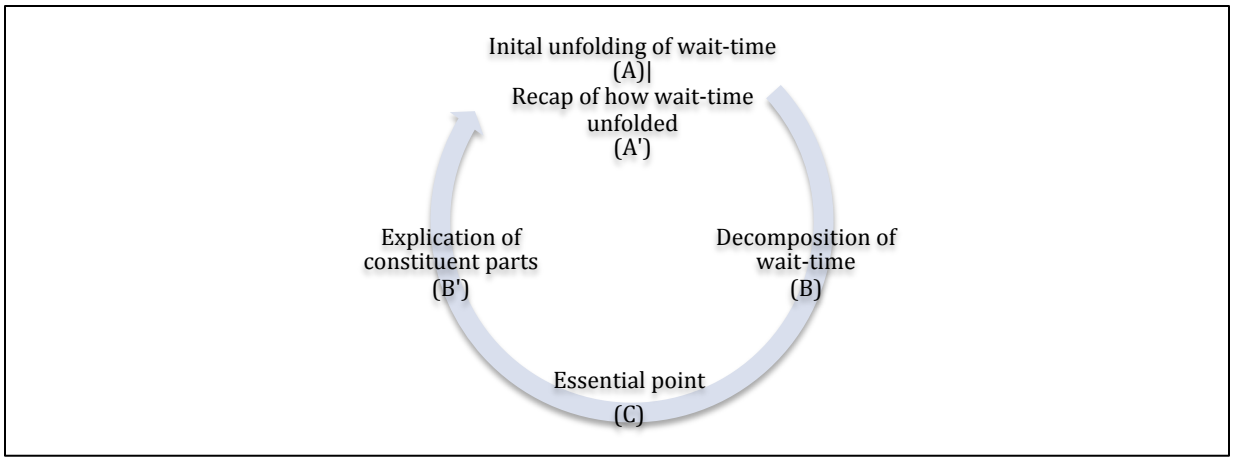


Figure 9: Symmetrical Chiastic Structure of Dialogic Modeling of Wait-time

After comparative analyses across the data corpus, a symmetrical structure seems to be apparent in most cases of dialogic modeling. Moreover, in most cases this symmetry entails chiasmus; i.e., a central, or mid-turn, point. In what follows, I detail one other example episode and my analyses of it as a means to warrant the assertion that the dialogic modeling enacted in this study consisted of a symmetrical chiastic structure, after which I will discuss how this structure illuminates dialogic modeling's opportunities to learn.

Symmetrical Chiastic Structures: An Example

In Episode 4.1.2, the dialogically modeled instructional practice is calling on students. This episode occurs during the first session of the workshop at Cauvery School, which is an English medium school. The group of teacher-learners is composed of the middle grade teachers from the school, all of whom have strong English language ability, and there are nine teachers attending. Following the "fishbowl" conversation with Kalpana, the teacher

educator led the group through a discussion on three questions, which he had asked them to attend to during the "fishbowl": (1) What were the questions I was asking; (2) What were her responses; and (3) What was the tone of the conversation? The representative modeling occurs when the teacher educator inquires about this final question. The table below represents my coding and categorizing of the structural units for this episode, including the representative modeling and the follow-on dialogue. In the adjacent column to the text, I provide my interpretive denotation of the particular text unit. In the far right column is my rationale for the unit's designation. In this episode, as with most that occurred at Cauvery, the interaction is mostly in English. Any Kannada that the teacher educator used was a safeguard to ensure that language was not an impediment.

Table 7: Episode 4.1.2_Cauvery_Session 1_Modeling 2_Calling on Students				
#	Text		Unit	Rationale
1	The teacher educator asks for feedback on the tone of the conversation, waits for several seconds, and then calls upon one teacher-learner directly. The teacher-learner responds, and the teacher educator extends her response. Two other responses are given, unsolicited, and the teacher educator extends or probes these responses. The teacher educator then returns to the teacher-learner that was participating in the fishbowl, and asks her for her thoughts on the tone of the conversation. In conclusion, the teacher educator asks one other teacher-learner if she would agree that the tone was "friendly." She nods her head in agreement, and softly replies, "Yes."		A	This is the representative modeling of calling on students.
2	TE:	Before I wrap up I have one question, eega nanna (ಈಗ ನನ್ನ; *now my*), we were talking, then I asked the group, ellarge keliddhu (ಎಲ್ಲರ್‌ಗೆ ಕೇಳಿದ್ಧು, *I asked everyone*), asked what was the tone of the conversation. Remember this? Then what did I do? (pause) After I asked the question, "what was the tone of the conversation?," then what did I do? Naan enu maadidhini? (ನಾನ್ ಏನು ಮಾದಿಧಿನಿ?; *What did I do*?) What did I do after? Naan prashne keladhmele naan enu maadidhini? (ನನ್ನ ಪ್ರಶ್ನೆ ಕೇಳಿಧ್ಮೇಲೆ ನಾನು ಏನು ಮಾದಿಧಿನಿ; *After I asked my question, then what did I do*?) (pause) All of you are thinking. Good. Do you remember? Lilly, do you remember?	B	This is the decomposition of the practice, which takes up the constituent parts (line 4) and (line 8). My question in line 9 is an attempt to prompt a discussion to decompose in terms of aims and consequences.
3	Lilly:	You pointed at me.		
4	TE:	I pointed at you, very good. That's right. That's right. I specifically asked you. I asked a question to the group, I waited, and then I specifically asked her. What's the benefit of asking one specific person?		
5	Ameena:	First she gave some answer.		

6	TE:	She was quick.		
7	Jyoti:	Yeah, she was quick in answering, first time she answered, you wanted to reinforce her like, … asked her again about the …		
8	TE:	…That was the second time. I asked again, yes. First time, I just made eye contact. I knew she had something. She had an answer, and I could see on her face that she had an answer, so I called on her.		
9	TE:	But is that a good thing or a bad thing?		
10	Nagaraj:	It's a judgment. A differentiated judgment.	C	This is the central point.
11	TE:	What is another way? Instead of just calling on Lilly, what could I have done? (pause)	B'	This is a return to the modeled practice through the lens of alternatives.
12	Ruchi:	Just let it go.		
13	TE:	Just let it go? Andhre? (ಅನ್ಧ್ರ್ರೆ; *Meaning*?)		
14	Ameena:	Those who know the answer open your hands.		
15	Kalpana:	Raise your hand.		
16	TE:	I could have said raise your hand you know. Ok, I could have done that. What else could I have done? (pause) Let it go you said. Just waited. I could have just waited, right? Someone would have responded, probably Lilly would have responded. But it is a decision that I made, because I wanted to focus on her. She had something to contribute. I wanted to…, how do you say… we say in English capitalize on her energy—her excitement. She was interested in giving a response.		
17	TE:	So just like in the video, you said ma'am. The girl in front, she put her hand up first, you called on her. She could have put her hand up first and you could have called on someone else. That can happen. But that would also be a choice.	A'	This is a parallel to the modeled practice, where an example from a teacher's own practice is used to revisit calling on students.

The text for this analysis begins with the teacher educator's representative modeling of calling on students (line 1). Posing the question to the group, using wait-time, and then calling specifically on Lilly to respond served as the material for our subsequent discussion. Thus, I denote this as the first structural unit of the text—**A**.

What follows is the teacher educator's launching of the discussion about the representatively modeled instructional practice:

2	TE:	… After I asked the question, "what was the tone of the conversation?," then what did I do?...

After some time, it becomes evident that many of the teacher-learners are unsure of what the teacher educator is asking them. Lilly, however, seems to have a sense. Recognizing this, the teacher educator redirects the question from an open call to the group to a solicitation, and asks Lilly directly.

2	TE:	…Lilly, do you remember?
3	Lilly:	You pointed at me.
4	TE:	I pointed at you, very good. That's right. That's right. I specifically asked you. I asked a question to the group, I waited, and then I specifically asked her. What's the benefit of asking one specific person?
5	Ameena:	First she gave some answer.
6	TE:	She was quick.
7	Jyoti:	Yeah, she was quick in answering, first time she answered, you wanted to reinforce her like, … asked her again about the …
8	TE:	…That was the second time. I asked again, yes. First time, I just made eye contact. I knew she had something. She had an answer, and I could see on her face that she had an answer, so I called on her.
9	TE:	But is that a good thing or a bad thing?

Lilly recalls the teacher educator's actions, and this leads into the decomposition of his instructional practice (line 4), and further clarification of what actually happened by Ameena and Jyoti (lines 5-7). In line 8, the teacher educator further decomposes the practice by shedding some light on his decision to call on Lilly. By asking the teacher-learners to evaluate this decision and this practice (line 9), the teacher educator attempts to continue decomposing, and bring others into dialogue. This interaction (lines 2-9) begins with the teacher educator's prompting the teacher-learners to recollect what happened at a specific time point during the instruction, and evolves into his articulation of the constituent parts and the instructional decision-making process. The teacher educator then makes an attempt to extend the decomposition to evaluate the practice. Thus, I take this to be the second structural unit—**B**—as it is a new part in the sequence.

The question the teacher educator poses: "But is that a good thing or a bad thing?" doesn't generate the response intended in a straightforward way. This may have been because a response to this type of question could be construed as passing judgment on the teacher educator's teaching, which may not have been comfortable for them.[53] In the midst of the decomposition, Nagaraja makes a simple statement about the teacher educator's decision:

10	Nagaraja:	It's a judgment. A differentiated judgment.

His point is the heart of the matter. Nagaraja's statement gives rise to the notion that teachers' work is comprised of endless moments where they must judiciously discern what actions would be well suited for the circumstances. Dialogically modeling calling on students pushed the teacher-learners to consider more than the instructional practice and its attributes. It provided an opportunity to take up the decision-making processes that underlie the details of instruction. Here, just as Poornima's statement does in Episode 3.2.2—Wait-time, Nagaraja's words serve as the third structural unit—**C**—and the "pedagogical point." Additionally, and importantly for the argument for the symmetrical chiastic structure, the point that he makes signals the mid-turn and the start of working back to the beginning of the episode.

What follows is the fourth structural unit—**B'**, which I interpret as parallel to the structural unit B, where the group decomposed his practice of calling on students.

11	TE:	What is another way? Instead of just calling on Lilly, what could I have done? (pause)
12	Ruchi:	Just let it go.
13	TE:	Just let it go? Andhre?
14	Ameena:	Those who know the answer open your hands.
15	Kalpana:	Raise your hand.
16	TE:	I could have said raise your hand you know. Ok, I could have done that. What else could I have done? (pause) Let it go you said. Just waited. I could have just waited, right? Someone would have responded, probably Lilly would have

[53] In the teacher educator journal, questions are raised as to whether this was a good question at all to ask teachers to think with: "By placing a value on the method, then it is unclear what this would mean for them? It seems that a question about the benefits and limitations would have been more appropriate, and been about the move, and not the teacher" (Setty TE Journal, July 23rd, 2012).

responded. But it is a decision that I made, because I wanted to focus on her. She had something to contribute. I wanted to…, how do you say… we say in English capitalize on her energy—her excitement. She was interested in giving a response.

The question the teacher educator raises is an attempt to bring in other voices, and also to engage with the practice of calling on students differently. In doing so, the teacher educator prompts the teacher-learners to analyze the modeled instructional practice through the lens of its alternatives. Ruchi and Ameena provide two alternatives, and Kalpana helps clarify Ameena's language. The teacher educator picks up on these contributions and revoices them. Quickly, though (line 16), he turns back to his representative modeling and bring to bear once more the thinking behind his decision: " …because I wanted to focus on her. She had something to contribute. I wanted to capitalize on her energy—her excitement." The teacher educator replays for the teacher-learners what they could not have seen even if they were keen observers. Saying this provides some access to the teacher educator's thinking, and externalizes his reading of the situation and of Lilly's expressions. The decomposition that evolves in this unit is analogous to the decomposition that occurred in lines 2-9. Thus, I denote this unit as B'.

The final comment of the episode builds out of the previous one.

17 TE: So just like in the video, you said ma'am. The girl in front, she put her hand up first, you called on her. She could have put her hand up first and you could have called on someone else. That can happen. But that would also be a choice.

The teacher educator's reference is to Kalpana and his "fishbowl" dialogue using her teaching video. In this summative comment there are two important aspects that help to characterize this as structural unit **A'**. First, I interpret these comments, where an example from a teacher's own practice is used to revisit the modeled instructional practice of calling on students, to be in parallel to the representative modeling. It seems that this second example is an effort to help reiterate the important points of this dialogue, and to bridge to the teacher-learners' practice. Second, the very last line: "But that would also be a choice," is comparable to Nagaraja's statement about "differentiated judgment." In chiastic analyses two conditions help analysts to recognize whether the structure meets the criteria. The

closure must bring the narrative back to the beginning, and can reiterate, build on, or negate it. Additionally, in the closure an analyst most likely will find language that corresponds to language used in the mid-turn, or central point. Both of these conditions seem to be present in this episode. Therefore, I denote this structural unit as **A'**.

The above analysis indicates that this episode can be sub-divided into five structural units. The teacher-learners are exposed to and experience the teacher educator's calling on

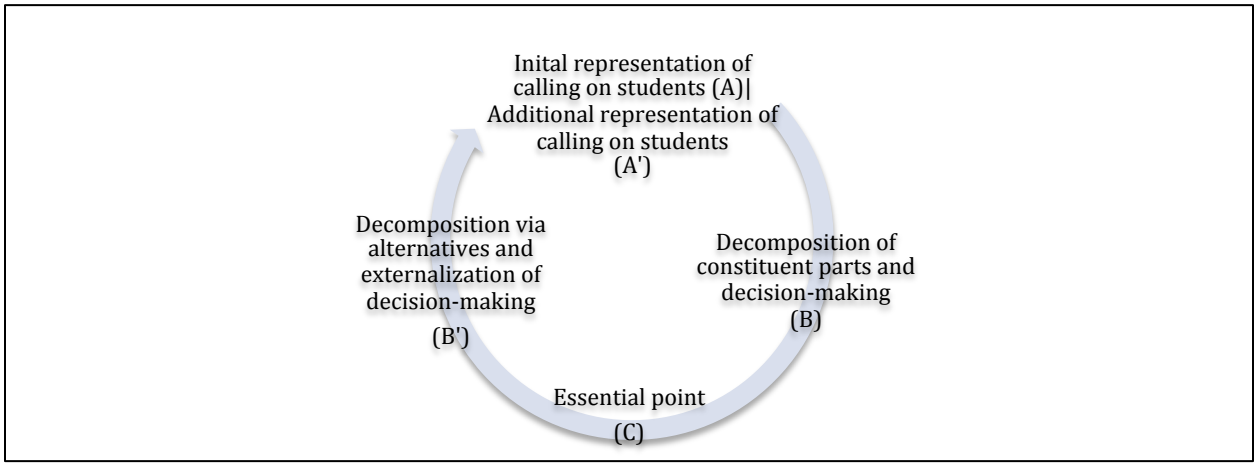


Figure 10: Symmetrical Chiastic Structure of Dialogic Modeling of Calling on Students

students (A). They then participate in a dialogue where both the teacher-learners and the teacher educator decompose his instructional practice in terms of constituent parts and decision-making processes (B). And while the teacher educator posed a question to bring others into the dialogue, Nagaraja voices what I interpret as the pedagogical point of this episode (C). His comment serves as the mid-turn in the conversation and the group then returns to decomposing the practice, but this time by naming alternatives and by the teacher educator externalizing his decision-making process to call on Lilly (B'). The dialogue ends with a turn to a different representation that the teacher-learners have all recently experienced, thus returning back to the beginning (A'). This episode, as with the previous one, is split into two halves. The second half occurs in reverse order of the first, and takes up similar content and ideas. Between the two halves sits a pedagogical point, which serves as a mid-turn from the first to the second half. Thus, this episode can be characterized as having a symmetrical chiastic structure: **AB/C/B'A'**.

Interpreting symmetrical structure provides a way to think about the work involved in dialogic modeling, a point I will pick up on at the end of this chapter. For now, it may be useful to acknowledge that an important hallmark of the dialogic modeling episodes is that the symmetrical chiastic structure seems to provide an instructional logic, which decomposes an instructional practice, steers teacher-learners to a "pedagogical point," and then recomposes the practice. This decomposing, steering, and recomposing seem to be conditions for the exportability of instructional practice.

Holding off, for the moment, questions concerned with implications, it will be helpful to build upon this notion of symmetrical structure, and see how it is evident in the rest of the data. My analyses and explorations of Episodes 3.2.2- Wait-time and 4.1.2- Calling on Students raise some questions about the internal generalizability of the assertion under investigation in this chapter. While the two cases explored thus far provide some insight into the analytical work carried out, on their own these cases may not convince critics that the dialogic modeling had a symmetrical chiastic structure. Critics of this work might also wonder if the symmetry might be present when the dialogic modeling took up practices beyond routine practices, such as exploring, or listening. Table 8 below illustrates the symmetrical forms and variation that are evident in the data that I generated.

Symmetrical Chiastic Structures: Across the Data Corpus

Of the 29 episodes available in this data set, 23 have symmetrical chiastic structures. The remaining 6 lack that structure. Going through the entire data set suggests that dialogic modeling had a consistent symmetrical structure that provided teacher-learners opportunities to experience the modeled practice, reconstruct it, isolate a main point, and then recursively go through the experience again.

Table 8 suggests that symmetrical chiastic structures dominate the data set. The analyses helped to determine that there are cases that are distinct from the typical AB/C/B'A' structure, such as Episodes 1.1.2 – Distributing Materials and 1.3.3 - Listening, where there seems to be parallel units, but they don't occur in the inverted format indicative of chiasmus. And there are discrepant cases as well, such as Episodes 2.3.3 – Giving Instructions and 3.2.1-Recap, where symmetrical structure is lacking.

Table 8: Symmetrical Chiastic Structures across the 29 Episodes		
Dialogically Modeled Practice	**Structure**	**Comment**
1.1.1 – Greetings	ABC/D/C'B'A'	
1.1.2 - Distributing Materials	ABC/D/A'B'C'	Mirror structure
1.1.3 – Homework	AB/C/B'A'	
1.2.1 – Recap	AB/C/B'A'	
1.2.2 - Organizing for Group Work	ABC/D/C'/D'	*Lacks symmetrical structure*
1.3.1 - Problem Posing	ABC/D/C'B'A'	
1.3.2 – Organizing for Group Work	A/B/C	*Lacks ring structure*
1.3.3 - Yielding the Floor	AB/C/A'B'	Mirror structure
2.1.1 - Greetings	ABC/D/C'/C"/D"/C"'/B/A'	Ring within a ring
2.1.2 - Giving Instructions	ABC/D/C'B'A'	
2.1.3 - Stopping an Activity	AB/C/B'A'	
2.2.1 - Exploring	ABC/D/C'B'A'	
2.2.2 – Recap	ABCD/E/D'C'B'	*Lacks ring structure*
2.2.3 - Concrete and Abstract	AB/C/B'A'	
2.3.1 – Rules	ABC/D/C'B'A'	
2.3.2 - Jogging the Memory	AB/C/B'A'	
2.3.3 - Giving Instructions	A/B/C	*Lacks ring structure*
2.3.4 -Student at the Board	A/B/C/D/E/D'	*Lacks ring structure*
3.1.1 - Distributing Materials	AB/C/B'A'	
3.1.2 - Giving Instructions	AB/C/B'A'	
3.2.1 - Recap	AB/C/B'	*Lacks ring structure*
3.2.2 - Wait-time	AB/C/B'A'	
3.2.3 - Movement	AB/C/B'A'	
3.3.1 - Grabbing Attention	AB/C/B'A'	
3.3.2 - Calling on Students	AB/C/B'A'	
4.1.1 - Distributing Materials	ABC/D/C'B'A'	
4.1.2 - Calling on Students	AB/C/B'A'	
4.2.1 - Greetings	ABC/D/C'B'A'	
4.2.2 - Recap	ABC/D/C'B'A'	

Most of these cases come close to fulfilling a symmetrical chiastic structure, but the interaction does not circle back to the representative modeling. The implications of these discrepant and distinctive cases are taken up as part of the discussion that follows.

One thread in my analysis is that a syntactical analysis can inform an understanding of instruction. On the value of symmetrical chiastic structures literary scholar Mary Douglas writes, "As a kind of syntax, the ring form brings ambiguity under control and

reduces confusion" (Douglas, 2007, p. 38). Analyzing the 29 dialogic modeling episodes helped me to bring the ambiguity of analysis under control. Importantly, and surprisingly, it allowed me to see that dialogic modeling's structure created opportunities to learn that brought the ambiguity of modeling under control. In the following section, I turn from these data illustrations and my interpretations of them to a discussion of what such an analysis affords in terms of understanding the opportunities to learn that dialogic modeling provided.

Discussion: From Experiencing to Recomposing

Teaching is inherently a recurring and recomposing process. Activities, ideas, and constructs laid out at the beginning emerge throughout the course of teaching and learning, and they are revisited and reanimated at the end. Classroom activities are often structured with a wrap-up, lesson plans usually include a closing segment in their structure as well. There is an instructional logic to this. From this synoptic view, it seems the intention is to bring closure to the events so that everything learners have been exposed and engaged in can be tied together in a package that can move on with them to subsequent lessons or tests. Similarly, dialogic modeling seemed to work this way, with an opening experience, deliberate efforts to fathom some meaning, and backwards step-by-step dialogue. In doing so, it seems the work involved in dialogic modeling escalated the opportunity to learn that modeling afforded. Grounding the learning opportunity in sensory experience alone would be uncertain. Fixing attention positions the experience as a resource to be considered more in full. However, unpacking an experience does not automatically lead to uptake and transfer either. Other conditions and endeavors seem necessary.

My intention for this dissertation was to find out how explicit modeling—as I developed and enacted it—worked, and what opportunities to learn it provided. Earlier in this chapter, I wrote that an important hallmark of the dialogic modeling episodes seems to be that the symmetrical chiastic structure provided an instructional logic. In what follows, I discuss this assertion in full, and how the following opportunities to learn: experiencing, noticing, decomposing, and recomposing, are evident in dialogic modeling.

In this discussion section, I build upon the warrants established in the data analysis of this chapter by discussing these four opportunities to learn. These opportunities may seem somewhat familiar from my analyses in Chapter 4. However, the symmetrical analysis presented here reorganizes the data, incorporates the modeling, and brings to bear complementary interpretations. From this particular analysis two important dynamics emerged. The first is what I have come to refer to as "steering to the pedagogical point." And, the second is recomposing. Furthermore, I discuss how my interpretations concerned with the synoptic view presented in this chapter align with the analytic work that scholars are finding to be productive in other efforts to improve teacher education.

Experiencing and Noticing

The initial experience—generally marked as **A** in the analyses above—in each of the dialogic modeling episodes was the initial starting point for the learning opportunities. It was a representation of practice. On its own, as I argued in chapters 1 and 2, the benefits of modeling are limited and uncertain. Alone, exposing teacher-learners to practices may not lead to enhancing their practice. As Pam Grossman, Karen Hammerness, and Morva McDonald argue: "…teacher educators must attend to both the conceptual and practical aspects associated with any given practice" (Grossman, Hammerness, & McDonald, 2009, p. 278). While there are affordances to experiencing practice, how the experience is *used* is integral for the development of professional practice. Undoubtedly, the teacher-learners in this study noticed many things in the professional learning settings, however, in what ways and to what extent is cloudy, and the degree to which they attended to the dimensions that underlie instructional practices is less clear.

Earlier in this chapter I presented Episode 3.1.1 – Wait-time, in which a complicated initial experience of a practice was nested within discussions embedded within discussions. The dialogic modeling of wait-time attempted to leverage the teacher educator's use of the practice during a "debriefing" conversation about a "fishbowl" conversation. The teacher educator's efforts were subtle and the interaction rich, so much so that it is reasonable to suspect that teacher-learners were not attending to the nuances of his deployment of wait-time. Moreover, wait-time in this case, entailed two dimensions—waiting for a learner to respond and intentionally returning to her after an extended period. All of these aspects led

the teacher educator to infer that deliberate measures might increase the probability of the teacher-learners noticing the teacher educator's practice, and studying it further might reveal the dimensionality that it entails.

In dialogic modeling the initial experience was the necessary fuel for the deliberate work of noticing. Noticing is consequential to teacher development because the process is intimately tied to their beliefs and resources, and it can lead to changed practices (Schoenfeld, 2010). As discussed in chapter 4, certain types of questions initiated the process of noticing (see Table 6). By leveraging the practice of wait-time out for scrutiny and discussion, the teacher educator enriched the opportunity to learn. The discussion guided the group to consider a particular part of the teacher educator's practice that occurred in the midst of his instruction. Indeed, dialogic modeling as it was enacted 29 times in the four sites not only drew teacher-learners' attention to instructional practices, but my analysis presented in this chapter, which highlights the second unit as **B**, also illustrates that it provided them the opportunity to reason about these in ways that provided them with more unpacked understandings of what they experienced. Such work, I regard as noticing.

Noticing in common terms is about observing and paying attention. However, scholars in the field are reconceptualizing the term to fit with the demands of learning professional practice. Miriam Sherin, Victoria Jacobs, and Randolph Philipp (2011), argue that there are two constituent parts to "teacher noticing." The first part is attending to particular events in an instructional setting. To be able to learn from the blur of events that occur during instruction, they argue that focusing on some events and not paying attention to others can serve as a useful means for future learning. The second part is making sense of events in an instructional setting. Reasoning is an inevitable part of noticing, in the authors' view. Teachers regularly relate and characterize what they observe in terms of familiar instruction. Some that are intrigued by this conceptualization of noticing also impress that this process can be guided and collective (Santagata & Guarino, 2011; Neubrand et al., 2009).

This view of noticing—as a two-part process of focusing and making sense of events—aligns with my interpretations of the data I generated around explicit modeling. In the 29 dialogic modeling episodes I studied, I too found attending to and decomposing to be

interrelated work meshed together. Drawing from Episode 4.1.2—Calling on Students from earlier in this chapter helps to explain this point.

> TE: Before I wrap up I have one question, eega nanna (ಈಗ ನನ್ನ; now my), we were talking, then I asked the group, ellarge keliddhu (ಎಲ್ಲರ್‌ಗೆ ಕೇಳಿದ್ಧು, I asked everyone), asked what was the tone of the conversation. Remember this? Then what did I do? (pause) After I asked the question, "what was the tone of the conversation?," then what did I do? Naan enu maadidhini? (ನಾನ್ ಏನು ಮಾದಿಧಿನಿ?; What did I do?) What did I do after? Naan prashne keladhmele naan enu maadidhini? (ನನ್ನ ಪ್ರಶ್ನೆ ಕೇಲಧ್‌ಮೇಲೆ ನಾನು ಏನು ಮಾದಿಧಿನಿ; After I asked my question, then what did I do?) (pause) All of you are thinking. Good. Do you remember? Lilly, do you remember?
>
> Lilly: You pointed at me.
>
> TE: I pointed at you, very good. That's right. That's right. I specifically asked you. I asked a question to the group, I waited, and then I specifically asked her. What's the benefit of asking one specific person?

This excerpt from the structural unit **B** can be characterized in two ways. First, the teacher educator's question provides a prompt to facilitate the noticing of his modeling of calling on students. Then Lilly responds, beginning the decomposition of the practice. The teacher educator then further specifies the practice by breaking it down into constituent parts. In this view, the two activities of noticing and decomposing come one on top of another, but they are independent. A second, way to interpret this excerpt, however, is that both noticing and decomposing are interdependent processes. The teacher educator prompts noticing, which takes the form of decomposition, or in Sherin, Jacobs, and Phillip's terms, "making sense of the events." In this view, the process of seeing and the process of sense-making are meshed together in the same sphere for the teacher educator and the teacher-learners. Noticing then is not only the impetus for describing and explicating teaching, but it is also the means. In dialogic modeling, the combination of noticing with decomposition preserves the "interactive nature" that Sherin et al. posit is a force in promoting the development of teaching expertise.

As with the movement for more decomposition of practice in teacher learning, the research on noticing is gaining momentum (Hiebert et al., 2007; Star & Strickland, 2008; Ball in Sherin, Jacobs, & Phillip, 2011). It is important to note, however, that the noticing

that I discuss here is not a dedicated effort to develop teachers' skills in noticing practice. To do so, requires a more extensive program that trains teachers how to build, develop, and use these skills over time (e.g., van Es & Sherin, 2010). And while the larger context within which dialogic modeling occurred sought to promote such skills,[54] the nature of this study is limited to the work involved in and the learning opportunities provided through explicit modeling. At the same time, the intervention of discussing the modeling into the stream of the teacher-learners' experience provided them a targeted and bounded opportunity to connect to principled ideas underlying the instruction they were involved in. And noticing may have been integral to boosting the chances that they took advantage of this opportunity. They had the opportunity to turn back to a practice that they just experienced. They were guided through an orchestrated sequence of questions to consider a particular instructional practice. And, they began to collectively take up multiple facets of an instructional practice engaging them in careful consideration of essential parts, aims, and responsibilities that manifest themselves within instruction. Even though dialogic modeling interrupted the flow of the teacher education, the interaction generated an opportunity to examine experience in such a way that would not be possible without intervention. The unitization of the 29 episodes highlighted these parts of the dialogue, as well as how noticing and decomposing were two activities that course through each other; thus an important part of the learning opportunities that dialogic modeling provided.

Not all episodes of dialogic modeling unfolded in this fashion, however. As Table 8 from earlier in this chapter shows, 23 of the 29 episodes in this study fit the chiastic structure criteria. Of the remaining six, because they lacked a symmetrical structure I was unable to reliably distill out the opportunity for noticing. For example, in Episode 2.3.3– Giving Instructions my analysis highlighted that this episode has an A-B-C structure, and thus does not meet the criteria for a symmetrical structure for a few reasons. First, the teacher-learners struggled to recall the modeled practice of giving instructions. They couldn't recall when the teacher educator had given the instructions, what the instructions were, or how many times he had given them. Thus, the noticing was imperceptible in my

[54] Much of the professional development workshops I designed and developed were dedicated to working with and analyzing video in collaborative settings. This work was similar to efforts explicated by van Es and Sherin, but also yielded much to consider in this type of work of supporting teachers' development in industrializing countries; an effort I hope to take up shortly.

analysis. It took some time for them to access their memories and required multiple questioning attempts. The teacher educator journal from that day speaks to this point.

> I think since my initial line of questioning wasn't getting the desired response, then I had to change my line of questioning. This wasn't something I had anticipated and made it complicated. I also think that since I wasn't getting what I expected, or had hoped for initially, then I may have cut this episode short. (Setty Journal Entry from July 13th, 2012)

It seems that this feeling of unsuccessfulness, in spite of adjustments, may have in turn led to the abrupt conclusion of the dialogic modeling; thereby precluding revisiting the representative modeling that typically occurred in other episodes. The sudden conclusion cut short the fulfillment of the symmetrical structure. As a result, it is difficult to tell what, if anything, the teacher-learners made of the modeled instructional practice. In some other discrepant cases, the dialogues veer off topic, and in others there is some mismanagement of the dialogue on the part of the teacher educator. These discrepant cases are instructive in that they indicate the importance of guiding the dialogue on the part of the teacher educator, and the vital nature of the work of noticing. Furthermore, they illustrate that dialogic modeling is not a seamless or simple practice for teacher educators to deploy. It is a complicated instructional tool that requires careful management and attention. Without such the learning opportunities that may occur are uncertain.

The "Pedagogical Point"

Consistently in the 23 dialogic modeling episodes where the symmetrical structure is evident, teacher-learners were able to concentrate their attention and reduce from all that they had noticed a single—pedagogical—point; identified in the analyses of typical symmetrical structures as **C**. As I argued in chapter 4, experiencing, guided noticing of aspects of that experience, and collective decomposition constituted ways of studying the modeled practice in dialogic modeling. Another interpretation is that as teacher-learners and the teacher educator engaged in dialogic modeling, they are involved in a process of "steering."

Steering involves maneuvering to a particular destination. In the case of dialogic modeling steering was not an individual process, but rather a collective communicative process carried out by teacher-learners and the teacher educator. In the episodes of

dialogic modeling used to generate data for this study, the teacher educator facilitated the discussion on an instructional practice, but the teacher-learners' uptake and interactions equally led the conversation to its goal. The dialogues' foundation was the shared experience of the modeled instructional practice, and the dialogue itself involved turn-taking, asking and answering questions, building on ideas or rejecting them, casting them in symbolically simple terms, and interconnecting them with other parts of practice. As in the mathematics instruction studied by Laurie Sleep there are efforts to "steer instruction toward a mathematical point" (Sleep, 2012; Sleep 2009). While Sleep's work explicated specific strategies necessary for keeping learners of mathematics on task, the work of dialogic modeling was less on this dynamic and more about the way a point emerges from decomposition and provides grounds with which to question a modeled practice's exportability.[55]

My close analysis of the discourse of the interactions through the lens of chiastic structures directed me to interpret the unity of these interactions as being more than an incoherent combination of statements and expressions. Rather, in Carl Ernst's words, they "hung together neatly" (Ernst, 2011, p.166). The units in and of themselves are important with regards to what occurs in them; i.e. noticing and decomposing in the structural units categorized as **B** in 23 out of 29 of my analyses. Yet, in this approach is the pivotal notion that meanings were preserved at the heart of the structures, and the surrounding dialogues were the means to both navigate towards the heart and away from it. One of the distinctive aspects of chiastic structures in literary texts is the mid-turn. In such texts, units are laid out in a sequence until there is a midpoint where the sequence stops, turns around, and in reverse order heads back the way it came. This creates an inverted parallel with the first sequence (Douglas, 2007). The opportunity to learn in dialogic modeling, I argue, depended on the mid-turn, and also provides further clarity on what it takes to do explicit modeling.

In the 23 episodes where I identified a chiastic structure, the mid-turn serves as the "pedagogical point," whereby a member of the group expresses the important idea

[55] While I draw this distinction between Sleep's focus and my own, the analysis that follows shares some common ground. For example, my use of "pedagogical point" connects with her interpretation of "mathematical point" in that both are viewed as a bundle of ideas. However, the instructional practices discussed here are connected to broader aims and intentions that are not tethered to a particular form of disciplinary knowledge.

extracting it from the practice. The voicing of this pedagogical point does not always come from the teacher educator, nor does it always come from a teacher-learner. Turning back to the example from Episode 3.2.2-Wait-time, Poornima, a 3rd standard science teacher of 15 years, articulates the pedagogical point of wait-time for the group as the conversation decomposing the practice draws to a close.

55	TE:	What did I do? Naan enu maadidhini? Chance andhre? Hege? Hege? (ನಾನೇನು ಮಾಡಿದಿನಿ? Chance ಆಂದ್ರ? ಹೇಗೆ? ಹೇಗೆ?; *What did I do? What do you mean by chance? How? How?*) How did I do it?
56	Priya:	You asked her opinion.
57	TE:	So, first I asked her opinion. Good. Good catch. I said what was your opinion. Then what did I do? Then she didn't have an answer.
58	Priya:	I interrupted.
59	TE:	You interrupted. (laughing) Good. That's true.
60	Teachers:	(laughing)
61	TE:	Then I said wait, I said wait. Then I went back to her. Then what?
62	Hema:	Then you asked again.
63	TE:	Then she was thinking.
64	Priya:	She had time to think.
65	TE:	She was thinking. Then what did I do?
66	Priya:	You came back to me.
67	TE:	Then I came back to you. And I said, "I will come back to you." I said, "I will come back to you." Then I went here, someone else had an answer, then I came here (pointing to the place he is now standing), and then she had something to say.
68	**Poornima:**	**<u>She got the time to think.</u>**

After the group proceeds through a step-by-step replay of how the practice of wait-time unfolded, thereby putting language to the constituent parts, Poornima emphasizes the consequence of employing wait-time. Poornima's distillation of the pedagogical point came through a collective decomposition of its use. When prompted to consider the modeled instructional practice, the teacher-learners detached the actions from the whole. First, the teacher educator asked Lalitha's opinion. Second, she didn't have an answer. Third, Priya interrupted. Fourth, the teacher educator asked her to hold her response, and then turned back to Lalitha. Fifth, the teacher educator asked Lalitha the question again. Then, Lalitha thought. After waiting for a few moments, the teacher educator explained to Lalitha that he

would come back to her. The final step in the procedure then was a return to Lalitha after others' contributions. Distilling these component elements into simpler constituents routed Poornima to the conclusion that wait-time, in this elaborated form, gave Lalitha time to think.

Poornima's giving voice to the "pedagogical point" raises two important considerations. First, her comment serves as an example of what teacher-learners made of the modeled practice from being involved in dialogic modeling. By steering through the dialogue, Poornima associates an implication to the modeled practice. Second, Poornima's comment enhances the characterization of the modeled practice as a principled practice, as her point provides insight into the plausible aim of "wait-time." The voicing of the "pedagogical point," provides the principle or theory that characterizes the practice as principled.

Educationist Mary Rowe's review of two decades of research on wait-time helps to situate Poornima's elaboration of the pedagogical point of wait-time, and my assertion that this is one of the important aspects of the instructional practice (Rowe, 1986; Rowe, 1969). Rowe found that there are "pronounced changes in student use of language and logic as well as in student and teacher attitudes and expectations" (Rowe, p.43). She points out that some studies showed that student responses increased in terms of elaboration, and failures to respond decreased when teacher effectively employed wait-time. Kenneth Tobin's research with elementary, middle, and high school science teachers in western Australia concurs with Rowe's claims where he found that wait-time, in the form of 3 seconds or more, had a role in students' higher cognitive activities (Tobin, 1987; Tobin, 1980). For both of these scholars it was the integral dynamic of time that enhanced the children's opportunity to learn, and the teachers' capacity to elicit student thinking.

In other episodes from this data set similar "pedagogical points" emerged. For example, in the midst of decomposing the implications of giving instructions in advance of an activity, Rukmini, a 2nd standard classroom teacher, highlighted for the group that giving directions in advance can help students to know "*What they should be looking for, what to observe, and through that the concepts will come to them*" (translated excerpt from Episode 3.1.2—Giving Instructions). Or, when Varuni said during the decomposition of recaps, "*…if a new lesson requires some things from here or there, then we will do it. [It helps] to start the*

lesson with fresh motivation"(translated excerpt from Episode 1.2.1—Recap). And, when Sundara voiced an important reason for why teachers should let students know when an activity is coming to a close before it ends: "*This helps our children be more alert when the finishing time comes*" (translated excerpt from Episode 2.1.3—Stopping an Activity). These simple statements are not uniquely personal creations. Rather they were built out of the collective work of the dialogue and emerged from the teacher-learners' past experiences. They developed in the flow of conversation, and they targeted a complex dimension of principled practice. These pedagogical points were typically loaded onto a central, or mid-turn, point that my chiastic structure analysis highlights as **C**. Furthermore, the cyclical nature of dialogic modeling provided an opportunity to simultaneously surround and make explicit a point that is implied early on and again at the end.

Without the voicing of this pedagogical point it would be less certain what, if any, implications of the modeled practice teacher-learners drew from their observations. Even with the voicing of the pedagogical point, it is unclear to what extent this insight was understood across the group. However, my identification of what constitutes **C**—the voicing of the pedagogical point—suggests that some teacher-learners were able to bring to bear a small theorization of what makes practices principled.

As Table 8 shows, not all of the symmetrically structured episodes from this data set fit the typical AB/C/B'A' structure. However, in a few of these cases as well "steering to the pedagogical point" was evident in my analysis. Episode 2.2.1 – Exploring is emblematic of seven other episodes in its ABC/D/C'B'A' form. While distinct, analysis revealed that a pedagogical point was still evident and the dialogue steered the group towards it. Before explaining this point, I first step back to provide readers more context on my analysis of this episode.

During analysis, I categorized this practice as a "principle" of teaching. This label signifies a practice that is not a routine, or habitual practice, such as wait-time, or greetings, and not a strategy, such as recaps. I defined principles, such as exploring, listening, and problem posing, as abstract ideas—consisting of aims, responsibilities, and courses of action—that provide a distinct way of thinking from the norm about the work of teaching. In this episode, the teacher educator is deliberately modeling a particular way of teaching

based on the notion that children can be given time to explore materials, without direction, and that these explorations may be educative and can be leveraged for guided learning.

This way of conceptualizing teaching practice was distinct at Medar's Block. At Medar's Block there are eight teachers including the Headmaster. At the beginning of this session there are only four teacher-learners present. Two others arrive soon after. The teacher-learners are seated in plastic red chairs along the long edges of a table that runs down the middle of the room. On the table, I have arranged nine plastic containers, and in each is a different set of manipulatives, such as geometric velcro shapes, blocks, a plastic clock, and stacking rings. The materials are from an NCERT (National Council of Educational Research and Training) mathematics kit for standards 1 and 2. Along with these items is a teacher's manual. The table below represents my coding and categorizing of the dialogic modeling of exploring materials, and includes the representative modeling and the follow-on dialogue. In the adjacent column to the text, I provide my interpretive denotation of the particular text unit. In the far right column is my rationale for the unit's designation.

Table 9: Episode 2.2.1_Medar's Block_Session 2_Modeling 1_Exploring Materials				
#	Text		Unit	Rationale
1	As the teacher-learners take their seats they begin handling the materials on the table. They are working with the Velcro shapes, the clock, and many other items. They are commenting on the materials to each other. The teacher educator is circulating around them, but is not interacting directly with the teacher-learners. After a few minutes, the teacher educator sits down at the table with the teacher-learners and tells them a bit about where the materials come from.		A	This is the representative modeling of exploring.
2	TE:	So my question is, did you notice how I started today's session? Hege start maadaithu eega? (ಹೇಗೆ start ಮಾಡಿತು ಈಗ?; *How did I start just now?*)	B	This is the decomposition of what was modeled.
3	Mamatha:	Grettings kottru. (Greetings ಕೊಟ್ಟರು; *You greeted us.*)		
4	TE:	Illa illa. Hege start maadidhvi? (ಇಲ್ಲ ಇಲ್ಲ. ಹೇಗೆ start ಮಾದಿಧ್ವಿ; *Not that, not that. How did we start?*)		
5	Mamatha:	Naavu bandhaga greet maadidhri. (ನಾವು ಬಂಧಗ greet ಮಾದಿಧ್ರಿ; *When we entered, you greeted us.*)		
6	Pavithra:	Ella things illi ithallva? namge nodthaidhange. (ಎಲ್ಲ things ಇಲ್ಲಿ ಇಥಲ್ಲ್ವ ನಮಗೆ ನೋಡ್ಥೈಧಂಗೆ; *All these things were laid out here, weren't they? For us to look at.*)		
7	Sundara:	Manasella illi odthaithu, practical aggi eekadene nodthaidhvi. (ಮನಸೆಲ್ಲ ಇಲ್ಲಿ ಓದ್ಥೈತು, practical ಅಗ್ಗಿ ಏಕದೆನೆ ನೋಡ್ಥೈಧ್ವಿ.; *We were making notes of these things in our minds, and also looking at these things while working with them.*)		
8	Jayshree:	Ella thegdhu thegdhu nodthaidhvi. (ಎಲ್ಲ ಥೆಗ್ಧು ಥೆಗ್ಧು ನೋಡ್ಥೈಧ್ವಿ; *We kept on taking taking everything out and looking at it.*)		
9	Sundara:	Mathe makklige curiosity iruthalwa (ಮತ್ತೆ ಮಕ್ಕಳಿಗೆ curiosity ಇರುಥಲ್ವಾ; *We had the curiosity like children do.*)		
10	TE:	Naanen maadidhini? (ನಾನೇನು ಮಾದಿಧಿನಿ; *What did I do?*) What did I do?		
11	Pavithra:	Neevu naavu bandha thakshana nodthaidhru naaven maadthivintha. (ನೀವು ನಾವು ಬಂಧ ತಕ್ಷಣ ನೋಡ್ಥೈಧ್ರು ನಾವೇನು ಮಾಡ್ತ್ಹಿವಿನ್ಥ; *Right from when we came in, you were watching us to see what we would do.*)		
12	TE:	Nodthaidhe, naanu nimmanna nodthaidhe, naanenu maadidhini? (ನೋಡ್ಥೈಧೆ, ನಾನು ನಿಮ್ಮನ್ನ ನೋಡ್ಥೈಧೆ, ನಾನೇನು ಮಾದಿಧಿನಿ; *I was watching. I was watching you all. But, what was I doing?*) What was I doing?		
13	Pavithra:	Observe maadthaidhri, enu maadthaidhare ellaru. (Observe ಮಾದ್ಥೈಧ್ರಿ, ಏನು ಮಾದ್ಥೈಧರೆ ಎಲ್ಲರು; *You observed what everyone was doing.*)		
14	TE:	Did I interfere? Interefere maadidhina? (Interefere ಮಾದಿಧಿನ; *Did I interfere?*)		
15	Pavithra:	Neevu maadilla. (ನೀವು ಮಾಡಿಲ್ಲ; *You didn't do that.*)		
16	TE:	I was just going around, illi illi, (ಇಲ್ಲಿ ಇಲ್ಲಿ; *here and there*) because you were exploring. You were playing with the blocks, adhra jothe, (ಅಧರ ಜೊತೆ; *with those things*) then you were looking at the shape, ii shape (ಈ shape; *this shape*). You were exploring.		
17	Pavithra:	Naave maadidhu. (ನಾವೇ ಮಾದಿಧು; *What we were doing.*)		
18	TE:	Many, many times, this is everywhere, many, many times we don't give children time to explore. Explore maadokke time illa makklige. Time naavu kodolla. (Explore ಮಾಡೋಕ್ಕೆ time ಇಲ್ಲ ಮಕ್ಕಳಿಗೆ.	C	This is the turn to the practice of all teachers.

		Time ನಾವು ಕೊಡೋಲ್ಲ; *There isn't time for children to explore. We don't give them time.*) We don't give them time to explore.		
19	Pavithra:	Naavu thorsidhre touch maadokke mathra bidthivi. Kaige kodalla. (ನಾವು ತ್ಹೊರ್ಸಿಧ್ರೆ touch ಮಾಡೋಕ್ಕೆ ಮಾತ್ರ ಬಿಡ್ತಿವಿ. ಕೈಗೆ ಕೊಡಲ್ಲ; *We only show them. We don't give it to them to hold*.)	D	This is the central point.
20	TE:	Many many times teacher idhu kodthare thakshana helthare, "adhu maadi, idhu maadi." Athwa, "adhu maadbeda." Naavu sumne kottadhare, awaru maadthare. Aataad alla, but maadthare, nodthare hege use maadodhu, adhella nodbeku. But naanu helthairodhu time, time thumba important. Keluru jana kodolla, idhu maadbeku. "Idhu maadbeku. Idhu maadbeku." Saamanu kodthivi, ella kade e type aids iralla. Sammanu kodthare but helthare idhu maadi. Sumne explore maadokke time kodalla. Awru ge kodolla. (Many many times teacher ಇದು ಕೊಡ್ತಾರೆ ತಕ್ಷಣ ಹೇಳ್ತಾರೆ ಅದು ಮಾಡಿ ಇದು ಮಾಡಿ, ಅಥವ ಅದು ಮಾಡಬೇಡ, ನಾವು ಸುಮ್ನೆ ಕೊತ್ತಧರೆ, ಅವರು ಮಾಡ್ತಾರೆ. ಆಟಆದ, ಅಲ್ಲ but ಮಾಡ್ತಾರೆ, ನೋಡ್ತಾರೆ ಹೇಗೆ use ಮಾದೊಧು, ಅಧೆಲ್ಲ ನೋಡ್ಬೇಕು. But ನಾನು ಹೇಳ್ಥೈರೋಧು time, time ತುಂಬ important. ಕೆಲೂರು ಜನ ಕೊಡೋಲ್ಲ, ಇದು ಮಾಡ್ಬೇಕು, ಇದು ಮಾಡ್ಬೇಕು, ಇದು ಮಾಡ್ಬೇಕು. ಸಾಮಾನು ಕಓದ್ತ್ಹಿವಿ, ಎಲ್ಲ ಕಡೆ ಈ type aids ಇರಲ್ಲ. ಸಂಮನು ಕೊಡ್ತಾರೆ but ಹೇಳ್ತಾರೆ ಇದು ಮಾಡಿ. ಸುಮ್ನೆ explore ಮಾಡೋಕ್ಕೆ time ಕೊಡಲ್ಲ. ಅವರು ಗೆ ಕೊಡೋಲ್ಲ; *Many many times teachers may give some materials, but then right away they tell students " Do this, do that." Or, they say, "Don't do that." If we just give it to them, then they will do something with it. Not just play, but they will do. They will look to see how to use something. They will look at all these things. But what I am saying is that time, time is very important. Most people don't give children materials. "We have to do this. We have to do that." We give them materials, but not every place has aids like these. We will give them materials, but then we will tell them what to do with them. We don't give them time to explore. We don't give it to them*.)	C'	This is a return to discussing the practice in general terms with respect to children.
21	TE:	So that's something to remember and something to think about. Yocahane maadokke. (ಯೋಕಾಹನೆ ಮಾಡೋಕ್ಕೆ; *Something to think about*.) Right. What I did was I gave you some time, naanu swalpa time kottidhini (ನಾನು ಸ್ವಲ್ಪ time ಕೊತ್ತಿಧಿನಿ; *I gave you some time*), and immediately you were playing. Immediately, neevu aata adidhri (Immediately, ನೀವು ಆಟ ಅಡಿಧ್ರಿ; *Immediately, you were playing*.) and I don't need to do anything.	B' & A'	This is specifically revisiting the TEs practice, and this is accompanied by some gestures, which parallel the act of giving over the materials and staying out of it.

Segmenting the entire episode into parts, the first unit—**A**—seems to be when the teacher-learners are exploring the materials on their own, and the teacher educator is circulating but not interfering. After a few minutes, he asks whether the teacher-learners noticed how the session started

2 TE: Did you notice how I started today's session? Hege start maadaithu eega?" (ಹೇಗರೆ start ಮಾಡಿತು ಈಗ?; *How did I start just now?*)

This question prompts a collective decomposition of what was modeled by the group, and is the start of the second unit—**B**—of the structure. In this unit (lines 2 through 17), Mamatha responds that the teacher educator greeted them as they came in. While this illustrates that Mamatha was thinking closely about his practice (given this was one of the practices dialogically modeled the previous day this isn't a surprising response), the teacher educator redirects the group, since this wasn't the practice intended for scrutiny. Pavithra, Sundara, and Jayshree then comment about how they were looking through the items, playing with the materials, and that they kept opening all the boxes. Sundara notes that they had the curiosity of children (line 9). Following this comment, the teacher educator asks them to consider what he was doing during this time. Pavithra remarks the teacher educator was observing. The teacher educator probes a bit further to inquire if he interfered. Pavithra replies he didn't. To this the teacher educator responds that he didn't interfere, because they were exploring. By going through this question-answer interaction the group has brought their experiences of the practice forward for scrutiny and decomposition, and the practice is named.

In line 18, the focus shifts from the teacher educator's practice to the practice of all teachers. This bridge constitutes the third unit (C).

18 TE: Many, many times … this is everywhere … Many, many times we don't give children time to explore. Explore maadokke time illa makklige. Time naavu kodolla. (Explore ಮಾಡೋಕ್ಕೆ time ಇಲ್ಲ ಮಕ್ಕಳಿಗೆ. Time ನಾವು ಕೊಡೋಲ್ಲ; *There isn't time for children to explore. We don't give them time.*) We don't give them time to explore.

The "we" that the teacher educator refers to is all teachers, thereby asserting that teachers—"everywhere"—seldom create spaces for children to explore materials or ideas. Pavithra responds to this point, in what I interpret as **D**—the pedagogical point.

19 Pavithra: Naavu thorsidhre touch maadokke mathra bidthivi, kaige kodalla. (ನಾವು ತೊರ್ಸಿದ್ರೆ touch ಮಾಡೋಕ್ಕೆ ಮಾತ್ರ ಬಿಡ್ತಿವಿ. ಕೈಗೆ ಕೊಡಲ್ಲ; *We only show them. We don't give it to them to hold*.)

Her contribution adds to this argument and points out that while teachers do use material objects, they don't allow students to touch, hold, or manipulate them. In doing so, she seems to be problematizing her own practice.

After this, the teacher educator steers the conversation back towards his previous more generalized comments. In line 20, he begins by pointing out that many times teachers put out materials, but this is immediately followed with directives telling the students what to do with them.

20 TE: *…If we just give it to them, then they will do something with it. Not just play, but they will do. They will look to see how to use something. They will look at all these things. But what I am saying is that time, time is very important. Most people don't give children materials…. We don't give them time to explore.*

The teacher educator assertively argues that if given time and materials, students will explore them in their own way. He then points out, " Most people don't give children materials…" These sentiments parallel the remarks made in line 17, where the teacher educator makes similar claims by glossing teachers and their practice in global terms. This parallelism suggests that this first part of line 20 be denoted as **C'**.[56]

In the second half of line 20 the teacher educator reiterates what he did, and exposes the group to some of his instructional choices. Gesturing to the materials and miming their actions, the teacher educator comments that right after they walked in the teacher-learners were immediately playing, and he didn't have to do anything. The teacher educator then explains that he was trying to give them a sense of how self-directed uninterrupted exploration feels. In these summative comments, these two statements detail more of what the representative modeling entailed, both of which are analogous to the collective decomposition of it; thereby suggesting that these comments parallel those in unit B and can be coded as **B'**. When this text was analyzed while watching the video of this episode, it also became apparent that these comments were coupled with physical gestures

[56] An alternative explanation might be that the comments marked as C, D, and C' are actually a set, and could be taken together as C. Both Pavitra's and teacher educator's comments attend to the concern that students don't have time to explore on their own. However, Pavitra's remark in line 18 interrupts the teacher educator's commentary, which begins in line 17, and draws the main idea out from that commentary; thereby encapsulating it and positioning it as a mid-turn point. Therefore, I designate this line as D: the pedagogical point of the interaction.

that mimicked the handing over of materials and leaving the learners to engage with them on their own. Thus, these comments also represent the initial activity—A—and can be coded as **A'**.

This analysis of this episode details a variant of the symmetrical chiastic structure specified for Episode 3.2.2 – Wait-time, and those like it. In this case there is an additional pair of units—C and C'—and D represents the pedagogical point. Therefore, the symmetrical structure seems to be

ABC/D/C'B'A'

In chiastic structure analyses, the mid-turn of the chiasmus should be unmistakable and the terms and ideas expressed should be in concordance with the beginning and the ending (Douglas, 2007). While the whole episode is densely interconnected, the mid-turn here seems to occur when Pavithra articulates the essential learning of the exercise in line 19: "Naavu thorsidhre touch maadokke mathra bidthivi, kaige kodalla" (We only show them. We don't give it to them to hold). Dialogically modeling the principle of giving students time to explore materials was intended to provide a learning opportunity to spur the teacher-learners to reflect on their own practice. Pavithra gives voice to her learning from this time to reflect. Consequently, the rest of what the teacher educator says is dependent on what she says in line 18, and the teacher educator's language reflects hers: … Awru ge kodolla (*We don't give it to them*). A second illustration of my analysis is below.

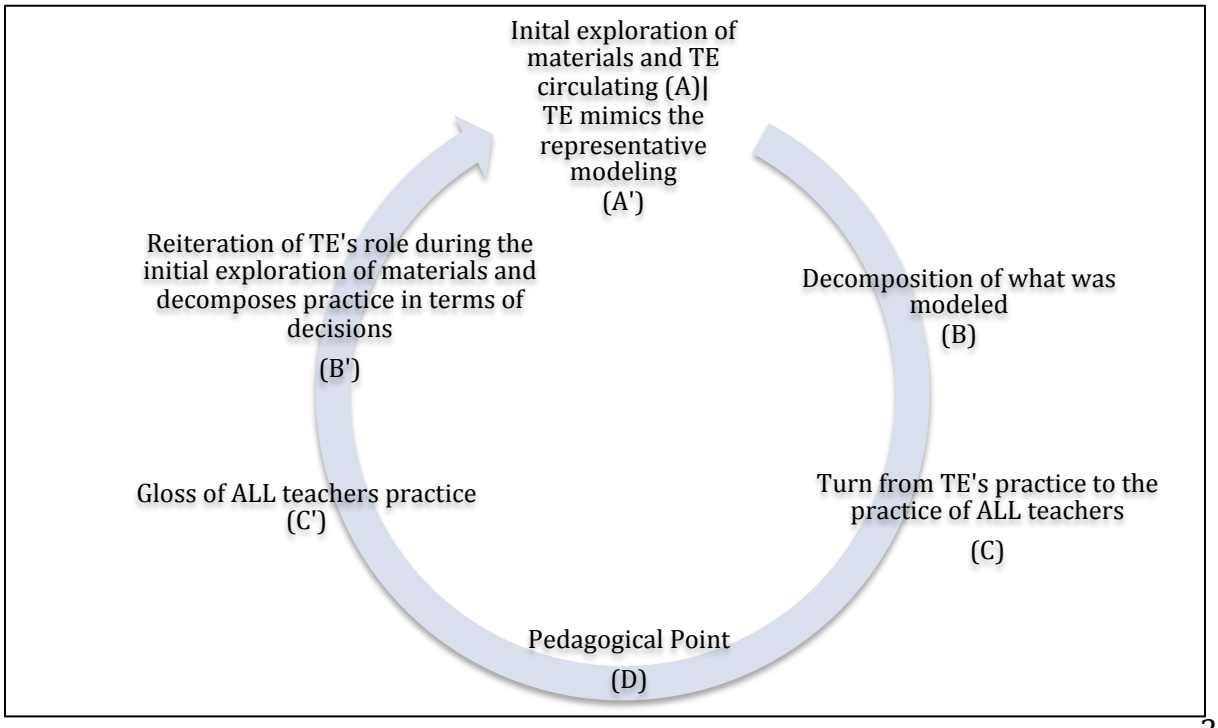


Figure 11: Symmetrical Chiastic Structure of Dialogic Modeling of Exploring Materials

My explication of Episode 2.2.1 further illustrates that dialogic modeling supported the learning opportunity to steer to the pedagogical point by making use of the demands that emerge within the dialogue. In this case, Pavithra's comments characterize the value of providing students opportunities to engage with academic materials on their own terms, thereby stimulating unencumbered inquiry and interpretation. Such exploration occurs in limited ways in classrooms, as Pavithra's comments indicate. The pedagogical point does not emerge in a directed manner, rather it develops from the material of the representative modeling and through participation in the dialogue that follows it. The steering was decomposing work, yet the import of that work—when seen through the lens of chiastic structures—is put on the table in a way that connects the modeled instructional practice to aims and intentions of the instructional practice. It is simultaneously a specific detail and a bundle of ideas that serve as a linchpin to principles about teaching, students, and content. Furthermore, the notion that decomposition of instruction includes not only specifying the constituent parts, but also the aims and intentions, is an important facet of considering exportability. When aims are considered, such work grounds the modeled practices in teachers' own experiences.

Recomposing

Thus far, I have discussed the relevancy of three of the five units identified in typical episodes of dialogic modeling—A, B, and C—where a symmetrical chiastic structure has been identified. This raises the question: If A and B in this analysis constitute the experiencing and noticing components of the practice, and C is the pedagogical point, then how is the rest of the structure relevant? My response is what follows.

When wait-time was dialogically modeled during the second session of the workshop at Kumbarkoppallu GHPS the teacher educator brought closure by saying,

69	TE:	… So there are two things there. One, in English we say wait-time. Wait-time. If I ask a question … (pause)…, I wait. Kaibeku… (ಕಾಯ್ಬೇಕು…; *I have to wait*…)
70	Hema:	Pause.
71	TE:	Awaru yochane maadthare. (ಅವರು ಯೋಚನೆ ಮಾಡ್ತಾರೆ; *They will think*.) You have to pause. Sometimes three or four seconds feels like it is ondhu gante. (ಒಂದು ಗಂಟೆ; *one hour*) But

> it's really three or four seconds. Just count till fifteen. Because fifteen seconds feels like a long time, but to think… fifteen seconds is a very short time. One is wait-time. Two is I came back to her. Marthoglilla. (ಮರ್ತಗ್ಹೊಗ್ಲಿಲ್ಲ; *I didn't forget*.) She had an answer. You could see it on her face. She had an answer. She was thinking about what it was. Then we went around, and then we came back, so we didn't forget her. That's one thing you noticed.

Winding up by returning to the beginning in teaching is common, and is arguably just "good teaching." However, the conclusion in the dialogic modeling of wait-time is conspicuous in the way that it parallels the preceding decomposition and the modeling of it. Earlier in the episode (see line 49) the teacher educator prompted the teacher-learners to consider his instruction by asking, "Did you notice how we were interacting?...What did I do?" When the teacher educator begins his closing comments here in line 69, he names what he did, and he wraps language around how he and Lalitha interacted and names the instructional practice "wait-time." By naming the practice, the teacher educator is responding once again to those questions that were posed at the beginning. In his response here at the end, the teacher educator goes a step further by acting it out: "If I ask a question…(pause)… I wait. The pause is deliberate and exaggerated, prompting Hema to label what he was doing (line 70). In line 71, the teacher educator decomposes the practice once again. He simplifies the practice by arguing that there needs to be an actual break in the conversation, and he even provides a guideline on how long to actually wait. These brief comments are analogous to what came earlier in the dialogue (lines 47-67), where the group collectively decomposed the modeled practice into constituent parts. What follows in line 71 is a return to what the teacher educator actually did when he came back to Lalitha after a series of contributions from others. However, in these comments, the teacher educator does not simply reanimate the interaction. Rather, he provides some rationale for his decision to provide her some more time. He remarks that he noticed that she wanted to contribute, and anticipated that she might feel limited by her language. Recognizing this he decided to give her more time to think and to move the spotlight off of her. He hoped that this would give her time to gather her thoughts, craft what she wanted to say, and build the

confidence to voice her ideas. This final comment from the teacher educator retells what happened and closes out the summary.

There is a thematic correspondence between the beginning and the ending of this episode of the dialogic modeling of wait-time. After the mid-turn, wait-time is again decomposed, and then the teacher educator provides a rationale for his decisions, thereby gathering together once again the initial experience of wait-time. The ring comes full circle, in a sense, but it does so in an inverted manner—typical of chiastic structures. As a result, that which the teacher-learners experience and decompose at the beginning is recomposed for them and repackaged. This notion of recomposing the modeled practice seems to be a condition of the dialogic modeling in this episode.

Turning to another example to further illustrate this point, recomposing the decomposed instructional practice also came toward the end of Episode 4.1.2 – Calling on Students. As discussed earlier in this chapter (see Table 7), in this episode the teacher educator models a particular way to call on a particular student after posing a question. That practice is then decomposed for its constituent parts, and as part of that decomposition, the teacher educator asks the group to evaluate the practice. Nagaraja, giving voice to the pedagogical point says, " It's a judgment, a differentiated judgment." What follows is the recomposing of the decomposed practice and a second iteration of the pedagogical point.

11	TE:	What is another way? Instead of just calling on Lilly, what could I have done? (pause)
12	Ruchi:	Just let it go.
13	TE:	Just let it go? Andhre? (ಅನ್ಧರ್ರೆ?; *Meaning*?)
14	Ameena:	Those who know the answer open your hands.
15	Kalpana:	Raise your hand.
16	TE:	I could have said raise your hand you know. Ok, I could have done that. What else could I have done? (pause) Let it go you said. Just waited. I could have just waited, right? Someone would have responded, probably Lilly would have responded. But it is a decision that I made, because I wanted to focus on her. She had something to contribute. I wanted to…, how do you say… we say in English capitalize on her energy—her excitement. She was interested in giving a response.

17 TE: So just like in the video, you said ma'am. The girl in front, she put her hand up first, you called on her. She could have put her hand up first and you could have called on someone else. That can happen. But that would also be a choice.

The excerpt above begins just after Nagaraja's voicing of the pedagogical point, which signals the mid-turn and the start of working back to the beginning. In line 11, the new sequence begins, not by rearticulating the constituent parts, but by juxtaposing it against other possible ways of calling on students. Ruchi replies that the teacher educator could have just let it go, meaning he could have posed the question to the group and just waited until someone responded. Ameena suggests that the teacher educator could have asked them to open their hands, which—according to Kalpana—means, "Raise your hand." The teacher educator emphasizes this point in his comments starting in line 16, when he forecasts what might have happened if he had waited and left it open. These comments move the teacher educator to zoom in on his instructional decision—a constituent of the instructional practice— which had been pre-defined by Nagaraja. When the practice of calling on students was looked at in relief of other alternatives, this shed a light on it and the way it unfolded. And when the teacher educator explained his choice on how he came to call on Lilly, by saying it was a "decision" he made, he was taking the group into the decision-making facet of the practice. Both of these round out the decomposing work done before the mid-turn, by bringing more depth to the previous analysis. This effort, then, led the group to the conclusion of the dialogue.

In the closing (line 17), the teacher educator returned to an example that occurred much earlier in the session, where the group was reviewing Kalpana's teaching video and discussed her decision to call on a particular student. There is a parallel between the image that this return tries to conjure and the modeling from the beginning of this episode. Both are representations of calling on students, however, they actively participated in the modeling, while in the other referenced representation they were viewers. Moreover, the teacher educator's language echoes Nagaraja's, when he ends by saying, "But that would also be a choice." By doing so, the linguistic choices that come at the end of the dialogue and the drawn connection between one representation and another constitute the ending of the symmetrical chiastic structure in ways that parallel the beginning. Thus, the final

comments of this dialogue recompose the modeled and decomposed instructional practice of calling on students in similar ways to the dialogic modeling episode of wait-time.

In chapter 4, I discussed more specifically how the modeled instructional practices were decomposed through the encoding process, in particular through the naming of the practice and the derivation of conceptual structures. My analyses of the 29 episodes demonstrates that part of the work of dialogic modeling was to break down the modeled experiences into steps that were conceptually meaningful, tied to aims and intentions, and were explicated through dialogue. Furthermore, in that chapter I discussed how cueing to positive and negative consequences was evident in dialogic modeling. Taking the time to do this also helps learners avoid trial-and-error solution strategies, formulate analogies, and draw inferences that are emblematic of effective problem solving (Glaser and Baxter, 1999).

My argument in this chapter is that dialogic modeling provided opportunities for teacher-learners to consider aspects of experienced and decomposed practice in a recomposed form. This involved the teacher educator guiding the discussion, summarizing what the decomposition—and in some cases the pedagogical point—entailed, and reanimating the experience. In the effort to recompose the decomposed modeled practice, the group was engaged in an opportunity to learn that offered space to consider whether the benefits and limitations of the modeled practice for their own teaching, and whether what was modeled might be exportable. This idea parallels J.J. Gibson's notion of affordances (Gibson, 1977). Gibson defined affordances as perceived opportunities for action. What this means is that when learners see something, they may also consider the possibilities of it. Gibson argued that when affordances are perceptible they link perception to action, and that when affordances are hidden or false, they lead to misuse and misunderstandings**.** Jean Lave and Etienne Wenger also theorized that when learners observe they develop conceptual models, which provide them with organizational and interpretive structures that facilitate reflection on their observations (Lave and Wenger, 1991).

Cognitive science research on children's learning has shown that some learners can form mental models of what they see when experiences are broken into conceptually meaningful steps, which are clearly explained (Renkl, 2005; 2011). They first identify

generic structures, and then over time the structures become more acute, and a qualitatively different organization of their sensory experience develops. These structures enable individuals to build a mental model that guides them in appropriating and applying, as well as future learning. However, not all learners are proficient in generating mental models. Thus, cognitive scientists argue that learning from sensory experiences is case-by-case, contingent on the capacity to visualize imagined selves, and dependent on low-levels of cognitive demand. Two examples may help to clarify this point.

Cognitive scientists Wayne Leahy and John Sweller posit that the "imagination effect"—where mental rehearsal generates enhanced fidelity during subsequent performances—requires a low-level of cognitive load (Leahy and Sweller, 2007). In contrast direct instruction and large amounts of information require learners to process those in addition to imagining. In their study, Leahy and Sweller organized 30 elementary school students into two groups to test their hypothesis that if left to imagine without material enhancements, learners could perform better on a subsequent task than learners that were provided those materials. Both groups had familiarity with a bus timetable, and members of one group were asked to study it, then respond to questions, while the members of the other group were asked to imagine a bus timetable without focused study time. The researchers found that the students in the "imagination group" scored better on the performance-based test than their peers that were provided more materials and time to study. The low level of cognitive load, they argue, assisted the learners in this group.

Additionally, cognitive Scientist Graham Cooper and his colleagues at the University of New South Wales, studied the importance that imagining has for learning (Cooper et al., 2001). Their work revealed that learners who were taken through a process on how to use a spreadsheet application that emphasized imagining procedures and concepts to solve problems found imagining to be more beneficial than formally sitting down to study the procedures and concepts. Interestingly, the researchers also found that the effects of the imagining were moderated by a learner's level of experience or expertise: imagining impeded novice learners, while learners with high-levels of experience or knowledge benefitted from imagining. Their report concludes by advocating that less experienced learners benefit from close study of their topic, but that imagining was enough to likely facilitate habitual practice for more experienced learners.

Certainly, the dialogic modeling that was enacted in this study kept the cognitive load low as it did not involve materials such as videos or artifacts that might have required more cognitive processing for the teacher-learners. Additionally, the follow-on dialogues were intentionally held close to the teacher educator's modeling. Moreover, by design teacher-learners were engaged with instructional practices that they had some level of familiarity with during dialogic modeling (see Appendix 5).

In the stimulated recall interview that followed Episode 4.1.2—Calling on Students, Lilly and Jyoti were asked about what they were thinking when the dialogic modeling was going on, as well as the value of the dialogue that followed the modeling.

60	Interviewer:	So, Lilly you said when I was asking you and pointed at you, you began thinking, imagining your own class. So, what if Rohit just left it and then the group did not discuss the good things, the bad things, the other ways to do it. Would that have been ok? (pause) Do you get what I am saying? (pause) So, you told me just now…
61	Lilly:	Stop it at that point and not discuss further?
62	Interviewer:	Pardon? I didn't get you.
63	Lilly:	What you are telling is, if sir had not discussed this thing—without further questions—then what would have happened to my imagining?
64	Interviewer:	Unnhhh… yes. Maybe? That sounds like a good question.
65	Lilly:	It would sort of cut short my imagining and bring me back to this place.

Lilly's responses to these interview questions indicate two important ideas about the significance of recomposing the modeled instructional practice. First, they reveal that Lilly was thinking about, i.e., "imagining," her own classroom practice during dialogic modeling. In the midst of the teacher education session, and while she herself was being questioned, she was visualizing her classroom, her students, and her interaction with them. Second, Lilly points out, and Jyoti agrees, that had there not been any dialogue about the representative modeling, then the imagining would have been "cut short." From their comments, it seems that the dialogue not only provided the opportunity to deepen their experience of the modeling, but it also gave Lilly a chance to continue reasoning about her own practice.

Recomposing becomes an asset in teacher education, when we consider the limits of relying on decomposition and working with representations.[57] Increasingly, since the cross-professional study of professional practice (Grossman et al., 2009), there has been an intent focus on "approximations of practice," (e.g., rehearsals, automated simulations, peer teaching) alongside decomposition and representations (Hatch & Grossman, 2009; Kazemi & Hubbard, 2008; Dieker et al., 2008). The affordance of these is that teacher-learners experience the teacher role during approximations, rather than remaining in the student role as they do during decompositions and work with representations. Dialogic Modeling integrated representation and decomposition, as the teacher-learners were getting chances to think about and talk about practice, but generally still situated teacher-learners in the student role, raising concerns about whether they will actually transfer the modeled practices. The processes of analogic reasoning and cueing to consequences that went on in what I identify as the recomposing units, though, raises the likelihood that teacher-learners were involved in thinking about enactment. Therefore, one potential outgrowth of this analysis is that the work that goes on during recomposing can be situated in the space between decomposition and approximation of practice, and may be a useful way to prime teacher-learners to in fact enact the modeled practice later on.

In a recent work, John Mason provides a commentary that reminds me of the importance of imagining in in-service teacher education (Mason in Sherin, Jacobs, and Phillip, 2011). He writes, "Indeed, the mark of effective professional development is that participants can imagine themselves in the future acting responsively and freshly rather than habitually" (Mason, p. 38). That teacher-learners mentally turn to their own practice and envision their own classrooms—past and future—during teacher education is not surprising. However, its importance should not be overlooked. My analysis of the symmetrical chiastic structure of the dialogic modeling episodes brought to bear that decomposed practices are collectively recomposed *before* enactment. The implication of this is that through the study of modeled principled practices teacher-learners were extended opportunities to cognitively consider, or imagine, the modeled practice in their practice.

---

[57] I gratefully acknowledge Mathew Ronfeldt for enticing and encouraging me to develop the idea presented here.

Imagining practices that are familiar and without material impediments is a way to consider how the opportunities to learn provided in dialogic modeling potentially shaped teacher-learners' consideration of the exportability of the modeled practices. My symmetrical structure analysis highlights that this potential was afforded due to the opportunity to reason about the modeled instructional practice through decomposition; the evidence of which sits at the middle point of each of these episodes. The additional bonus that my analysis showed was that the decomposed practice with its pedagogical point was then recomposed. Whether or not imagining occurred on a wider scale is not evident in the data I provide in this dissertation. Even so, this appears to be an important empirical question and one that needs to be studied. In this study it seems that teachers-learners were generating imagined selves and were likely getting more flexible in their reasoning (vis-à-vis analogical reasoning); however, a study of the relationship between imagined selves and enacted practice, or flexible thinking and enacted practice, would help bolster this case.

Dewey once wrote, "Knowledge results if the mind discriminates and combines things" (Dewey, 1916, p. 59). This effort that I have described here was to provide opportunities to "discriminate" then "combine," or in this case "re-combine," as a means to enhance what teacher-learners could possibly take from the study of modeled principled practices. The recomposition seems key to repackaging and cueing the teacher-learners about the affordances and limitations of the modeled practice, and it was done in a way that did not make significant cognitive demands on the teacher-learners, ostensibly facilitating the opportunity to consider and question the exportability of the modeled instructional practice, a point which I take up in the final chapter.

Chapter 7:
Insights and Implications

At the outset of this dissertation, I argued that there was a fog constricting the field's ability to communicate about what teacher educator modeling is and what it affords. One reason I did this research was to clear this fog. I tried to figure out what is meant by teacher educator modeling. And I delved into what it would take to calibrate modeling in such a way that it aligns with other practice-based teacher education efforts. I also tried to provide an image of how teacher educators can be explicit with and about their modeling in an effort to shed some light on the practice. I surmised, also, that if I were to take a teacher educator's practice as the unit of analysis, then I might be able to describe well what it takes to pull off the type of modeling I was imagining. If I could do these things, I thought I might be able to help shed some light on a ubiquitous practice that is, and has been, a "signature pedagogy" (Shulman, 2005) of teacher education.

In this dissertation, I raised questions such as: "How does one "do" modeling?", and "Might the way one models depend on what one models?" As a response, I tried to define the construct of modeling through systematic inquiry of measures that try to leverage modeling to enhance opportunities for teachers to learn. I have tried to show how a particular practice of explicit modeling actually unfolds, and how one can try to pull it off. A central point in this analysis has been that modeling can be used as a resource to support the study of principled practices, and that study can be constituted in part by the consideration of the exportability of the modeled practices.

Although many might agree with this point in principle, they might be unsure of the wider relevance of this claim. Therefore, this concluding chapter first summarizes the study's central questions and the analyses of the data I generated to study explicit modeling in teacher education. Then, in the second part of this chapter I use this review to specify and elaborate the core claims about the work involved in explicit modeling practices, and discuss possible implications of this study. I close by discussing next steps for research on explicit modeling. In doing so, my intent is to plant a seed about the affordances and limitations of being explicit about modeling in teacher education.

Summary of Interpretations

What are some ways that teacher educators can harness the potential that modeling affords? My response to this question in this dissertation focused on the work involved in enacting explicit modeling of principled teaching practices in teacher education where the goal is to provide teacher-learners opportunities to experience and examine in detail specific instructional practices; a practice which I came to call dialogic modeling. To unpack the work involved in enacting dialogic modeling two orienting research questions guided this study:

RQ 1: What is the work involved in enacting explicit modeling of teaching practices?
RQ 2: What kinds of opportunities to learn might dialogic modeling present for teacher-learners?

In Chapter 4, I reported on what shaped the flow of the explicit modeling, in terms of the processes and sub-processes of the work for the teacher educator and the teacher-learners. And, in Chapter 6 I analyzed the opportunities to learn. What it took to do dialogic modeling and bring modeled practices to the forefront for study was examined in a set of extended examples in Chapters 2, 4, and 6. These examples consisted of narrative descriptions, full representations of episodes of dialogic modeling (Boxes 1, 2, and 3) and two sets of analyses.

The Synoptic View

In Chapter 6, borrowing from literary theory, I examined the flow and structure of dialogic modeling and determined that there was symmetry in the cases I examined. In particular, my analyses illustrated that 23 of the 29 episodes of dialogic modeling could be characterized as having a chiastic structure; one in which initial points are returned to at the end in reverse order, and where both sets are anchored by a pedagogical point voiced by a member of the group.

The analyses suggested that explicit modeling, as I designed and enacted it, can be a means to provide opportunities to experience, notice, and recompose practices.

Chapter 6 Analyses

• Experiencing
• Noticing
  • Decomposing
  • Steering to the Pedagogical Point
• Recomposing

Table 10: Interpretations of Opportunities to Learn in Explicit Modeling from Chapter 6

I argued that deliberately guiding opportunities to notice the practice—constituted by decomposing and "steering to the pedagogical point" (Sleep, 2012)—and recomposing the practice could be used to shape how teacher-learners experienced the modeled practice. These opportunities to learn, I argued, could be used to unpack and study the modeled practices in detail, to consider the exportability of the modeled practice, and to derive a "pedagogical point."

Consider the example I discussed earlier in Chapter 6. In the dialogic modeling of calling on students at the Cauvery School—Episode 4.1.2—the analysis indicated that, when taken together, the modeling and the follow-on discussion could be sub-divided into five units. In this episode the teacher educator demonstrates a way to elicit student thinking with them. The teacher educator, then, uses the experience as a resource for the group to study the modeled practice, wherein they decompose what happened and the decision-making behind it. The teacher educator's questions and the teacher-learners' responses steer the dialogue to a central point, voiced by a teacher-learner. In this case, Nagaraja states, " It's a judgment. A differentiated judgment." This statement, and the others like it in the data I present in previous chapters, provides a window into how the teacher-learners were involved in the explicit modeling and also what they were making from the experience. Following this point, the flow of the dialogue cycles back to the initial modeling, by weighing alternatives and reiterating the important points of the dialogue. In doing so, the group is involved in recomposing the previously unpacked practice.

The Micro-Analytic View

Three main themes emerged in analyzing the data to respond to the first research question: What is the work involved in enacting explicit modeling of teaching practices?

These themes, discussed in Chapter 4, were: garnering attention, encoding, and cueing. I framed these themes as three micro-level processes that constituted the work of dialogic modeling. I zoomed into these processes by deriving sub-themes that illustrated what it took to do this work. I discussed the ways in which (1) guiding questions, (2) physicalizations, (3) voicing symbolic referents, (4) deriving rules and principles, and (5) cueing to positive and negative consequences, all constituted features of decomposing and studying principled instructional practices in the 29 episodes.

In Chapter 4, I showed that, by leveraging the teacher educator's modeling, the group of teacher-learners could be involved in breaking down a practice into its functional parts—as in the follow-on discussion of Episode 3.1.1 – Distributing Materials—and could also take up the aims and consequences of a practice—as seen in the discussions of Episode 1.2.1-Recap, and Episode 4.2.1 – Greetings. In the example taken up in Chapter 4 about the dialogic modeling of the practice of movement at Kumbarukoppallu GHPS, the teacher educator guides the noticing by asking the teacher-learners to recall what he did during a recent interaction. In doing so he zooms in on a particular facet of his instruction, in order for the group to scrutinize it in detail. In order for noticing to flow into decomposing, attention must be focused on the topic. Doing so provides a solid footing in the representation that modeling provides. Representations, such as videos and case studies, are widely used in teacher education today. These provide a single starting point from which to explore practices. However, in teacher educator modeling what constitutes the representation is not obvious. It requires first drawing attention to it. Doing so abstracts it so that it can be used as a resource for decomposition.

Decomposing can help teacher-learners learn to enact principled practices (Grossman et al., 2009); however, cognitive work also plays an important part in any future performance (Vosniadou & Ortony, 1989). The dialogic modeling episodes studied involved providing opportunities to surface alternatives to the modeled practice as well as the plausible affordances and consequences of it. In doing so, the groups were provided opportunities to also be involved in analogic reasoning.

Chapter 4 Analyses
• Noticing • Decomposing
• Analogic Reasoning

Table 11: Interpretations of Opportunities to Learn in Explicit Modeling from Chapter 4

In sum, my analyses for this chapter suggest that explicit modeling as I deployed it involved studying the modeled practice and consisted of providing opportunities to notice, decompose, and analogically reason about practice. Although the synoptic view suggested comparable interpretations, the micro-analytic view provided an up close lens on the inner workings of how explicit modeling as I enacted it flowed.

Coordinating the Micro-analytic and the Synoptic Views

No single study adequately explains a practice, but dealing with both the outside and the inside provides an opportunity to expand the view of that practice while at the same time deepening it. The processes I outlined in Chapter 4 and the structure I argued for in Chapter 6 provide both a micro-analytic view and a synoptic view of what it might take to do the type of explicit modeling that I developed and enacted. The "doing" involved primarily leading a discussion about the constituents, aims, and responsibilities of a modeled instructional practice, weighing alternatives to the modeled practice, and collectively reasoning about its affordances and limitations. What was involved from the teacher educator was asking steering questions, physicalizing the modeled practice, and repeatedly tagging the practice throughout the discussion as the means to garner teacher-learners' attention on the practice. The work also included naming the practice and deriving a conceptual structure for it; i.e., encoding the practice. Furthermore, the work included orchestrating specific opportunities to learn such as noticing, decomposing, and reasoning about practice that were intended to assist teacher-learners in deriving a pedagogical point and connecting it with their own ideas about teaching. To come to these interpretations, I first decoupled the modeling from the follow-on discussion, and focused on fine-grained parts of the dialogue; presented in Chapter 4. The synoptic view, presented in Chapter 6, was intended to problematize or strengthen these interpretations, and importantly re-coupled the modeling with the follow-on discussion.

Coordinated View
Experiencing
Noticing
Garnering Attention • Steering Questions • Physicalizations • Semantic Repetition
Decomposing • Naming Instructional Practices • Deriving Conceptual Structures
Voicing the Pedagogical Point
Recomposing
Analogic Reasoning • Cueing to consequences

Table 12: Coordinated Interpretation of Work Involved and Opportunities to Learn in Dialogic Modeling

The unitization and the determination of the symmetrical structure led to several considerations that were not evident from the analysis presented in Chapter 4. For example, collapsing the initial stages of dialogic modeling highlighted that noticing was tied up with decomposing. As discussed in Chapter 6, the construct of noticing is undergoing refinement in debates in the literature, and some scholars see the construct of decomposing as fitting within noticing (Mason in Sherin et al., 2010). In my analysis, I refer to this work as steering to the pedagogical point (Sleep, 2012), and as a central feature of the possible work involved in noticing modeled practice. Also, the unitization revealed that there were central pedagogical points that sat at the heart of the dialogic modeling. These points, as discussed in Chapter 6, help me to characterize the modeled practices as "principled practices, " as they often reflected grand intellectual aims, or broad social responsibilities. These pedagogical points also provide some insight into what some of the teacher-learners were making from the collective scrutiny of the modeled practice. An additional outcome of identifying the pedagogical point of a dialogic modeling episode through the symmetrical analysis was that it characterized these points as "mid-turns"; a typical feature of chiastically-structured text (Douglas, 2007). The notion of the mid-turn suggests that what follows the pedagogical point is a reiteration of what came before. Thus, if a principled practice was decomposed prior to the articulation of the pedagogical point,

then it could be inferred that the practice was "recomposed" after the pedagogical point. Recomposing becomes an asset in teacher education when considering the limits of relying solely on decomposition, as discussed in Chapter 6.

The design of the elements in the process represented here assumes that teacher-learners can learn about teaching through discussion, collective inquiry, and concerted scrutiny of the constituents, aims, and responsibilities of knowledge-in-action (Grossman, Hammerness, & McDonald, 2009; McDonald, Kazemi & Kavanagh, 2013). By working to highlight and study routine aspects of teaching that require professional judgment, teacher educators can prepare teachers for the moment-to-moment decisions that are required in this profession (McDonald, Kazemi & Kavanagh, 2013). Taking on intellectual work that investigates and codes aspects of professional work in teacher educator modeling can enable teacher-learners to develop a "professional vision" (Goodwin, 1994; Shulman & Shulman, 2004; Grossman et al., 2009). According to Goodwin, coding and highlighting aid in developing professional vision, or "socially organized ways of seeing and understanding events that are answerable to the distinctive interests of a particular social group" (Goodwin, p.606). When a particular practice is abstracted from the teacher educator's instruction, it is highlighted. In doing so the teacher educator makes the modeled practice stand out, and available for study and for drawing out relevant connections to their own work. By opening up the modeled practice for discussion, teacher-learners can describe it, code it, and analyze it. By coding it in dialogic modeling, teacher-learners were involved in setting parameters about the affordances and limitations of the modeled practice and thinking through alternatives. One of the interesting things about the way dialogic modeling unfolded was that teacher-learners were often asked to consider their own practices in relation to the modeled practice. Pressing them to do so situated them in an activity of considering their practice in relation to the modeled practice. Questions such as these seem to help break down the partitions that separate the professional learning setting from the teacher's classroom. The process of collectively studying modeled practices entails considering ways of doing the complex work of teaching, and it may disrupt or support existing visions. Pushing teacher-learners to consider affordances and limitations of modeled practices and their own practice can also dislodge idiosyncratic work and provide grounds from which to expand opinions on modeled practices. Thus,

follow-on discussions in explicit modeling can be a space to contest existing assumptions about practices and mediate cognition about the potential of those practices, as it sits between the prior experience of the modeled practice and any subsequent action. Furthermore, such discussions can help to shape experience and may help to set the teacher-learners up to enact practice. Thus, developing a professional vision seems to entail opportunities to consider and question the exportability of instructional practices.

This assertion emerged from my study of the 29 dialogic modeling episodes that led me to three overall claims about what it takes to do the type of explicit modeling that shares the parameters that I set for the form presented in this study. First, my analyses reveal that in explicit modeling teacher-learners can engage with the modeled practice as a resource with which to study routine practices (e.g., calling on students), and do so in such a way that those routines are positioned as principled practices (e.g., eliciting student thinking). Second, in explicit modeling the study of the modeled principled practices during the follow-on dialogues can entail providing opportunities to notice important features and recompose the modeled practice. Third, my analyses show that noticing in explicit modeling can include garnering attention, decomposing, and voicing the pedagogical point of the modeled practice, and that recomposing can include, and potentially foster, analogic reasoning. Thus, by being explicit about modeling, it seems reasonable to suggest that modeling can involve teacher-learners in deliberate study of firsthand engagement with principled practices. And, it can provide a resource for a teacher educator to use in ways that help teacher-learners consider and question the exportability of modeled practices. In what follows, I discuss four tenable implications for this study with respect to contributions to the teacher education discourse, possibilities for teacher educator practice, and the notion of exportability.

Implications

Fitting explicit modeling in practice-based teacher education

The first implication of this study is that it can be viewed as a response to increasing calls for practice-based teacher education, and interest in identifying and unpacking the core practices of teacher education. With programs shifting to practice-based teacher education (Ball & Cohen, 1999), the knowledge base has come to include specific principled teaching

practices. Practices anchor the curriculum in some teacher education programs (see efforts outlined in Ball & Forzani, 2009; Lampert, Boerst, & Graziani, 2011; and McDonald, Kazemi & Kavanagh, 2013). Ways to teach this practice-centered professional knowledge –– what some would call the "pedagogy of teacher education" (Grossman, 2005) –– are still being developed (Grossman & McDonald, 2008; Zeichner, 2012). Modeling is one such practice. As this practice continues to gain traction as a "signature pedagogy" and a "core practice" (Grossman, 2005; McDonald, Kazemi & Kavanagh, 2013; Shulman, 2005), a conception of modeling that construes it only as demonstration and observation neglects some of the crucial characteristics of what practice-based teacher education affords.

There are plausible implications for practicing teacher educators who are cautiously optimistic that defining core teacher education practices and centering their efforts on high-leverage teaching practices can improve teaching and student outcomes. Explicit modeling, as I have described it, seems promising as a way to complement other approaches used in practice-based teacher education, such as rehearsals and video study, because modeling fuses representations with decompositions, uses principled practices as anchors, and capitalizes on collective study of those practices. Although it has been argued that decomposing can help teacher-learners attend to essential aspects of practice (Grossman, 2011; Zeichner, 2012), a prerequisite for decomposing is noticing practices. This becomes particularly difficult in drawing out a practice from the constant stream of a teacher educators' modeling (Lunenberg, Korthagen, & Swennen, 2007). Knowing what to attend to, what to look for, and how to interpret one's own experience is challenging (Buchmann and Schwille, 1983, Dewey, 1904/1938). Focused attention on the modeled practice is essential for identifying the constituents of the specific teaching strategy or technique being modeled.

What I have learned about explicit modeling from the close investigation of dialogic modeling is that the prerequisite for decomposing practices seems to be providing opportunities to notice (Sherin, Jacobs, & Phillip, 2010) and reason (Vosniadou & Ortony, 1989) about the modeled practice through deliberate and natural means. Without teacher-learners' noticing, what they made of the modeling would be haphazard and uncertain. If the modeled practice were not encoded, then the texture and tangibility of the practice would diminish, as would teacher-learners' attention, thereby weakening the opportunity

to learn from the modeling. And if cues to the affordances and limitations of the modeled practice went unnoticed, then the importance of garnering attention and encoding a practice would be ephemeral. Invoking such parameters can help align explicit modeling practices with other emerging core pedagogies of teacher education.

Common language for teacher educator modeling

Additionally, there is an increasing need to develop common language about explicit modeling practices, but the language should also be aligned with current evolutions in teacher education. Thus, the second implication of this work is that it can contribute to building a common language for teacher education. A core insight from this dissertation is that the varied extant definitions of teacher educator modeling and explicit modeling are insufficient. Modeling is cast by some as a representation of practice (Shah, 2011; McDonald, Kazemi, & Kavanagh, 2013), while others in the field view modeling as a depiction that can be used to provide the reasoning behind one's decision-making (Loughran, 1996; Lunenberg, Korthagen, & Swennen, 2006). My view is consonant with this latter view, but builds in the grounds shared by practice-based teacher education efforts and attempts to organize some thoughts on how modeling can be dialogic in two ways.

First, anchoring teacher educators' modeling in and around systematically investigated principled practices that teachers do with students can help scholars and practitioners identify common ground in their work in order to improve it. What this means is that modeling can be deliberately focused on a certain set of principled practices. Teacher educators can be selective about what is taken up with the group, and they can lean towards the teacher-learners' needs and interests. However, relying on idiosyncratic wisdom of practice need not be the sole basis for what is taken up through teacher educator modeling. As I have argued in this dissertation, the aim of teacher educator modeling can be to provide opportunities to notice, decompose, and recompose modeled practices in ways that can support teacher-learners in considering what is involved in doing the modeled practice, and whether the modeled practice is suitable and feasible for their own teaching. The basis for what the modeled practices are can be more closely aligned, and in doing so teacher educators can open up opportunities to talk about their own practice as there will be common threads.

Second, the theory of dialogism (Bakhtin & Holquist, 1981) can contribute to developing a common language about teacher educator modeling. Mikhail Bakhtin's work pointed out that every dialogue, whether it be text or spoken, is qualified by both the writer's and the reader's thoughts, perspectives, points of view, shared meanings, individual understandings, judgments, and particular emphases. For Bakhtin, a writer's words can attempt to plant a seed of a particular interpretation, but it is the reader that either accommodates or disputes the idea put forth. Bakhtin points out that authoritative language—or language that attempts to demand a singular interpretation—is "doomed to death and displacement," because the only options for readers are to affirm or reject the writer's proposition. This conceptualization, if foregrounded in explicit modeling practices, can help coordinate the myriad emerging views of being explicit about modeling.

In conventional modeling, and in some of the cases of explicit modeling discussed in Chapter 2 even, learners may be unable to split up the modeling they experience as it is presented as an authoritative representation of practice. Ostensibly, this might impede their ability to agree with some parts and disagree with others. Take for example, Schön's discussion of Pablo Casals and Bernard Greenhouse and their interaction on how to play Bach's D-Minor Suite on the cello (Schön, 1987). In this example of learning through modeling, which Schön labels as "Follow me," Casals would play a phrase and have Greenhouse repeat it. The emphasis was for the learner to exactly reproduce what the teacher had played. This went on for weeks, and once the piece had been imitated in exact bowing, fingering, and sound, the learner was told that he could now improvise the piece. Although, in the end Greenhouse was able to inject his own interpretation into the piece, and do so from a position of mastery of his teacher's interpretation, for Schön this form of modeling was insufficient as the discourse leading up to improvisation and interpretation was directive and authoritative.

Turning to Casals' language can be useful in seeing this point, as the dialogue—musical and verbal—seems to have unfolded in monoglossic terms. If one were to look past the context of what is said, but rather looked more closely at how it was said; i.e. the

linguistic choices, one might find that the language is monoglossic.[58] Take Casals words, presented in Schön's representation of the discussion, and discussed earlier in the dissertation: "No, no. Do it this way," and "Now you've learned how to improvise in Bach." A Bakhtinian argument on linguistic choices would view this language as monoglossic, and therefore limiting the space for interpretation. And in this view, such closing down of the space can be detrimental to uptake and use. Research in education that leverages applied linguistics makes a similar case (e.g., Mesa & Chang, 2011; Martin and White, 1998). The alternative for Casals might have been much more heteroglossic linguistic choices, and a dialogue that involved the learner in a joint discussion to solve the problems; a point that Schön himself makes.

In the 29 dialogic modeling episodes examined in this study, posing questions that might generate a collective dialogue was privileged in an attempt to avoid an authoritative discourse. The intent was to bring teacher-learners into the modeled practices and provide them with opportunities to play with the contours of the modeled practice, as opposed to relying on a singular portrayal of instruction. In modeling that is dialogic teacher-learners can see the teacher educator's choices as ones that they have a stake in and are in part responsible for. A typical episode of dialogic modeling was not directive and seemed to rely on multiple voices to generate meaning from it. And in many cases, it was a teacher-learner that voiced the pedagogical point of the modeled practice. If such a view was implicated in the design of other explicit modeling practices, then there may be opportunities to discuss teacher educator modeling from a common conceptual starting point that has theoretical grounds.

Towards Designs for Explicit Modeling
Designing What to Study in Explicit Modeling

The study also attempted to provide systematic descriptions of what it is like to use explicit modeling to teach about practices in professional learning settings. Therefore, a

[58] It is hard to tell, however, whether the language between the cellos was monoglossic or heteroglossic. While Lee Unsworth's (2011) recent work on multimodal efforts begins to touch upon this dimension, there is still limited coverage of this territory, and more to be explored. However, if we look to the passage once again, we see that Greenhouse's rendition of what happened portrays the musical interaction in what seems to be very directive, or monoglossic, terms as well: "He would play a phrase and have me repeat it…" and "he demanded that I become an absolute copy…" (Schon, 1987, pgs. 176-179).

third implication of the interpretations from this work is for the design of explicit modeling practices—namely, what could be the content of explicit modeling and how such practices can be mobilized to better study modeled practices.

The practices that I used as the "curriculum" in the dialogic modeling episodes were tied to practices derived from other researchers' systematic inquiry (e.g., Hatch & Grossman, 2009; Ball, Sleep, Boerst, & Bass, 2009; Ball & Forzani, 2009), a direct need voiced by the teacher-learners or identified in observations of their practice, or through what could be called the "wisdom of practice" (Shulman, Wilson, & Hutchings, 2004; Shulman, 2007).

The practices took the form of routines, such as distributing materials and greeting students; strategies, such as recapping a lesson and movement; and principles, such as listening, and teaching with and through problems. The practices varied in any given setting, and some practices recurred over the course of the professional learning sessions. In each episode of dialogic modeling the practice was studied in different ways. In some cases, considerable extra effort was taken to unpack the practice in terms of its constituent parts. In other cases, significant attention was paid to alternatives to the modeled practice. Table 13 illustrates the practices that were modeled dialogically and provides an image of possible practices that could be modeled.

Routines	Strategies	Principles
• Greetings • Distributing Materials • Reiterating Homework Assignment • Organizing for Group Work • Giving Instructions • Stopping an Activity • Wait-time • Movement • Grabbing Attention • Calling on Students	• Recap • Rules • Jogging the Memory • Student at the Board	• Exploring • Concrete and Abstract • Listening • Problem Posing

Table 13: Modeled Instructional Practices

The table does not present a comprehensive listing, and it may require some re-categorization. However, this profile can serve as a guideline for the types of practices that may benefit from explicit modeling in teacher education. Ostensibly, the practice of "listening," for example, could be viewed as a "strategy" or a "routine," as it is a typical

activity that is constantly going on in a learning environment. Naming the modeled practice as "Listening" and categorizing it as a "principle," though, captured the way that the teacher-learners spoke of the practice during the dialogic modeling, and also represented the modeled practice as an abstract notion of teaching consisting of an aim to elicit student thinking, the responsibility of a teacher to provide students opportunities to voice their own ideas and opinions, and the courses of action that might yield and support such behaviors. Such was what undergirded my categorizations, but others might challenge and seek alternative ways to consider practices that might be suitable for dialogic modeling.

These practices can span subject areas and emerged as useful anchors around which to orchestrate discussion. This list emerged from my own work with practicing teachers who work in in government schools in India, and my acquaintance with literature from the field of Indian teacher education (e.g.: Ramachandran et al., 2005), and is drawn from one teacher educator's practice. Therefore, the list is imperfect, and requires much more sustained thought and several rounds of experimentation. For example, a teacher educator who focuses specifically on social studies, for example, may find that other modeled practices are necessary to support teachers, such as how to teach with primary sources or how to raise doubt about historical facts (Wineburg & Martin, 2004). Furthermore, the list that I posit here would benefit from revisions based on the goals of the teacher educator and the teacher-learners. However, it does present a useful starting point that draws heavily from systematic investigations of practices carried out by others and does not rely solely on one educator's "wisdom of practice."

Designing How to Study Practice through Explicit Modeling

The analyses in Chapter 4 that discussed the processes and means involved in dialogic modeling, and the symmetrical structuring discussed in Chapter 6 could be posited as a possible way to organize explicit modeling. In Chapter 2, I provided a sketch of the work involved in dialogic modeling, and argued that such an image was limited in its depth. Figure 12, revisits that initial graphic by adding another layer of interpretation as a means to provide a thicker description, and enhance the depth of possible connections. In addition, the illustration also presents what I have learned about what is involved in doing explicit modeling as a result of delving into dialogic modeling.

In the foreground of the figure below lies what may be considered as the "flow" of dialogic modeling, in which the teacher educator abstracts out a modeled practice and orchestrates a discussion about it. The discussion unfolds by (1) opening the discussion, and then (2) discussing the affordances and limitations of the modeled practice, then (3) weighing the alternatives to the modeled practice, and finally (4) closing the discussion. Just under the surface of this operating order are the opportunities to learn that can be provided and the work that can be involved in enacting dialogic modeling. Opening the discussion can entail garnering learners' attention in order for them to recall and take note of the modeled practice. Moreover, the launch of the discussion can be carried out through physicalizations, repeated semantic references, and steering questions.

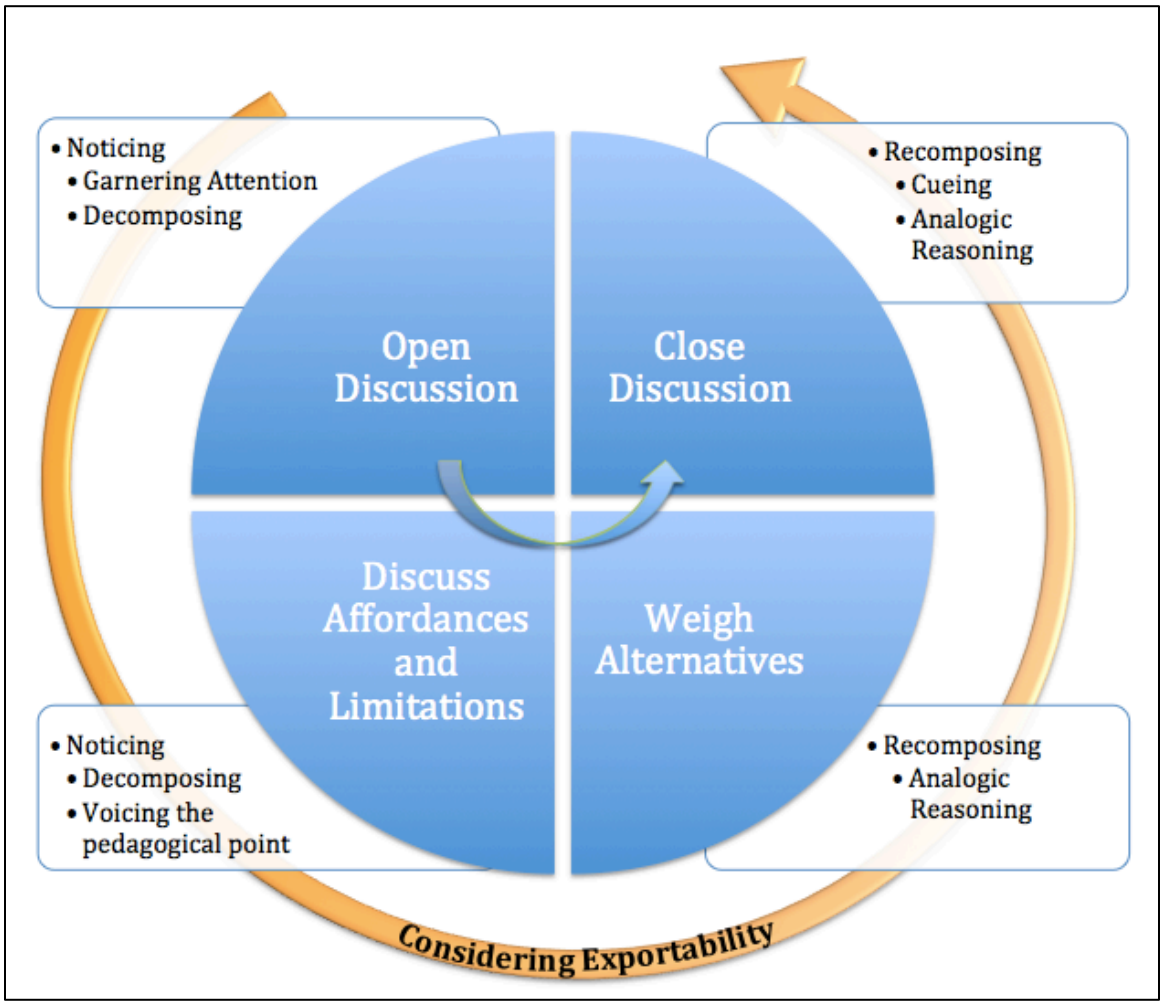


Figure 12: Representation of the Work Involved in Dialogic Modeling and the Opportunities to Learn

As the teacher-learners' responses inform the work of enactment as much as the questions do, the responses constitute the integral work of beginning to decompose the modeled practice into constituent parts, aims, and responsibilities. Discussing the affordances and limitations can escalate the decomposing effort from naming the practice and identifying constituent parts, to considering the aims and responsibilities of the modeled practice. This decomposing can lead to the voicing of the pedagogical point. Weighing the alternatives to the modeled practice can begin to recompose the practice and possibly provide the opportunity to reason analogically. The discussion then can be drawn to a close in which cueing to the positive and negative consequences and further opportunities for analogic reasoning are provided.

To shift this proposed model from an analytical tool to a planning tool, however, would place new demands on teacher educators. This would include knowing how to introduce and orchestrate discussions, listen carefully for the pedagogical point, and once it had been reached, draw the dialogue to an ending that paralleled the beginning. It would also require a stance that was comfortable with not openly priming or delivering the pedagogical point, but allowing learners to collectively navigate towards it and give voice to a central point.

Much of this work was drawn out through the analysis of the symmetrical structure in the 29 dialogic modeling episodes. This structure possibly sounds simple and familiar; with an opening of a theme, developing of that theme, and returning back to the beginning in the conclusion. Although this may go on in some fashion in teacher education already, for chiastic structures to be useful as a planning tool would require frameworks, tools, and language that would help to describe it. Furthermore, a prerequisite would be more systematic investigations of its how it unfolds and its utility.

Revisiting the Notion of "Exportability"

A final implication for this study is in reconsidering the aims of teacher education practices for the ongoing education of practicing teachers. As a strong link seems to exist between the arguments that teaching is composed of practices (Lampert, 2010) and that those practices can be made "studyable," (Ghousseini & Sleep, 2011) teacher education is increasingly centered on preparing teachers to do the work of teaching by teaching about

and through practices (Kazemi, Lampert & Franke, 2009; Windschitl et al., 2012 in McDonald, Kazemi & Kavanagh, 2013). One danger in the strong press to isolate teaching practices, however, may be that teacher educators can gloss over or pay inadequate attention to teacher-learners' familiarity with practices and experiences. In professional development teacher-learners come with varying experiences and already organized ways of thinking about practices.[59] A persistent challenge with the ongoing education of teachers is that enactment is left up to each teacher to draw from multiple frames of reference, interpret the provided content, and translate it into specific actions in their own classrooms (Fishman et al., 2012). The problem is slightly, but not altogether, different in pre-service teacher education, where novices may need to be presented with images of how to enact certain practices, but not recognize the situations where these practices can be deployed. In professional development, teacher-learners may already have catalogues of images of situations from which to draw. In the end, it is the teacher-learners who must manage the complicated challenge of integration, and the teacher educator plays the role of guide in the reframing process (Schön, 1983, 1987).

I suspect that creating ways for teacher-learners to reframe their work is also what drives other teacher educator practices, such as rehearsals and exercises in decomposition. In a study of a science methods course, for example, Ashima Shah found that representations were used to procure "buy-in" for the importance of classroom discussions in elementary science through decomposition (Shah, 2011). Decomposition offers the possibility to generate images of not only what is important, but also what is possible. One way to view the goal in these efforts, which can be purposefully attached to teacher education centered on practice, is for teacher-learners to be better equipped to make something out of what they are intended to learn, so that they can take it away. I view this effort as considering the exportability of a practice.

---

[59] Through my study in India, I was surprised by the teacher-learners' knowledge about teaching practices, and capabilities to scrutinize modeled practices. Cautioned by worries of seeming like a "foreign interloper," I humbled myself before the teacher-learners and tried to make them believe—as I did—that they were the experts in the room. Criticizing them and their teaching did not seem particularly useful. And it quickly became clear that the teacher-learners at these four schools knew about many of these practices we were taking up, and had language to use when talking about them. These experiences highlighted for me the importance of not marginalizing the teacher-learners' own "wisdom of practice."

As I argued in Chapter 4, for a modeled practice to be used in teachers' classrooms necessitates some processing, so that it resembles something that can be taken with them. There may be a linear process required in getting teachers from studying practices to using those practices, and considering exportability may be one of the threads that bind the two ends. Considering and questioning exportability involves generating opinions about a practice, and trying to land some "buy-in." Yet, rather than leave this up to chance, teacher educators who involve teacher-learners in decomposing the practice, can boost the chances of "buy-in" by enlisting the opportunity to reason about the modeled practice and cue them to the affordances and limitations of the modeled practice. Whether or not a practice is deemed usable rests on teachers' consideration and questioning of its *exportable* properties—properties that identify the practice as something to be taken up and out of the professional learning setting to the classroom.

Such a view anticipates that teachers will need to make adjustments to the practice in order for it to fit with the demands and features of their own contexts. More teacher educators now understand that finding how practices fit within one's own practice can be capably done during approximations of practice or in authentic settings, and is crucial to learning about teaching (Hatch & Grossman, 2009; Grossman et al., 2009). Approximations are simplified ways to engage with practices (Rose, 1989 in Grossman, 2011). Approximations assist in getting fluent with a practice and in honing one's enactment of a practice (Grossman, Hammerness, & McDonald, 2009). When educators ask teacher-learners to engage in approximations, part of what they are asking them to do is test out practices in order to get a feel for whether or not they would use them in their own classrooms, and what might happen if they did. However, as I argued in Chapter 6, the space to begin working on those adjustments can also come *before* enactment, alongside colleagues, and be built out of dialogue about teacher educator modeling. When educators employ explicit modeling practices, they can provide teacher-learners with an image of the possible, and use that image to help them draw conclusions to evaluate and consider the viability of the observed practice in their own work.

Such practices cannot replace the benefits of approximations or close scrutiny of other representations, but they can support those endeavors. Teacher educators who press teacher-learners to notice and to recompose decomposed modeled practices may find that

doing so provides an opportunity for teacher-learners to coordinate the complexity of what they observed with what they know of teaching in a way that helps them consider the viability of the modeled practice for their own work prior to enacting that practice with students or peers.

Future Directions

Professional development is thought to be one of the critical means to enhance teachers' capabilities to do teaching that is socially and intellectually ambitious. This study matters because it details what it takes to do the work involved in professional development seeking to create such teaching. Increasingly, modeling is seen as integral to that work. This study was an effort to study systematically a set of examples of the practice of explicit modeling in teacher education. It was carried out as a response to the problem that in spite of the great appeal of teacher educator modeling in professional development, the practice still remains unpacked. Furthermore, the research examined possible ways to study modeled practices and to provide opportunities to consider and question the exportability of modeled practices.

A next step in the line of inquiry pursued in this dissertation might be to examine what teacher-learners draw from explicit modeling practices and take into their own classrooms. For example, might Lilly, who talked about her imagining of her own practice during dialogic modeling, try out different ways to distribute materials, and what implications might this have for the relational aspects of her teaching? Or, might the teacher-learners at Metagalli GHPS, who were able to identify several affordances of listening and yielding the floor to students, incorporate this practice into their own teaching, and how might this effect their students' abilities to express their own ideas? Studying distal implications of explicit modeling may also prove useful to understand whether what I have characterized as providing opportunities to consider and question the exportability of a practice results in the actual import of that practice. The long-term impacts of explicit modeling practice require careful study in order to build up a case for their use. However, a first and crucial step to doing this is an informative conceptualization of possible ways to enact explicit modeling practices, which this study has sought to provide. The concept of dialogism highlights a new facet of the problem this study engages

with, and can bring a conceptual underpinning to how teacher educators and researchers discuss modeling. Studying linguistic choices in modeling at a word or utterance level can shed light on the journey that the ideas represented and discussed take as they move from the teacher education setting to the classroom. "Dialogic modeling," as I have presented it here, seems a useful place to start, but the study of the uptake from modeling necessitates the use of a rigorous and systematized set of tools that can explore the metafunctions of choices; linguistic and otherwise, in order to better understand the implications of language choice in explicit modeling on teacher-learners' future practice.

Future studies could also explore how a teacher educator's use of explicit modeling evolves and shifts over time. The data that I generated for this study could prove useful in such an endeavor, as episodes occurred with the same teacher-learners over a set amount of time. A part of that study might be to explore and analyze how a teacher educator's practice during a professional learning session shifts as a result of the ideas that come up during explicit modeling. Additionally, as I have shown, teachers' thoughts about modeled practice are externalized during these discussions, suggesting that teacher educators may have access to information about what teacher-learners are thinking. Teacher educators may use this information to address misconceptions about teaching and shift their own instruction to do so. Studying this phenomenon might help to build interrelationships between explicit modeling and other promising teacher education practices. It may also be useful to explore the centrality of subject matter and subject-specific differences in the enactment of explicit modeling. For example, a study of explicit modeling with teachers who teach similar subject areas might suggest other principled practices to take up, or different contours to the discussions that follow the modeling. One could also examine how other teacher educators take up and employ explicit modeling, of the kind that I have argued for in this dissertation, and how they learn this practice. Such an effort would require delving into questions about what teacher educators need to know and what they would have to learn to do—the "subject matter" of explicit modeling—to pull it off. For example: Does modeling of this kind benefit from close work with the teacher-learners and does it require observations of them teaching? To what extent does a teacher educator need to know the literature on systematically investigated practices? And what is required to be able to recognize which practices to abstract out? Diving into questions such as these

may help to unpack the curriculum required to learn to do the type of modeling presented here. These are questions that remain for me, and have most likely been raised for readers. Optimistically, I view this study's initial conceptualization through the design, development, enactment, and study of dialogic modeling as a means to enable further scholarship on explicit modeling.

Appendices

Appendix 1 - Details and Materials from Professional Development Setting

Title: "Noticing the Little Things": Developing Reflective Practice for Professional Teaching

Objective: To support teachers in learning particular ways of reflecting on their practice and the practices of others in order to improve opportunities for student learning.

Allotted Time: 3-90 minute sessions and 3 days of peer observation and video recording. Additionally, teachers will keep running journals throughout the week.

Materials and Equipment Needed for Sessions:

1. Room Requirements
    a. Capacity for 10-15 teachers
    b. LCD projector and screen
    c. Movable chairs
    d. 3-4 laptop computers (RS has two)
2. Instructional Materials
    a. Colored chalk
    b. Photocopies of teacher packet - approximately 20 pages to include session guide and readings.
    c. Writing or note pad for each participant
    d. Note cards
3. Recording Equipment
    a. 1 standing video camera
    b. 1 mobile phone equipped with video capability

Materials and Equipment Needed for Peer Observation Days:

1. Mobile phones equipped with video capability or video camera
2. Note pads for peer observation
3. Peer Observation Guide

"Noticing the Little Things": Developing Reflective Practice for Professional Teaching

Dates: TIME TABLE Mysore

Day & Date	2:30-2:40	2:40-3:00	3:00-3:30	3:30-3:50	3:50-4:00
Monday	Sign-in and Welcome	Orientation to topic, agenda for the week, interaction process	Whole Group Analysis of Video Excerpt #1 – "Fishbowl"	Whole Group Discussion of Example Journal Entry and Keeping of Journals	"Exit Cards"
Tuesday	Peer Observations, Video Recording, & Teacher Journaling				
Wednesday	Sign-in and Welcome	Whole Group Analysis of Video Excerpt #2 – "Fishbowl"	Small Group Analyses of Video -Excerpt #3	Small Group Discussions of Teacher Journal Entries	"Exit Cards"
Thursday	Peer Observations, Video Recording, & Teacher Journaling				
Friday	Peer Observations, Video Recording, & Teacher Journaling				
	9:30-9:45	9:45-10:15	10:15-10:45	10:45-11:20	11:20-11:30
Saturday (If school is in session, then after school timings would occur)	Sign-in and Welcome	Small Group Analyses of Video Excerpt #4	Small Group Analysis of Teacher Journals	Focus Activity on "TM" & Redesign of Guides	Summative comments from teachers, feedback form, & next steps

Overall Training Scheme

1. Session Day 1:

1. Pre-Test
    a. Teachers will view a short video excerpt of one of their teachers teaching. They will be asked to respond to the following question:
        i. What are the specific things the teacher is doing?

    After teachers craft their responses, their responses will be collected and we will have a short discussion on who they focused on more during the viewing: the teacher or the student,.
2. Orientation to topic, intention, agenda for the week, interaction process and introductions and the driving question:
    a. How do we improve?
3. Video Viewing "Fishbowl" of video excerpt #1 -
    a. Discussions will center on decomposing the practice and critically analyzing what prompted the particular teacher moves and what occurred as a result. The emphasis is on how to have the conversation, and how to push each other's thinking on specific instructional choices. Discussing video in a group setting will be modeled during this part of the session by the trainers.
    b. The emphasis will be on modeling ways to have a generative collegial conversation on teaching while using video and by focusing on little details.
    c. Participants that are not participating inside the "fishbowl" will be focusing on two things: my questions for the teacher, and the teacher's responses. The focus will be on what is said in the conversation, the topics covered, and the tone of the conversation. The question guide is below.
4. Whole Group Discussion of Example Journal Entry and Keeping Journals
    a. The emphasis will be on modeling ways to discuss journals
    b. Discussion of teaching journals using the following questions:
        i. Are there descriptive details?
        ii. Has the teacher inquired into the teaching episode in a way that demonstrates that they have thought about what they have seen?
5. "Exit Cards"

2. Session Day 2: Peer Observation and Video

On these days teachers will observe each other teach, as will the trainers. Video recordings will also be taken of teachers on these days. The observation data from the trainers and from other teachers, along with the video recordings, will be used during day 2 and day 3 of the session.

3. Session Day 3:

1. Video Viewing "Fishbowl" of Video Excerpt #2 -
    a. The videos selected will come from the participants teaching from day 2 and follow a similar format as day 1.
2. Small Group Analyses of Video Excerpt #3
    a. In small groups, or pairs, teachers will view, discuss, and analyze a short clip from a second video from their practice in a conversation similar to the large group activity.
3. Small Group Discussions of Teacher Journal Entries

    a. In small groups, or pairs, teachers will engage in a critical conversation on their journal entries from the previous day in conversations similar to the large group activity from the previous session.
4. "Exit Cards"

4. Session Day 4: Peer Observation and Video (Same as day 2)

5. Session Day 5: Peer Observation and Video (Same as day 2)

6. Session Day 6:

1. Small Group Analyses of Video Excerpt #4 (Same as day 3.2.a)
2. Small Group Analysis of Teaching Journals (Same as day 3.3.a)
3. Focus Activity on Dialogic Modeling
    a. Participants will view two video excerpts of a previous session from the training. In the excerpt, I will be teaching and using "DM." Teachers will be asked to respond to two questions:

        i. Describe what you are seeing in this video excerpt.
        ii. Was the trainers' modeling and explanation of the particular instructional strategy (e.g., passing out papers, organizing groups) helpful?
            1. If yes, how? If no, why not?
4. Small group activity of redesigning the guides
    a. In small groups teachers will re-design the three supplied guides (below) to fit their interests and needs.
5. Post-test
    a. Teachers will watch the same video excerpt they did at the beginning of the training and respond to the same prompt:
        i. What are the specific things the teacher is doing?
6. Closing
    a. Summative comments from teachers
    b. Feedback form
    c. Discussion of next steps

Video Observation Guide - Draft

Guidelines for Asking and Preparing Reflective Questions

1. Questions should be authentic.
2. Base question on the respondent's own experiences
3. Word questions in neutral, non-judgmental ways.
4. Keep an overall purpose in mind.
5. Be prepared to follow up initial questions.
6. Use a neutral tone of voice.
7. Refrain from giving advice.
8. Be an active listener.

Types of Possible Reflective Questions

Clarifying

Tell me about the plan you had for today.
What were some things that happened when you interacted with the students?

Purpose/Consequence Questions

What kinds of outcomes were you anticipating?
Why did you choose the method/content/interaction strategy?
What did I learn about my students from this video clip?
What did I learn about myself from this video clip?

Linking Questions

You indicated XXX. You also mentioned YYY. Is there a relationship between these two issues?

Did anything that happened change your thinking on your plan for this class or for future classes?

Peer Observation Guide -Draft

Each teacher will have a chance to observe a colleague and be observed at least once during the week. A video recording will also be taken of each teacher teaching at least once in the week. The observation data from other teachers, along with the video recordings, will be used during sessions 2 and 3 of the session.

Each week we will focus on a particular question. Please center your discussions on the following question. The guidelines below are simply as examples, and do not need to be used exactly as they are.

Week 1: How are students interacting with one another in groups?

Week 2: How is a particular learning objective being met?

Week 3: How do students use evidence?

Procedural Steps

1. Pre-observation orientation session
Prior to each observation, two teachers can meet to discuss the nature of the class to be observed, the kind of material being taught, the teachers' approach to teaching, the kinds of students in the class, typical patterns of interaction and class participation, and any problems that might be expected.

The teacher being observed would also assign the observer a goal for the observation and a task to accomplish. The task would involve collecting information about some aspect of the lesson, but would **not** include any evaluation of the lesson.

2. The observation
The observer would then visit his or her partner's class and complete the observation using the procedures that both partners had agreed on.

3. Post-observation
The two teachers would meet as soon as possible after the lesson (always a good tea-time conversation!). The observer would report on the information that had been collected and discuss it with the teacher.

Journal Writing Guide - Draft

Each teacher is being asked to keep a teaching journal during the week. Please write two entries per week. Each entry need not be longer than a page, but you may find yourself writing more than that. Try to keep it clean and concise and don't spend more than 15 minutes. A prompt is below for each week. Whatever you are willing to share will be used during sessions 2 and 3 of the session.

Prompt:

Write about a particular episode from today's teaching. An episode could be as broad as a lesson, or it might be as focused as a couple of moments. Describe the episode objectively, and descriptively, as if you were describing the scene for another. Following your focused objective description of the episode, ask specific questions of the episode. Some possible questions to ask might be:

- What happened?
- What are the objective facts?
- What was my role?
- What did I feel about what I did?
- What is important to remember?

This is a spontaneous process, so if you deviate from this...no problem!

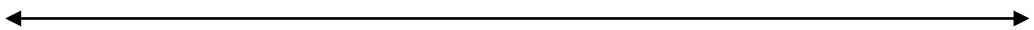
A journal is a reconstruction of experience and, like the diary, has both objective and subjective dimensions, but unlike diaries, the writer is (or becomes) aware of the difference. The journal as a 'service book' is implicitly a book that someone returns to. It serves purposes beyond recording events and pouring out thoughts and feelings... Like the diary, the journal is a place to 'let it all out'. But the journal is also a place for making sense of what *is* out... The journal is a working document.

Feedback Form

1. Name: _____
2. Post: _____
3. Organization: _____

4. What are the three most important **ideas** [**or topics**] you learned during this training?

5. Please rate the training in terms of its impact and usefulness in the following areas, using the scale below. Circle the numbers that apply to your opinions.



1 = Not useful at all 5 = Very useful

Area	1	2	3	4	5
Useful in your daily work	1	2	3	4	5
Increasing your willingness to reflect on your work	1	2	3	4	5
Increasing your willingness to reflect on others' work	1	2	3	4	5

6. Please complete the following by checking the column of your choice.

PLEASE RATE THE QUALITY OF THE FOLLOWING	POOR	FAIR	GOOD	VERY GOOD	EXCELLENT
Overall Content of Course					
Video Excerpts					
Guide Materials					
Presentation of Material by Trainer					
Modeling of Teaching by Trainer					
Participant / Group Activities					

7. Which of the following helped you "notice little things"? Check all that apply.

Video Observation

Discussions with Video

Observation of Peers

Journaling

Session Discussions

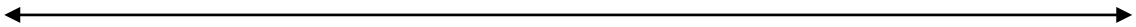
Trainer Modeling then explaining certain teaching moves

Your own notes

Trainer's Commentary

Before Training					***Self-assessment of Your Knowledge and Skills Related to:***	**After Training**				
1	2	3	4	5	General notion of reflecting on teaching	1	2	3	4	5
1	2	3	4	5	Collaborative Conversations	1	2	3	4	5
1	2	3	4	5	Reflection on teaching incidents with video	1	2	3	4	5
1	2	3	4	5	*Reflection on teaching incidents with journals*	1	2	3	4	5
1	2	3	4	5	Reflection on teaching incidents with peer observations	1	2	3	4	5
1	2	3	4	5	Small instructional strategies	1	2	3	4	5

8. Think about what you *already knew* and what you *learned during* this training about reflection and its implications for teaching. Then evaluate your knowledge in each of the following topic areas ***Before*** and ***After*** this training.



9. To what extent do ***you*** feel prepared to have collaborative conversations over video?

1	2	3
Not At All Prepared	Somewhat Prepared	Well Prepared

1 = No knowledge or skills 3 = Some knowledge or skills 5 = A lot of knowledge or skills

10. To what extent do you feel prepared to keep a journal focused on teaching incidents?

1	2	3
Not At All Prepared	Somewhat Prepared	Well Prepared

11. If you were given the task of redesigning the workshop, what would you change?

Follow-up Survey

1. Do you think you have used any of the tools (video observation, peer observation, collaborative conversations, journaling) you practiced during the training within the past month?

   __ Yes __ No

   a. If yes, please briefly describe when and how you applied these tools.

   b. If no, please explain why you were not able to utilize these tools within the last month.

2. During the training a month back, specific attention was given to the following instructional strategies. On a scale of 0 to 4 please rate how your use of these strategies has changed, if the change is in relation to the training. (0 = no change; 1= little change; 2 =some change; 3 = a good deal of change; 4= a great deal of change)

3. What topic areas related to reflection and more broadly to teaching would you like ***more information*** on, if any?

INSTRUCTIONAL STRATEGY SPECIFICALLY ATTENDED TO DURING TRAINING:	CHANGE IN INSTRUCTION SINCE TRAINING				
Strategy #1: Passing out student materials (ex.)	0	1	2	3	4
Strategy #2: Organizing students into groups (ex.)	0	1	2	3	4
Strategy #3: XXXX	0	1	2	3	4
Strategy #4: XXXX	0	1	2	3	4
Strategy #5: XXXX	0	1	2	3	4
Strategy #6: XXXX	0	1	2	3	4

Appendix 2: Sample Teacher Educator Journal Entry

July 18th, 2012 – Kumbarkoppallu Session 2 –
Modeling #1 – Recap (Session 2, Part 2 7:35 – 12:25)

1. Was there a reason why I deployed 'transparent modeling' for this practice? What triggered my choice?
    a. This was a pre-meditated instance.
    b. I deployed it in spite of being concerned about time, because I felt that it was a good example of how we can focus on little things, and I felt that it was important to have an example for the teacher-learners that were not in the session on Monday.
    c. I also felt that the recap is a good practice and habit that many teachers know about but don't employ. And even if they do employ it the characterization of the recap in terms of a TV serial seems like a nice way to articulate how a recap can extend beyond just the day before and needs to tie in other elements from previous lessons or even years.
2. What happened when I employed 'transparent modeling'? What did the practice look like?
    a. I deployed this instance of TM early on in the session. I went through the recap quite quickly. It seems that the time constraints were pressuring me a bit, so I wanted to move through it quickly. I think this was a good thing in the end, as it kept it tight. After I went through the recap I opened the discussion by asking the teachers, " Did you notice what did I just do?"
        i. One teacher responded that I put on some slides. I responded good. I was thinking that this was a nice focus point, or something that the teacher had picked up on that was quite mechanical, yet she noticed it.
    b. What do we call that? Was the next question that I asked.
        i. Recaptulation was the response that Doli had, and then I pushed her to shorten that and then she responded by saying review, and then eventually the group came to the response recap, which was what I was looking for.
    c. I then gave the example of the Serial recap and told them how in the serials they bring in things from the previous weeks. Then I tied this to teaching, and I was about to tell them why teachers do a recap, but I stopped myself and asked the question, "Why do we do a recap?"
        i. I changed my direction on this because I had been doing a lot of the talking, and I noticed that some of the teachers were struggling a bit in terms of my language and also because of their own fatigue. Therefore, in an effort to bring them into it, and enliven the session I posed the question to them. I also wanted to bring out the alternative ways to do a recap, and in doing so we could potentially get at some of the rationales behind a recap.
    d. There were several answers that I revoiced and there were one or two comments that I asked for further clarification, and tried to put things into my own terms.

    e. They didn't get the one point that we recap also to catch people up.
    f. Then I asked about the benefits of the recap, but what were the downsides of the recap. There was no response, and actually I think one of the teachers said "no." Then I made a joke about this and said "There could be? Couldn't there?"
    g. Then seeing that this line of questioning wasn't framed correctly, or that it wasn't going to lead anywhere, I asked the teachers if they had examples of their own recaps, and how they did it.
        i. I probed a bit further about the time that Hema takes, thinking it would be short, but rather she said sometimes she takes 15 minutes.
        ii. We went through a few more examples. Then I tried to tie it back into the complexity of bringing in previous ideas and materials.
    h. Then Doli asked about how much time US lessons take. And I responded about the block schedule and the typical timing.
3. What do I seem to be trying to make visible here? How? Are there aspects of what I am modeling that I do not seem to explain, or don't come up?
    a. I am trying to make visible the practice of brining in ideas and thoughts from previous lessons into the current one, and making sure learning objectives are being made by teachers by way of tying things together for students. I think a good point to make is that lessons can be seen as disparate episodes with no connection.
    b. I didn't take up the point about the slides. I think I left this because it wasn't the direction I wanted the conversation to go at the moment. It felt to mechanical, and also it felt as if focusing on slides was going to make the practice seem even more foreign.
4. Was there anything about this that was difficult to do? What was it? Why was it difficult?
    a. Coming up with alternatives or a contrast was difficult. In the end I tried to use the teachers own experiences as a way of reflecting on what I had done and what I was proposing.
5. How do the teachers seem to be attending? Do any of them say or do anything that affects what I am doing?
    a. Similar to the past the way the teachers answered my questions pushed me to articulate and use their ideas. I am less clear in this instance about what the teachers are taking from the episode, as I didn't ask them to tie it all up for me at the end.
    b. In terms of the modeling, the mannerisms of the teachers pushed me to move through the recap quickly.
    c. I am always surprised that this example moves quite smoothly. I think it does because in some ways I am leveraging shared contextual knowledge to offer an example for the teacher-learners. They have familiarity with "recapitulation" because it is the headline on their lesson plans. And they are familiar with "recap" as a term used in their serials. I knew about the latter and was working on this premise. Now I know that it is also taught to them in the ed. Programs.

Appendix 3: Sample Coding Matrix

Id	Depth	Title	Description
1	0	Videos	
2	1	Co-participation	Excerpts where teachers and the teacher educator are collectively taking part in the explication of the modeled practice.
3	2	Broad Engagement	More than 1/3 of the teacher-learners are contributing at least one question, comment, or response to the explication of the modeled practice.
4	2	Limited Engagement	Less than 1/3 of the teacher-learners are contributing at least one question, comment, or response to the explication of the modeled practice.
5	1	Cueing to the Positive Consequences	A modality of the modeling practice that serves to signal to the teachers the benefits of the modeled practice.

Id	Depth	Title	Description
1	0	Videos	
6	1	Cueing to the Negative Consequences	A modality of the modeling practice that serves to signal to the teachers the problems associated with the modeled practice.
7	1	Emotion Arousers	A social interaction that involves displays of emotion, such as laughter.
8	1	Facilitators	Types of behaviors that potentially guide observational learning activities.
9	2	Attention-Directing Aids (Instructor)	Behaviors (or procedures) that heighten engagement in the modeling practice, and the taking notice of the modeled practice.
10	3	Distinctiveness of the social exemplars	A characteristic of a behavior or procedure that distinguishes it from the teachers' local cultural context. For example, the excerpt might include mention of materials from another place, or a teaching practice that is markedly different from these teachers' teaching practice.
11	3	Material Demonstration	A procedure that heightens engagement through the use of materials, such as manipulatives or videos.

Id	Depth	Title	Description
1	0	Videos	
12	3	Physical Demonstration	A procedure that heightens engagement through the use of physicalizations, such as exaggerated gestures or movements.
13	4	Exaggerating Essential Aspects Physically	A physical demonstration that directs attention during the modeling practice.
14	3	Verbal Description	A procedure that heightens engagement through the use of exagerrated or repeated linguistic choices.
15	4	Furnishing Informative Feedback	A verbal description of facts or details relating to the modeled practice.
16	4	Providing Semantic References	A verbal description where previous activities are mentioned related to the modeled practice. An example may be to linkwhat is being modeled to a teacher's practice.
17	4	Exaggerating Essential Aspects Verbally	A verbal description that directs attention to the modeled practice.
18	2	Behavioral Referents - Learners	The teachers mention or describe the teacher educator's behaviors or procedures during the modeling practice.
19	2	Retention-Directing Aids (Instructor)	An example of a representational system in use, such as defined language choices, rules, or symbols to aid in keeping the modeled practice in memory.

Id	Depth	Title	Description
1	0	Videos	
20	3	Rules that capture conceptual structure	An articulation of the governing principles of the modeled practice.
21	3	Linguistic Conciseness	A concrete linguistic referent employed with regards to the modeled practice.
22	3	Symbols	A mark, character, drawing, or story that represents or stands in for a facet of the modeled practice.
23	4	Imagery	A type of symbol that employs vividly descriptive or figurative language.
24	4	Reductive Symbols	A type of symbol that simplifies facets of the modeled practice.
25	2	Verbal-Conceptual Marker	A concrete linguistic referent employed with regards to the modeled practice.

Id	Depth	Title	Description
1	0	Videos	
26	3	Language Appropriation	A concrete linguistic referent employed with regards to the modeled practice and potentially emanating from previous exposure during the training.
27	1	Instructors	Types of behaviors that potentially aid observational learning activities.
28	2	Acquiring Rules	To posit, or develop, guidelines or principles about the modeled practice.
29	3	Application	Using the rule to consider, or conjecture, about new or other instances of behavior.
30	3	Extraction	Extracting relevant attributes from the modeled practice.
31	3	Integration	Integrating the observed information into a composite rule.

Appendix 4: Background Information for 29 Episodes

Episode	Modeled Practice	School	Session	Order in Session	Duration	Type	Familiarity	Planned	Recurring
1.1.1	Greetings	Metagalli	1	1	2:57	Routine	Familiar, say they do, and observed	Yes	Yes
1.1.2	Distributing Materials	Metagalli	1	2	3:27	Routine	Familiar, say they do, and observed	Yes	Yes
1.1.3	Reiterating Homework Assignment	Metagalli	1	3	1:36	Routine	Familiar, say they do, but not observed	No	No
1.2.1	Recap	Metagalli	2	1	2:02	Strategy	Familiar, say they do, but not observed	Yes	Yes
1.2.2	Organizing for Group Work	Metagalli	2	2	3:02	Routine	Familiar, say they do, and observed	Yes	Yes
1.3.1	Problem Posing	Metagalli	3	1	8:10	Principle	Not Familiar	Yes	No
1.3.2	Organizing for Group Work	Metagalli	3	2	1:41	Routine	Familiar, say they do, and observed	Yes	Yes
1.3.3	Listening	Metagalli	3	3	3:09	Principle	Not Familiar	No	No
2.1.1	Greetings	Medar's Block	1	1	3:49	Routine	Familiar, say they do, but not observed	Yes	Yes
2.1.2	Giving Instructions	Medar's Block	1	2	3:08	Routine	Familiar, say they do, but not observed	Yes	Yes

Episode	Modeled Practice	School	Session	Order in Session	Duration	Type	Familiarity	Planned	Recurring
2.1.3	Stopping an Activity	Medar's Block	1	3	2:00	Routine	Not Familiar	No	No
2.2.1	Exploring	Medar's Block	2	1	3:11	Principle	Not Familiar	Yes	No
2.2.2	Recap	Medar's Block	2	2	7:04	Strategy	Familiar, say they do, but not observed	Yes	Yes
2.2.3	Concrete and Abstract	Medar's Block	2	3	7:14	Principle	Not Familiar	Yes	No
2.3.1	Rules	Medar's Block	3	1	9:33	Strategy	Familiar, say they do, and observed	Yes	No
2.3.2	Jogging the Memory	Medar's Block	3	2	2:20	Strategy	Not Familiar	No	No
2.3.3	Giving Instructions	Medar's Block	3	3	2:27	Routine	Familiar, say they do, and observed	Yes	Yes
2.3.4	Student at the Board	Medar's Block	3	4	2:20	Strategy	Familiar, say they do, and observed	Yes	No
3.1.1	Distributing Materials	Kumbark oppallu	1	1	1:49	Routine	Familiar, say they do, and observed	Yes	Yes
3.1.2	Giving Instructions	Kumbark oppallu	1	2	1:49	Routine	Familiar, say they do, and observed	Yes	Yes
3.2.1	Recap	Kumbark oppallu	2	1	4:52	Strategy	Familiar, say they do, and observed	Yes	Yes
3.2.2	Wait-time	Kumbark oppallu	2	2	5:56	Routine	Not Familiar	No	No

Episode	Modeled Practice	School	Session	Order in Session	Duration	Type	Familiarity	Planned	Recurring
3.2.3	Movement	Kumbark oppallu	2	3	1:42	Routine	Familiar, say they do, and observed	No	No
3.3.1	Grabbing Attention	Kumbark oppallu	3	1	2:29	Routine	Not Familiar	No	No
3.3.2	Calling on Students	Kumbark oppallu	3	2	4:13	Routine	Familiar, say they do, and observed	No	Yes
4.1.1	Distributing Materials	Cauvery	1	1	2:41	Routine	Familiar, say they do, and observed	Yes	Yes
4.1.2	Calling on Students	Cauvery	1	2	2:47	Routine	Familiar, say they do, and observed	No	Yes
4.2.1	Greetings	Cauvery	2	1	4:13	Routine	Familiar, say they do, and observed	Yes	Yes
4.2.2	Recap	Cauvery	2	2	4:08	Strategy	Familiar, say they do, and observed	Yes	Yes

Appendix 5: Sample Coding Matrices from Two Time Points

Data Analysis from February 3, 2013

#	Excerpt	Ring	Reasoning for Ring
1.	Modeling of movement: During the discussion, one teacher-learner leans towards the teacher educator, who is seated next to her, and offers a quiet aside. As she makes comments, the teacher educator stands up and moves a few yards away to the front of the room. He asks her to repeat what she was saying. She does so; this time in a louder voice, and the discussion about the tone with the whole group ensues.	A	A dilemma arises – a teacher's comments are being quietly discussed between the teacher the teacher educator. While the teacher is speaking, the teacher educator stands up and moves from the back of the room to the front and asks the teacher to repeat what she just said. She then reiterates what she was saying, but this time she projects and articulates the key points.
2.	Rohit: Yeah, then what did I do know?	B	This is the reconstruction of what happened. (Co-constructed)
3.	Teacher 1: Then you asked me to repeat whatever you shared with you.		
4.	Rohit: That was you.		
5.	Teacher 2: You stopped her. With friendly answers.		
6.	Rohit: Amele, then you two were discussing. Adhadhmele, then after that we were discussing there then what did I do?		
7.	Teacher 1: You went there.		
8.	Rohit: Very good. I came here.		
9.			
10.			
11.	Rohit: Yakke, why is that important? Important or not important?	C	This is the central point (Co-constructed)
12.	Teacher 1: You came back here.		
13.	Rohit: Naan yaake? Why do you think? Why did I come here?		
14.	Teacher 3: Discussionalli nammana serskolloke.		
15.	Rohit: Right, ellarna sersheku naanu summne alli kopthre, naavibhru maathadthivi. Mathe awru englishalli enu beku maathadthare, naavella		
16.	Teacher 4: Mother tongue English		
17.	Rohit: Just joking.		
18.			
19.			
20.			
21.	Rohit: But I come here, then if 'am here, it is just here, and naavibhru maathadthivi, you are all struggling enu belthaidhare, right and you were talking very softly also. If I come here then you have to speak loudly and it makes everyone included. Just a small detail very small detail that I thought what she was saying was important and I wanted everyone to hear what she is saying so I moved, so she could, she had to speak loudly. She would not whisper any more she had to speak loudly because I came here. Because she spoke louder, everyone was in the conversation. That was two things.	B	This is the replay of what happened.
22.			
23.			This is the articulation of what was going through the teacher educator's mind that prompted them to move.
24.		A	
25.			
26.			
27.			
28.			
29.			

Data Analysis from April 29, 2013

#	Text	Unit	Rationale
1	During the discussion, one teacher-learner leans towards the teacher educator, who is seated next to her, and offers a quiet aside. As she makes comments, the teacher educator stands up and moves a few yards away to the front of the room. He asks her to repeat what she was saying. She does so; this time in a louder voice, and the discussion about the tone with the whole group ensues.	A	This is the unofficial modeling of movement.
2	TE: Yeah, then what did I do?	B	This is the decomposition of the practice.
3	Teacher 1: Then you asked me to repeat whatever you shared with you.		
4	TE: That was you.		
5	Teacher 2: You stopped her. With friendly answers.		
6	TE: Amele, then you two were discussing. Adhadhmele, then after that we were discussing there then what did I do?		
7	Teacher 1: You went there.		
8	TE: Very good. I came here.		
9	TE: Yakke, why is that important? Important or not important?		
10	Teacher 1: You came back here.		
11	TE: Naan yaake? Why do you think? Why did I come here?		
12	Teacher 3: Discussionalli nammana serskolloke.	C	This is the central point
13	TE: Right, ellarna sersheku naanu summne alli kopthre, naavibhru maathadthivi. Mathe awru englishalli enu beku maathadthare, naavella	B'	This is again decomposition, but provides insight into the decisions guiding the movement.
14	Teacher 4: Mother tongue English		
15	TE: Just joking.		
16	TE: But I come here, then if 'am here, it is just here, and naavibhru maathadthivi, you are all struggling enu belthaidhare, right and you were talking very softly also. If I come here then you have to speak loudly and it makes everyone included.		
17	Just a small detail very small detail that I thought what she was saying was important and I wanted everyone to hear what she is saying so I moved, so she could, she had to speak loudly. She would not whisper any more she had to speak loudly because I came here. Because she spoke louder, everyone was in the conversation. That was two things.	A'	This seems to be a replay of what happened.

References

Alexander, R. J. (2008). *Education for All, the quality imperative and the problem of pedagogy*. London: Consortium for Research on Educational Access, Transitions and Equity.

Allday, R. A., & Pakurar, K. (2007). Effects of Teacher Greetings on Student On-Task Behavior. *Journal of applied behavior analysis*, *40*(2), 317-320.

Allen, R. M., & Casbergue, R. M. (1997). Evolution of novice through expert teachers' recall: Implications for effective reflection on practice. *Teaching and Teacher Education*, *13*(7), 741-755.

Aronfreed, J. (1969). The problem of imitation. *Advances in child development and behavior*, *4*, 209-319.

Atkinson, J. M., & Heritage, J. (Eds.). (1984). *Structures of social action*. Cambridge University Press.

Baddeley, A. (2007). *Working memory, thought, and action*. London: Oxford University Press.

Baddeley, A. D., & Hitch, G. (1993). The recency effect: Implicit learning with explicit retrieval?. *Memory & Cognition*, *21*(2), 146-155.

Bakhtin, M. M., & Holquist, M. (1981). *The dialogic imagination: Four essays* (Vol. 1). Austin: university of Texas press.

Ball, D. L. (1993). With an eye on the mathematical horizon: Dilemmas of teaching elementary school mathematics. *The elementary school journal*, 373-397.

Ball, D. L. (2000). Working on the Inside: Using One's Own Practice as a Site for Studying Teaching and Learning. In: A. Kelly and R. Lesh (Eds.), *Handbook of Research Design in Mathematics and Science Education*. Mahwah, NJ: Lawrence Erlbaum, 365-402.

Ball, D. L., & Cohen, D. K. (1999). Developing practice, developing practitioners: Toward a practice-based theory of professional education. In L. Darling-Hammond and G. Sykes (Eds.), *Teaching as the learning profession* (pp. 3–31). San Francisco, CA: Jossey-Bass.

Ball, D. L., & Forzani, F. M. (2009). The work of teaching and the challenge for teacher education. *Journal of Teacher Education*, *60*(5), 497-511.

Ball, D. L., & Wilson, S. M. (1996). Integrity in teaching: Recognizing the fusion of the moral and intellectual. *American Educational Research Journal*, *33*(1), 155-192.

Ball, D. L., Sleep, L., Boerst, T. A., & Bass, H. (2009). Combining the development of practice and the practice of development in teacher education. *The Elementary School Journal*, *109*(5), 458-474.

Ball, D.L. (2010). Foreword. In Sherin, M., Jacobs, V., & Philipp, R. (Eds.), *Mathematics teacher noticing: Seeing through teachers' eyes* (pp. xx-xxii). New York, NY: Routledge.

Bandura, A. (1969). *Principles of behavior modification.* New York, NY: Holt, Rinehart and Winston.

Bandura, A. (1971). *Social learning theory.* New York, NY: General Learning Press.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory.

Bandura, A., & Barab, P. G. (1971). Conditions governing non-reinforced imitation. *Developmental Psychology*, *5*(2), 244.

Bandura, A., & Menlove, F. L. (1968). Factors determining vicarious extinction of avoidance behavior through symbolic modeling. *Journal of Personality and Social Psychology, 8*, 99-108.

Bandura, A., Grusec, J. E., & Menlove, F. L. (1966). Observational learning as a function of symbolization and incentive set. *Child Development*, 499-506.

Bandura, A., Ross, D., & Ross, S. A. (1961). Transmission of aggression through imitation of aggressive models. *The Journal of Abnormal and Social Psychology*, *63*(3), 575.

Barker, L. M. (2012). *Under Discussion: Improvisational Theatre as a Tool for Improving Classroom Discourse* (Doctoral dissertation, Stanford University).

Basch, M. Franz. (1988). *Understanding psychotherapy: the science behind the art.* New York, NY: Basic Books.

Bashan, B., & Holsblat, R. (2012). Co-teaching Through Modeling Processes: Professional Development of Students and Instructors in a Teacher Training Program. *Mentoring & Tutoring: Partnership in Learning*, *20*(2), 207-226.

Belcher, T. L. (1975). Modeling original divergent responses: An initial investigation. *Journal Of Educational Psychology*, *67*(3), 351-358.

Berger, S. M. (1962). Conditioning through vicarious instigation. *Psychological Review*, *69*(5), 450.

Berlak, A., & Berlak, H. (1981). *Dilemmas of schooling*: *Teaching and social change.* London: Methuen.

Berry, A. (2004). Self study in teaching about teaching. In *International handbook of self-study of teaching and teacher education practices* (pp. 1295-1332). Springer Netherlands.

Bindra, D. (1974). A motivational view of learning, performance, and behavior modification. *Psychological Review*, *81*(3), 199.

Blanton, M. L. (2002). Using an undergraduate geometry course to challenge pre-service teachers' notions of discourse. *Journal of Mathematics Teacher Education*, *5*(2), 117-152.

Borko, H., & Putnam, R. (1996). Learning to teach. In D. Berliner & R. Calfee (Eds.), Handbook of educational psychology (673–708). New York, NY: Macmillan.

Borko, H., Jacobs, J., & Koellner, K. (2010). Contemporary approaches to teacher professional development. *International encyclopedia of education*, *7*, 548-556.

Borko, H., Jacobs, J., Eiteljorg, E., & Pittman, M. E. (2008). Video as a tool for fostering productive discussions in mathematics professional development. *Teaching and teacher education*, *24*(2), 417-436.

Bransford, J., Brown, A., Cocking, R., Donovan, M. S., & Pellegrino, J. (2000). How people learn: brain, mind, experience, and school. Committee on Developments in the Science of Learning and Committee on Learning Research and Educational Practice, Commission on Behavioral and Social Sciences and Education, National Research Council. *Expanded ed*. Washington DC: National Academy Press.

Bransford, J., Derry, S., Berliner, D., Hammerness, K., & Beckett, K. L. (2005). Theories of learning and their roles in teaching. *Preparing teachers for a changing world: What teachers should learn and be able to do*, 40-87.

Bransford, J., Sherwood, R., Vye, N., & Rieser, J. (1986). Teaching thinking and problem solving: Research foundations. *American psychologist*, *41*(10), 1078.

Bronkhorst, L. H., Meijer, P. C., Koster, B., & Vermunt, J. D. (2011). Fostering meaning-oriented learning and deliberate practice in teacher education. *Teaching and Teacher Education*, *27*(7), 1120-1130.

Brown, J. L & Wiggins, G. P. (2004). *Making the most of Understanding by design.* Alexandria, Va.: Association for Supervision and Curriculum Development

Buchmann, M. (1987). Teaching knowledge: The lights that teachers live by. *Oxford Review of Education*, *13*(2), 151-164.

Buchmann, M., & Schwille, J. (1983). Education: The overcoming of experience. *American Journal of Education*, 30-51.

Bullock, D., & Neuringer, A. (1977). Social Learning by Following: An Analysis. *Journal of the experimental analysis of behavior*, *27*(1), 127-135.

Bullough Jr, R. V., & Pinnegar, S. E. (2004). Thinking about the thinking about self-study: An analysis of eight chapters. In *International handbook of self-study of teaching and teacher education practices* (pp. 313-342). Springer Netherlands.

Calderhead, J. (1981). Stimulated Recall: A Method For Research On Teaching. *British Journal of Educational Psychology*, 51: 211–217.

Cazden, C. B. (2001). *Classroom discourse: The language of teaching and learning*. Portsmouth, NH: Heinemann.

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis.* London: Sage.

Charters, W. W., & Waples, D. (1929). *The commonwealth teacher-training study*. University of Chicago Press.

Chi, M.T.H., Feltovich, P. J., & Glaser, R. (1981). Categorization and representation of physics problems by experts and novices. *Cognitive Science*, 5, 121-152.

Clark, C. M., & Peterson, P L. (1986). Teachers' thought process. In M. Wittrock (Fd.), *Handbook of Research on Teaching*, (3rd ed.) (pp. 255-296). New York, NY: Macmillan.

Clarke, P. (2003). Culture and classroom reform: The case of the district primary education project, India. *Comparative Education*, *39*(1), 27-44.

Cobb, P. (1994). Where is the mind? Constructivist and sociocultural perspectives on mathematical development. *Educational Researcher*, *23*(7), 13-20.

Cochran-Smith, M. (2003). Learning and unlearning: The education of teacher educators. *Teaching and Teacher Education*, *19*(1), 5-28.

Cohan, A., & Honigsfeld, A. (2011). *Breaking the mold of preservice and inservice teacher education: innovative and successful practices for the 21st century*. Rowman & Littlefield Education.

Cohen, D. K. (1988). *Teaching practice: Plus ça change* (pp. 27-84). National Center for Research on Teacher Education.

Cohen, D. K. (2011). *Teaching and its predicaments*. Harvard University Press.

Cohen, D. K., Raudenbush, S. W., & Ball, D. L. (2003). Resources, instruction, and research. *Educational Evaluation and Policy Analysis*, *25*(2), 119-142.

Conklin, H. G. (2008). Modeling Compassion in Critical, Justice-Oriented Teacher Education. *Harvard Educational Review*, *78*(4), 652-674.

Cook, S. D., & Brown, J. (1999). Bridging epistemologies: The generative dance between organizational knowledge and organizational knowing. *Organizational Science*, *10*(4), 381-400.

Cooper, G., Tindall-Ford, S., Chandler, P., & Sweller, J. (2001). Learning by imagining. *Journal of Experimental Psychology: Applied*, *7*(1), 68.

Creswell, J. W. (2012). *Qualitative inquiry and research design: choosing among five approaches.* 3rd ed. Los Angeles: SAGE Publications.

Crowe, A. R., & Berry, A. (2007). Teaching prospective teachers about learning to think like a teacher. *Enacting a Pedagogy of Teacher Education. Values, Relationships and Practices*, 31-44.

Darling-Hammond, L. (2000). How teacher education matters. *Journal of teacher education*, *51*(3), 166-173.

Darling-Hammond, L., & McLaughlin, M. W. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan*, *76*(8), 597-604.

Darling-Hammond, L., Hammerness, K., Grossman, P., Rust, F., & Shulman, L. (2005). *The design of teacher education programs*. In L. Darling-Hammond, & J. Bransford (Eds.), Preparing teachers for a changing world: What teachers should learn and be able to do (pp. 390e441). San Francisco: Jossey-Bass.

Davis, M., & Hadiks, D. (1990). Nonverbal behavior and client state changes during psychotherapy. *Journal of clinical psychology*, *46*(3), 340-351.

Denney, D. R. (1975). The effects of exemplary and cognitive models and self-rehearsal on children's interrogative strategies. *Journal of Experimental Child Psychology*, *19*(3), 476-488.

Denney, N. W., & Denney, D. R. (1974). Modeling effects on the questioning strategies of the elderly. *Developmental Psychology*, *10*(3), 458.

Desimone, L. (2002). How can comprehensive school reform models be successfully implemented? *Review of Educational Research*, *72*(3), 433-479.

Dey, I. (1993). Qualitative data analysis: a user-friendly guide for social scientists. London: Routledge.

Dewey, J. (1904). The relation of theory to practice in education. In C. A. McMurry (Ed.), *The relation of theory to practice in the education of teachers* (Third Yearbook of the National Society for the Scientific Study of Education, Part I). Bloomington, IL: Public School Publishing.

Dewey, J. (1916). *Democracy and education: an introduction to the philosophy of education.* New York, NY: The Macmillan company.

Dewey, J. (1938). *Experience and Education.* New York, NY: The Macmillan company.

Dhankar, R. (2002). Seeking Quality Education: In the Arena of Fun and Rhetoric. *Seeking Quality Education For All: Experiences from the District Primary Education Programme*.

Dieker, L., Hynes, M., Hughes, C., & Smith, E. (2008). Implications of Mixed Reality and Simulation Technologies on Special Education and Teacher Preparation. *Focus on Exceptional Children*, *40*(6), 1.

Douglas, M. (2007). *Thinking in circles: An essay on ring composition*. New Haven, CT: Yale University Press.

Driscoll, M. J. (2008). Embracing Coaching as Professional Development. *Principal Leadership*, *9*(2), 40-44.

Duncker, K. (1945). On problem-solving. *Psychological Monographs*, *5*, 113.

Dyer, C. (1996). Primary teachers and policy innovation in India: some neglected issues. *International Journal of Educational Development*, *16*(1), 27-40.

Dyer, C., Choksi, A., Awasty, V., Iyer, U., Moyade, R., Nigam, N., ... & Sheth, S. (2004). *District institutes of education and training: a comparative study in three Indian states* (No. 12847). Department for International Development (DFID)(UK).

Educational Demographics Unit. (2011). "California Public Schools - District Report: 2010-11 District Enrollment by Grade San Francisco Unified." California Department of Education. Retrieved 2011-11-04.

Ekman, P., & Oster, H. (1979). Facial expressions of emotion. *Annual review of psychology*, *30*(1), 527-554.

Ekman, P., Friesen, W. V., & Ellsworth, P. (1972). *Emotion in the human face: Guidelines for research and an integration of findings*. New York, NY: Pergamon Press.

Ekman, P., Friesen, W., & Hager, J. (2002). *Facial Action Coding System*: *The Manual on CD ROM*. A Human Face, Salt Lake City.

Emerson, R.M., Fretz, R.; & Shaw, L. (2011). *Writing Ethnographic Fieldnotes*, Second Edition. University of Chicago Press.

Erickson, F. (1986). Qualitative methods in research on teaching (pp. 119-161). *Handbook of research on teaching*.

Erickson, F. (2006). Definition and analysis of data from videotape: Some research procedures and their rationales. *Handbook of complementary methods in education research*, 177-192.

Ericsson, K. A., Krampe, R.T., & Clemens,T-R. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100, 363-406.

Ericsson, K.A. (2002). Attaining excellence through deliberate practice: Insights from the study of expert performance. In M. Ferrari (Ed.), *The pursuit of excellence through education* (pp. 21–55). Hillsdale, NJ: Erlbaum.

Ernst, C. W. (2011). How to read the Qurʾan: a new guide, with select translations. Chapel Hill, NC: University of North Carolina Press.

Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *The Teachers College Record*, *103*(6), 1013-1055.

Feldon, D. F. (2007). Cognitive load and classroom teaching: The double-edged sword of automaticity. *Educational Psychologist*, 42, 123-137.

Fenstermacher, G. (1994), The Knower and the Known: The Nature of Knowledge in Research on Teaching. L. Hammond (Ed.), Review of Research in Education, 20 (pp. 3-56), Washington, DC: AERA.

Finley, P. (2009). *Oxford American Writer's Thesaurus*. Oxford University Press.

Fishman, B., Konstantopoulos, S., Kubitskey, B. W., Vath, R., Park, G., Johnson, H., & Edelson, D. C. (forthcoming, 2013). Comparing the Impact of Online and Face-to-Face Professional Development in the Context of Curriculum Implementation. *Journal of Teacher Education*.

Forzani, F. M. (2011). *The Work of Reform in Teacher Education*. Unpublished doctoral dissertation. University of Michigan, Ann Arbor.

Franke, M. L., & Chan, A. (2008). Learning about and from focusing on routines of practice. In *annual meeting of the American Educational Research Association, Chicago*.

Franke, M. L., & Kazemi, E. (2001). Learning to teach mathematics: Focus on student thinking. *Theory into practice*, *40*(2), 102-109.

Franke, M. L., Carpenter, T. P., Levi, L., & Fennema, E. (2001). Capturing teachers' generative change: A follow-up study of professional development in mathematics. *American Educational Research Journal*, *38*(3), 653-689.

Franke, M. L., Kazemi, E., & Battey, D. (2007). Mathematics teaching and classroom practice. *Second handbook of research on mathematics teaching and learning*, *1*, 225-256.

Freire, P., & Shor, I. (1987). What is the "dialogical method" of teaching?, *Journal of education*, *169*(3), 11-32.

Gage, N. L. (1968). *Explorations of the Teacher's Effectiveness in Explaining* (Vol. 4). School of Education, Stanford University.

Gallimore, R., & Tharp, R. (1992). Teaching mind in society: Teaching, schooling, and literate discourse. In L. C. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 175–205). Cambridge: Cambridge University Press.

Garbett, D., & Heap, R. (2011). Making practice visible: A collaborative self-study of tiered teaching in teacher education. *Studying Teacher Education*, *7*(3), 235-248.

Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American educational research journal*, *38*(4), 915-945.

Getz, H., Kennedy, L., Pierce, W., Edwards, C., & Chesebro, P. (1973). From traditional to competency-based teacher education. *Phi Delta n*, *54*(5), 300-302.

Ghousseini, H. N. (2008). *Learning with routines: Preservice teachers learning to lead classroom mathematics discussions*. Unpublished doctoral dissertation. University of Michigan, Ann Arbor.

Ghousseini, H., & Sleep, L. (2011). Making practice studyable. *ZDM*, *43*(1), 147-160.

Gibson, J.J. (1977). The Theory of Affordances (pp. 67-82). In R. Shaw & J. Bransford (Eds.). *Perceiving, Acting, and Knowing: Toward an Ecological Psychology*. Hillsdale, NJ: Lawrence Erlbaum.

Glaser, B. G., Strauss, A. L. (1967). *The discovery of grounded theory: strategies for qualitative research*. Chicago, IL: Aldine Pub. Co.

Goldstein, L. S., & Freedman, D. (2003). Challenges enacting caring teacher education. *Journal of teacher Education*, *54*(5), 441-454.

Goodwin, C. (1994). Professional vision. *American anthropologist*, *96*(3), 606-633.

Greeno, J. G., & Collins, A. M., & Resnick, LB (1996). Cognition and learning. *Handbook of educational psychology*, 15-46.

Grossman, P. L. (1991). Overcoming the apprenticeship of observation in teacher education coursework. *Teaching and Teacher Education*, *7*(4), 345-357.

Grossman, P. (2005). Research on pedagogical approaches in teacher education. *Studying teacher education: The report of the AERA panel on research and teacher education*, 425-476.

Grossman, P. (2011). Framework for teaching practice: A brief history of an idea. *Teachers College Record*, *113*(12), 2836-2843.

Grossman, P. L., Smagorinsky, P., & Valencia, S. (1999). Appropriating tools for teaching English: A theoretical framework for research on learning to teach. *American Journal Of Education-Chicago*, *108*(1), 1-29.

Grossman, P. L., Valencia, S. W., Evans, K., Thompson, C., Martin, S., & Place, N. (2000). Transitions into teaching: Learning to teach writing in teacher education and beyond. *Journal of Literacy Research*, *32*(4), 631-662.

Grossman, P., & McDonald, M. (2008). Back to the future: Directions for research in teaching and teacher education. *American Educational Research Journal*, *45*(1), 184-205.

Grossman, P., Compton, C., Igra, D., Ronfeldt, M., Shahan, E., & Williamson, P. (2009). Teaching practice: A cross-professional perspective. *The Teachers College Record*, *111*(9), 2055-2100.

Grossman, P., Hammerness, K., & McDonald, M. (2009). Redefining teaching, re-imagining teacher education. *Teachers and Teaching: theory and practice*, *15*(2), 273-289.

Gumperz, J. J. (Ed.). (1982). *Discourse strategies* (Vol. 1). Cambridge University Press.

Guthrie, G. H. "Discourse Analysis," in *Interpreting the New Testament: Essays on Methods and Issues*, ed. D. A. Black and David S. Dockery (Nashville: Broadman and Holman, 2000), 254.

Hark, M. T. (2003). Searching for the searchlight theory: from Karl Popper to Otto Selz. *Journal of the History of Ideas*, *64*(3), 465-487.

Harris, M. B., & Evans, R. C. (1973). Models and creativity. *Psychological Reports*, *33*(3), 763-769.

Hatano, G., & Inagaki, K. (1986). Two courses of expertise. In H. Stevenson, H. Azuma, & K. Hakuta (Eds.), *Child Development and Education in Japan*. New York, NY: Freeman.

Hatch, T., & Grossman, P. (2009). Learning to look beyond the boundaries of representation. *Journal of Teacher Education*, *60*(1), 70-85.

Hawley, W. D., & Valli, L. (1999). The essentials of effective professional development: A new consensus. *Teaching as the learning profession: Handbook of policy and practice*, 127-150.

Heaton, R. M. (1994). *Creating and studying a practice of teaching elementary mathematics for understanding*. Unpublished doctoral dissertation, Michigan State University, East Lansing.

Herbst, P., Chazan, D., Chen, C. L., Chieu, V. M., & Weiss, M. (2011). Using comics-based representations of teaching, and technology, to bring practice to teacher education courses. *ZDM*, *43*(1), 91-103.

Hiebert, J., Morris, A. K., Berk, D., & Jansen, A. (2007). Preparing teachers to learn from teaching. *Journal of Teacher Education*, *58*(1), 47-61.

Houston, W. R., & Howsam, R. B. (1972). Competency-Based Teacher Education; Progress, Problems, and Prospects.

Hutinger, P., & Bruce, T. (1971). The effects of adult verbal modeling and feedback on the oral language of Head Start children. *American Educational Research Journal*, 611-622.

Izard, C. E. (1984). Emotion-cognition relationships and human development. In C. Izard (Ed.), *Emotions, Cognition, and Behavior*, (pp. 17-37). Cambridge: Cambridge University Press.

Jacobs, V. R., Franke, M. L., Carpenter, T. P., Levi, L., & Battey, D. (2007). Professional development focused on children's algebraic reasoning in elementary school. *Journal for research in mathematics education*, 258-288.

Jay, J. K. (2002). Meta, Meta, Meta: Modeling in a Methods Course for Teaching English. *Teacher Education Quarterly*, *29*(1), 83-102.

Justi, R. S., & Gilbert, J. K. (2002). Modelling, teachers' views on the nature of modelling, and implications for the education of modellers. *International Journal of Science Education*, *24*(4), 369-387.

Kazemi, E., & Franke, M. L. (2004). Teacher learning in mathematics: Using student work to promote collective inquiry. *Journal of Mathematics Teacher Education*, *7*(3), 203-235.

Kazemi, E., Franke, M., & Lampert, M. (2009). Developing pedagogies in teacher education to support novice teachers' ability to enact ambitious instruction. In *Crossing Divides, Proceedings of the 32nd Annual Conference of The Mathematics Education Research Group of Australasia* (Vol. 1, pp. 11-29).

Keiper, T., Harwood, A., & Larson, B. E. (2000). Preservice teachers' perceptions of infusing computer technology into social studies instruction. *Theory & Research in Social Education*, *28*(4), 566-579.

Keller, M. F., & Carlson, P. M. (1974). The use of symbolic modeling to promote social skills in preschool children with low levels of social responsiveness. *Child Development*, 912-919.

Kennedy, M. M. (1987). Inexact sciences: Professional education and the development of expertise. *Review of research in education*, *14*, 133-167.

Kennedy, M. M. (1998). Education reform and subject matter knowledge. *Journal of Research in Science Teaching*, *35*(3), 249-263.

Kennedy, M. M. (2010). Attribution error and the quest for teacher quality. *Educational Researcher*, *39*(8), 591-598.

Kim, Y. (2011). The Pilot Study in Qualitative Inquiry Identifying Issues and Learning Lessons for Culturally Competent Research. *Qualitative Social Work*, *10*(2), 190-206.

Kittel, F. (1988). *A Kannada-English dictionary*. New Delhi: Asian Educational Services.

Koerner, M., Rust, F. O. C., & Baumgartner, F. (2002). Exploring Roles in Student Teaching Placements. *Teacher Education Quarterly*, *29*(2), 35-58.

Korthagen, F. A., Kessels, J., Koster, B., Lagerwerf, B., & Wubbels, T. (2001). *Linking practice and theory: The pedagogy of realistic teacher education*. Mahwah, N.J.: L. Erlbaum Associates.

Korthagen, F., Loughran, J., & Russell, T. (2006). Developing fundamental principles for teacher education programs and practices. *Teaching and teacher education*, *22*(8), 1020-1041.

Kosminsky, L., Russell, T., Berry, A., & Kane, R. (2008, August). The boundaries of think-aloud as practiced by teacher educators. In *The Seventh International Conference on Self-Study of Teacher Education Practices*.

Kosnik, C. (2007). 2 Still the same yet different. *Enacting a pedagogy of teacher education: Values, relationships and practices*, 16.

Kuhn, D. (1973). Imitation theory and research from a cognitive perspective. *Human Development*, *16*(3), 157-180.

Kumar, N. (2000). *Lessons from Schools: The History of Education In Banaras*. New Delhi: Sage Publications.

Labov, W., Fanshel, D. (1977). *Therapeutic discourse: psychotherapy as conversation*. New York, NY: Academic Press.

Lampert, M. (1986). Knowing, doing, and teaching multiplication. *Cognition and Instruction*, *3*, 305–342.

Lampert, M. (2001). *Teaching problems and the problems of teaching*. Yale University Press.

Lampert, M. (2010). Learning teaching in, from, and for practice: What do we mean? *Journal of Teacher Education*, *61*(1-2), 21-34.

Lampert, M., Beasley, H., Ghousseini, H., Kazemi, E., & Franke, M. (2010). Using designed instructional activities to enable novices to manage ambitious mathematics teaching. In M.K. Stein & L. Kucan (Eds.), *Instructional explanations in the disciplines* (pp. 129-141). New York, NY: Springer.

Lampert, M., Boerst, T., & Graziani, F. (2011). Organizational resources in the service of school-wide ambitious teaching practice. *Teachers College Record*, *113*(7), 1361-1400.

Lampert, M., Franke, M. L., Kazemi, E., Ghousseini, H., Turrou, A. C., Beasley, H., Cunard, A. & Crowe, K. (2013). Keeping It Complex Using Rehearsals to Support Novice Teacher Learning of Ambitious Teaching. *Journal of Teacher Education*, *64*(3), 226-243.

Langer, J.A. (1981). Facilitating text processing: The elaboration of prior knowledge. In J.A. Langer & M.T. Smith- Burke (Eds.), *Reader meets author/Bridging the gap* (pp. 149-162). Newark, DE: International Reading Association.

Lave, J. (1996). Teaching, as learning, in practice. *Mind, Culture, and Activity*, 3, 149–164.

Lave, J., Wenger, E. (1991). *Situated learning: legitimate peripheral participation.* Cambridge: Cambridge University Press.

Leahy, W., & Sweller, J. (2008). The imagination effect increases with an increased intrinsic cognitive load. *Applied cognitive psychology*, *22*(2), 273-283.

Lee, C. D. (2007). *Culture, literacy & learning*. New York, NY, NY: Teachers College Press.

Lieblich, A., Tuval-Mashiach, R., & Zilber, T. (1998). *Narrative research: Reading, analysis, and interpretation*. Thousand Oaks, CA: Sage.

Leinhardt, G., & Greeno, J. G. (1986). The cognitive skill of teaching. *Journal of educational psychology*, *78*(2), 75.

Lewis, J. M. (2007). *Teaching as invisible work*. Unpublished doctoral dissertation, University of Michigan, Ann Arbor.

Lewis, M., Sullivan, M. W., & Michalson, L. (1984). The cognitive-emotional fugue. *Emotions, cognition, and behavior*, 264.

Lincoln, Y. S., Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage Publications.

Little, J. W. (1982). Norms of collegiality and experimentation: Workplace conditions of school success. *American Educational Research Journal*, *19*(3), 325-340.

Lortie, D. C. (1975). *Schoolteacher: A sociological study*. Chicago: University of Chicago Press.

Loucks-Horsley, S., Hewson, P. W., Love, N., & Stiles, K. E. (1998). *Designing professional development for teachers of science and mathematics*. Thousand Oaks, CA: Corwin Press.

Loughran, J. (2007). Researching teacher education practices responding to the challenges, demands, and expectations of self-study. *Journal of Teacher Education*, *58*(1), 12-20.

Loughran, J. J. (1996). *Developing reflective practice: Learning about teaching and learning through modelling.* London: Falmer Press.

Loughran, J., & Berry, A. (2005). Modelling by teacher educators. *Teaching and teacher education*, *21*(2), 193-203.

Loughran, J.J. (2006). *Developing a pedagogy of teacher education*, London: Routledge.

Ludlow, V. L. (1982). *Isaiah: Prophet, Seer, and Poet*. Salt Lake City, UT: Deseret Book Company.

Lunenberg, M., Korthagen, F., & Swennen, A. (2007). The teacher educator as a role model. *Teaching and teacher education*, *23*(5), 586-601.

Manusov, V., & Milstein, T. (2005). Interpreting nonverbal behavior: Representation and transformation frames in Israeli and Palestinian media coverage of the 1993 Rabin–Arafat handshake. *Western Journal of Communication*, *69*(3), 183-201.

Manz, C. C., & Sims Jr., H. P. (1981). Vicarious learning: The influence of modeling on organizational behavior. *Academy of Management Review*, 105-113.

Marzano, R., Marzano, J., and Pickering, D. (2003). Classroom management that works. Research-based strategies for every teacher, Association for Supervision and Curriculum Development, Alexandria, VA.

Maxwell, J. A. (2005). *Qualitative research design: An interactive approach* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Maxwell, J. A. (2013). *Qualitative research design: An interactive approach (3rd* ed.). Thousand Oaks, CA: Sage Publications.

Maxwell, J. A., & Miller, B. A. (2008). Categorizing and connecting strategies in qualitative data analysis. *Handbook of emergent methods*, 461-477.

McCoy, B. (2003). Chiasmus: An Important Structural Device Commonly Found in Biblical Literature. *Chafer Theological Seminary Journal*, *9*, 18-34.

McDonald, M., Kazemi, E., & Kavanagh, S. S. (forthcoming, 2013). Core Practices and Pedagogies of Teacher Education A Call for a Common Language and Collective Activity. *Journal of Teacher Education.*

McGlamery, S. L., & Shillingstad, S. L. (2011). Modeling Assessment and the Impact on K–16 Student Learning. In A. Cohan (Ed.), *Breaking the mold of preservice and inservice teacher education: innovative and successful practices for the 21st century* (pp. 75-87). Lanham: Rowman & Littlefield Education.

Meichenbaum, D. (1977). *Cognitive-behavior modification: an integrative approach.* New York, NY, NY: Plenum Press.

Mehan, H. (1979). *Learning lessons*. Cambridge, MA: Harvard University Press.

Miles, M. B., Huberman, A. M. (1994). *Qualitative data analysis: an expanded sourcebook.* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Miller, N. E., Dollard, J. (1941). *Social learning and imitation.* New Haven, CT: Publication for the Institute of Human Relations by Yale University Press.

Mischel, W. (1973). Toward a cognitive social learning reconceptualization of personality. *Psychological review*, *80*(4), 252.

Molebash, P. (2004). Preservice teacher perceptions of a technology-enriched methods course. *Contemporary Issues in Technology and Teacher Education*, *3*(4), 412-432.

Molebash, P. E. (2002). Constructivism meets technology integration: The CUFA technology guidelines in an elementary social studies methods course. *Theory & Research in Social Education*, *30*(3), 429-455.

Morse, J. M. (1997). " Perfectly Healthy, but Dead": The Myth of Inter-Rater Reliability. *Qualitative Health Research*, *7*(4), 445-447.

Moss, P. A., Pullin, D., Haertel, E. H., Gee, J. P., and Young, L. (Eds.) (2008). *Assessment, equity, and opportunity to learn*. New York, NY, NY: Cambridge University Press.

Mukhopadhyay, R. (2009). Changing mindsets about quality. In P. Rustagi (Ed.), *Concerns, Conflicts, and Cohesions: Universalization of Elementary Education in India*. New Delhi: Institute for Human Development.

Myers, C. B. (2002). Can self-study challenge the belief that telling, showing and guided practice constitute adequate teacher education? In J. Loughran, & T. Russell (Eds.), *Improving teacher education practices through self-study* (pp. 130–142). London: Routledge Falmer.

National Curriculum Framework (NCF). (2005). New Delhi: National Council for Educational Research and Training.

National Curriculum Framework for Teacher Education. (2009). *Towards Preparing Professional and Humane Teacher (NCFTE).* New Delhi: National Council for Teacher Education.

National Policy on Education (NPE). (1986). New Delhi: National Council for Educational Research and Training.

National University of Educational Planning and Administration. (2011). *District Information System for Education Report*. New Delhi: NUEPA.

Neubrand, M., Seago, N., Agudelo-Valderrama, C., DeBlois, L., Leikin, R., & Wood, T. (2009). The balance of teacher knowledge: Mathematics and pedagogy. In *The Professional Education and Development of Teachers of Mathematics* (pp. 211-225). Springer US.

Neumann, A. (2006). Professing passion: Emotion in the scholarship of professors at research universities. *American Educational Research Journal*, *43*(3), 381-424.

Nicol, C. (1998). Learning to teach mathematics: Questioning, listening, and responding. *Educational Studies in Mathematics*, *37*(1), 45-66.

Nystrand, M. & Gamoran, A. (1997). The big picture: Language and Learning in hundreds of English lessons. In M. Nystrand, A. Gamoran, R. Kachur, & C. Prendergast (Eds.), *Opening dialogue: Understanding the dynamics of language and learning in the English classroom* (pp. 30-74). New York: Teachers College.

Palincsar, A. S., & Herrenkohl, L. R. (2002). Designing collaborative learning contexts. *Theory into practice*, *41*(1), 26-32.

Parker, W., & Hess, D. (2001). Teaching with and for discussion. *Teaching and Teacher Education*, 17(3), 273–289.

Patton, M. Quinn. (2002). *Qualitative research and evaluation methods.* 3 ed. Thousand Oaks, CA.: Sage Publications.

Pellegrino, J. W., & Hilton, M. L. (Eds.). (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. National Academies Press.

Penuel, W. R., Fishman, B. J., Yamaguchi, R., & Gallagher, L. P. (2007). What makes professional development effective? Strategies that foster curriculum implementation. *American Educational Research Journal*, *44*(4), 921-958.

Peressini, D. D., & Knuth, E. J. (1998). Why are you talking when you could be listening? The role of discourse and reflection in the professional development of a secondary mathematics teacher. *Teaching and Teacher Education*, *14*(1), 107-125.

Poglinco, S., Bach, A., Hovde, K., Rosenblum, S., Saunders, M., & Supovitz, J. (2003). *The heart of the matter: The coaching model in America's Choice schools.* Consortium for Policy Research in Education, University of Pennsylvania Graduate School of Education.

Pollock, S. (1985). The theory of practice and the practice of theory in Indian intellectual history. *Journal of the American Oriental Society*, 499-519.

Popper, K. R. (1972). *Objective knowledge: An evolutionary approach*. Oxford: Clarendon Press.

Price, R. (2001). *Feasting of the heart*. New York, NY: Scribners.

Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational researcher*, *29*(1), 4-15.

Ramachandran V., Pal M., Jain S., Shekar S., Sharma J. (2005). *Teacher Motivation in India.* Educational Resource Unit, India.

Renkl, A. (2005). The worked-out-example principle in multimedia learning. *The Cambridge handbook of multimedia learning*, 229-244.

Richards, L., & Morse, J.M. (2012). *Readme first for a user's guide to qualitative methods*. Thousand Oaks, CA: Sage.

Rogers, E. M. (1962). *Diffusion of innovations.* New York, NY: Free Press of Glencoe.

Rogers, E. M. (2003). *Diffusion of innovations.* 5th ed., New York, NY: Free Press.

Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. Oxford University Press.

Ronfeldt, M., & Grossman, P. (2008). Becoming a professional: Experimenting with possible selves in professional preparation. *Teacher Education Quarterly*, 35, 41-60.

Rosenberg, S. (2012). *Organizing for Quality in Education: Individualistic and Systemic Approaches to Teacher Quality*. Unpublished Doctoral dissertation. University of Michigan, Ann Arbor.

Rosenthal, T. L., & Zimmerman, B. J. (1978). *Social learning and cognition*. New York, NY: Academic Press.

Rowe, M. B. (1986). Wait time: slowing down may be a way of speeding up!. *Journal of teacher education*, *37*(1), 43-50.

Saigal, A. (2012). Demonstrating a situated learning approach for in-service teacher education in rural India: The Quality Education Programme in Rajasthan. *Teaching and Teacher Education*, *28*(7), 1009-1017.

Santagata, R., & Guarino, J. (2011). Using video to teach future teachers to learn from teaching. *ZDM*, *43*(1), 133-145.

Sarangapani, P. M., & Vasavi, A. R. (2003). Aided programmes or guided policies? DPEP in Karnataka. *Economic and Political Weekly*, 3401-3408.

Schoenfeld, A.H. (2010). Noticing matters a lot. Now what? In Sherin, M., Jacobs, V., & Philipp, R. (Eds.), *Mathematics teacher noticing: Seeing through teachers' eyes*. New York, NY: Routledge.

Schön, D. A. (1983). The reflective practitioner: how professionals think in action. New York, NY: Basic Books.

Schön, D. A. (1987). *Educating the reflective practitioner*. San Francisco, CA: Jossey-Bass.

Schwab, J. J. (1964). Structure of the disciplines: Meanings and significances. *The structure of knowledge and the curriculum*, 6-30.

Schwab, J. J. (1971). The practical: Arts of eclectic. *The School Review*, *79*(4), 493-542.

Schworm, S., & Renkl, A. (2007). Learning argumentation skills through the use of prompts for self-explaining examples. *Journal of Educational Psychology*, *99*(2), 285.

Segall, A. (2002). *Disturbing practice: reading teacher education as text.* New York, NY: P. Lang.

Senese, J. C. (2007). Providing the necessary luxuries for teacher reflection. *Enacting a pedagogy of teacher education: Values, relationships and practices*, 45.

Shah, A. M. (2011). *Practicing the practice: Learning to guide elementary science discussions in a practice-oriented science methods course*. Unpublished doctoral dissertation. University of Michigan, Ann Arbor.

Shavelson, R. J., & Stern, P. (1981). Research on teachers' pedagogical thoughts, judgments, decisions, and behavior. *Review of educational research*, *51*(4), 455-498.

Sherin, M. G., & Han, S. Y. (2004). Teacher learning in the context of a video club. *Teaching and Teacher Education*, *20*(2), 163-183.

Sherin, M. G., & Van Es, E. A. (2009). Effects of video club participation on teachers' professional vision. *Journal of Teacher Education*, *60*(1), 20-37.

Sherin, M., & van Es, E. (2005). Using video to support teachers' ability to notice classroom interactions. *Journal of technology and teacher education*, *13*(3), 475-491.

Sherin, M., Jacobs, V., & Philipp, R. (Eds.). (2010). *Mathematics teacher noticing: Seeing through teachers' eyes*. New York, NY: Routledge.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational researcher*, *15*(2), 4-14.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard educational review*, *57*(1), 1-23.

Shulman, L. S. (2005). Signature pedagogies in the professions. *Daedalus*, *134*(3), 52-59.

Shulman, L. S. (2007). Response to comments: Practical wisdom in the service of professional practice. *Educational Researcher*, *36*(9), 560-563.

Shulman, L. S., & Elstein, A. S. (1975). Studies of problem solving, judgment, and decision making: Implications for educational research. *Review of research in education*, *3*, 3-42.

Shulman, L. S., & Shulman, J. H. (2004). How and what teachers learn: A shifting perspective. *Journal of curriculum studies*, *36*(2), 257-271.

Shulman, L. S., Wilson, S., & Hutchings, P. (Eds.). (2004). *The wisdom of practice: Essays on teaching, learning, and learning to teach*. San Francisco, CA: Jossey-Bass.

Simon, S. (1996). *Gender in translation: Cultural identity and the politics of transmission.* London: Routledge.

Sleep, L. (2009). *Teaching to the mathematical point: Knowing and using mathematics in teaching*. Unpublished doctoral dissertation. University of Michigan, Ann Arbor.

Sleep, L. (2012). The Work of Steering Instruction Toward the Mathematical Point A Decomposition of Teaching Practice. *American Educational Research Journal*, *49*(5), 935-970.

Sleep, L., Boerst, T., & Ball, D. L. (2007, March). Learning to do the work of teaching in a practice-based methods course. Presentation made at the research presession of the annual meeting of the National Council of Teachers of Mathematics, Atlanta, GA.

Smith, K. (2005). Teacher educators' expertise: What do novice teachers and teacher educators say?. *Teaching and Teacher Education*, *21*(2), 177-192.

Spady, W. G. (1977). Competency based education: A bandwagon in search of a definition. *Educational Researcher*, *6*(1), 9-14.

Spillane, J., & Jennings, N. (1997). Aligned instructional policy and ambitious pedagogy: Exploring instructional reform from the classroom perspective. *The Teachers College Record*, *98*(3), 449-481.

Spiro, R. J., Feltovich, P. J., Coulson, R. L., & Anderson, D. K. (1989). Multiple analogies for complex concepts: Antidotes for analogy-induced misconception in advanced knowledge acquisition. In S. Vosniadou & A. Ortony (Eds.), *Similarity and analogical reasoning* (pp. 498-531). New York: Cambridge University Press.

Star, J. R., & Strickland, S. K. (2008). Learning to observe: Using video to improve preservice mathematics teachers' ability to notice. *Journal of Mathematics Teacher Education*, *11*(2), 107-125.

Stein, M. K., & Coburn, C. E. (2008). Architectures for learning: A comparative analysis of two urban school districts. *American Journal of Education*, *114*(4), 583-626.

Stevenson, A. (Ed.) (2010). *New Oxford American Dictionary*. Oxford: Oxford University Press.

Sykes, G., Bird, T., & Kennedy, M. (2010). Teacher education: Its problems and some prospects. *Journal of Teacher Education*, *61*(5), 464-476.

Tannenbaum, P. H., & Zillmann, D. (1975). Emotional arousal in the facilitation of aggression through communication. *Advances in experimental social psychology*, *8*, 149-192.

Temple, B., Edwards, R., & Alexander, C. (2006). Grasping at Context: Cross Language Qualitative Research as Secondary Qualitative Data Analysis. *Qualitative Social Research*, 7(4), Art. 10.

Tharp, R. G., Gallimore, R. (1988). *Rousing minds to life: teaching, learning, and schooling in social context.* Cambridge: Cambridge University Press.

The Right of Children to Free and Compulsory Education Act (RTE Act). (2009). New Delhi: The Gazette of India.

Thorndike, E. L. (1898). Animal intelligence: An experimental study of the associative processes in animals. *Psychological Monographs: General and Applied*, *2*(4), i-109.

Tobin, K. (1987). The role of wait time in higher cognitive level learning. *Review of educational research*, *57*(1), 69-95.

Tobin, K. G. (1980). The effect of an extended teacher wait-time on science achievement. *Journal of Research in Science Teaching*, *17*(5), 469-475.

Unsworth, L. (2011). *Multimodal semiotics: Functional analysis in contexts of education*. Continuum International Publishing Group.

van Es, E. A., & Sherin, M. G. (2002). Learning to notice: Scaffolding new teachers' interpretations of classroom interactions. *Journal of Technology and Teacher Education*, *10*(4), 571-596.

van Es, E. A., & Sherin, M. G. (2008). Mathematics teachers' "learning to notice" in the context of a video club. *Teaching and Teacher Education*, *24*(2), 244-276.

Vosniadou, S., & Ortony, A. (1989). *Similarity and analogical reasoning*. New York: Cambridge University Press.

Warnick, B. R., & Silverman, S. K. (2011). A framework for professional ethics courses in teacher education. *Journal of Teacher Education*, *62*(3), 273-285.

Wei, R., Darling-Hammond, L. Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional Learning in the Learning Profession: A Status Report on Teacher Development in the United States and Abroad.* Dallas, TX: NSDC.

Weinstein C., Tomlinson-Clarke S., & Curran M. (2004). Toward a Conception of Culturally Responsive Classroom Management. *Journal of Teacher Education*, 55(1), 25-38.

Wells, G. (1999). *Dialogic inquiry: Towards a socio-cultural practice and theory of education*. Cambridge University Press.

Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity.* Cambridge, England: Cambridge University Press.

Wertsch, J. V. (1991). *Voices of the mind: a sociocultural approach to mediated action*. Cambridge, Mass.: Harvard University Press.

White, G. M., & Rosenthal, T. L. (1974). Demonstration and lecture in information transmission: A field experiment. *The Journal of Experimental Educational*, 90-96.

Wideen, M., Mayer-Smith, J., & Moon, B. (1998). A critical analysis of the research on learning to teach: Making the case for an ecological perspective on inquiry. *Review of educational research*, *68*(2), 130-178.

Willingham, D. T. (2009). *Why don't students like school: A cognitive scientist answers questions about how the mind works and what it means for the classroom*. San Francisco: Jossey-Bass.

Wilson, S. M., & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. *Review of research in education*, *24*, 173-209.

Windschitl, M., Thompson, J., Braaten, M., & Stroupe, D. (2012). Proposing a core set of instructional practices and tools for teachers of science. *Science Education*, *96*(5), 878-903.

Wineburg, S., & Grossman, P. (1998). Creating a community of learners among high school teachers. *Phi Delta Kappan*, 79, 350-353.

Wineburg, S., & Martin, D. (2004). Reading and rewriting history. *Educational Leadership*, *62*, 42-45.

Wood, C. J., & Pohland, P. A. (1979). Teacher evaluation: The myth and realities. In W.R. Duckett (Ed.), *Planning for the evaluation of teaching* (pp. 73-82). Bloomington, IN: Phi Delta Kappa.

Wood, E., & Geddis, A. N. (1999). Self-conscious narrative and teacher education: Representing practice in professional course work. *Teaching and Teacher Education*, *15*(1), 107-119.

Wubbels, T., Korthagen, F., & Broekman, H. (1997). Preparing teachers for realistic mathematics education. *Educational Studies in Mathematics*, *32*(1), 1-28.

Yin, R. K. (2009). *Case study research: design and methods.* 4th ed. Los Angeles: Sage Publications.

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American psychologist*, *35*(2), 151.

Zeichner, K. (2012). The turn once again toward practice-based teacher education. *Journal of Teacher Education*, *63*(5), 376-382.

Zembal-Saul, C., Krajcik, J., & Blumenfeld, P. (2002). Elementary student teachers' science content representations. *Journal of Research in Science Teaching*, *39*(6), 443-463.

Zimmerman, B. J. (1983). Social learning theory: A contextualist account of cognitive functioning. In C. J. Brainerd (Ed.), *Recent advances in cognitive developmental theory* (pp. 1-49). New York, NY: Springer.