

Early Childhood Teachers' Use of Information to Reason About and Enact Moment-to-Moment
Instruction

by

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Abstract

Although many people in both K-12 and early childhood education have written about knowledge and teaching, little is known about what types of knowledge teachers of preschool-aged children use to make moment-to-moment decisions in the classroom, specifically during common activities such as circle time and language and literacy instruction. The field seems to value research-based knowledge about how children learn and develop skills as an important source of information for teaching, however, there is no evidence that this form of knowledge is used by early childhood teachers in their pedagogical reasoning about practice. This study responds to the gaps in the literature by exploring early childhood teachers' pedagogical reasoning about practice in order to uncover what types of information teachers report using to reason about practice and how this informs their enacted instruction.

This dissertation study used a phenomenological approach in order to understand early childhood teachers' pedagogical reasoning. It asked the guiding research question: *How do prekindergarten teachers reason during their moment-to-moment instruction?* The pedagogical reasoning of eight prekindergarten teachers from two preschools was examined. The teachers had a variety of background experiences. The schools served similar children but each had different learning goals for children as well as different center-wide structures for how content was to be delivered to children. Each teacher was observed and video-recorded four times, twice during circle time and twice during language and literacy instruction. A stimulated recall procedure was used to access teachers' reasoning about their practice during those instructional times.

Participants discussed using six main categories of information to inform their pedagogical reasoning during practice. Across these categories teachers seemed to think a great deal about their students, content (goals and curriculum), and sometimes themselves. They rarely reported using information from outside the instructional context such as information about how young children learn and develop skills. Broader contextual variables such as instructional activity and school setting also seemed to influence teachers' use of information. Multiple sources of information worked together to inform teachers' pedagogical reasoning in complex ways that were often not visible from an outside perspective.

By focusing on teachers' perspectives of their work in the classroom, this research complements and expands current early childhood education research and helps the field understand more about the information that teachers use to inform their pedagogical reasoning during practice. The implications of these findings as they relate to what is currently known about early childhood and K-12 teachers' uses of knowledge, implications for designing professional learning for teachers of young children, as well as directions for future scholarship are discussed.

Chapter 1 Introduction to the Study

In their 2009 position statement outlining research-based best practices for early childhood teachers and next steps for those working to improve instruction in early childhood classrooms, the National Association for the Education of Young Children (NAEYC) called on the early childhood community to recognize “teacher knowledge and decision making as vital to educational effectiveness” (p. 2). In this statement the NAEYC equally weighted both teacher knowledge as well as teachers’ process of decision-making during instruction as important components of teachers’ classroom practice. They suggested that researchers need to understand and develop both knowledge and decision-making as they are connected to instruction. Despite the need for an equal emphasis on knowledge and decision-making, early childhood researchers working with teachers of children ages zero to five¹ have focused on knowledge, leaving decision-making processes relatively unexplored.

This focus on knowledge about children’s learning and skill development has formed the basis of many efforts within the field to both examine teachers and their practice as well as efforts to improve practice. Both the empirical research and the design of professional development seem to indicate that teachers’ conceptions of how children learn are important for practice and something that should be informing teachers’ work in the classroom. Despite this direction in the research on teachers and professional development, there is little evidence

¹ In the context of this study, early childhood education is defined as schooling for children ages zero through five, as around the age of six children often enter kindergarten and more formal school contexts with different curricular and developmental expectations (Bowman, Donovan, & Burns, 2001; Snow, Burns, & Griffin, 1998).

linking growth in knowledge about how children learn or develop skills with improved practice and outcomes for children. Although the field has a growing understanding of how children learn and develop literacy skills, teachers do not seem to be performing very well on measures of knowledge (e.g., Hindman & Wasik, 2011; O’Leary, Cockburn, Powell, & Diamond, 2010) nor are models of professional development always successful in changing teachers’ practice in the classroom (e.g., Cunningham, Zibulsky, & Callahan, 2009; Neuman & Cunningham, 2009).

There could be many explanations for teachers’ low performance on measures of knowledge and the failure to see significant changes in practice after professional development. Early childhood teachers may value or use different knowledge than the knowledge which is typically assessed by or valued by researchers. Some have suggested that the knowledge that teachers do use during instruction is different from that which researchers value or evaluate (e.g., Carlisle, Correnti, Phelps, & Zeng, 2009; Friesen & Butera, 2012). In addition, the types of knowledge presented in professional development may not be useful to teachers as they enact instruction. Even when professional development is successful, there are questions about how or why teachers are learning and using the new information gained during these experiences (e.g., Powell & Diamond, 2011; Wasik & Hindman, 2011). These questions about the types of knowledge that teachers use during their instruction, the efficacy of professional development, as well as the assimilation of new knowledge suggest the need for further research.

I propose a shift from investigating depth of knowledge to knowledge in use, especially decision-making. In contrast to investigating knowledge, to date few researchers have examined early childhood teachers’ decision-making during instruction. Moreover, this process of decision-making using knowledge is largely under-conceptualized in the early childhood research literature.

In particular, there is a need to understand how teachers describe the process of using knowledge during decision-making as it is connected to their moment-to-moment instruction. Attending to teachers' perspectives on their work in the classroom provides an insight into information that they value, that may or may not be different than information that researchers value, as well as how they describe their use of knowledge in decision-making during instruction. This type of investigation requires focusing more on teachers and their perceptions during instruction rather than what can be observed or measured from outside of practice.

The teacher education literature provides a model for theorizing and investigating how teachers use knowledge during instruction, thus providing a way to investigate knowledge in use. In order to examine theoretical conceptions of teacher knowledge, researchers in K-12 have been using multiple methods, including many qualitative approaches, to access or uncover teachers' knowledge in ways that are reflective of teachers' experiences. These studies and their continual application of new frameworks and methodological strategies have helped expand the field's understanding of knowledge used in teaching (Ben-Peretz, 2011).

For example in a seminal work, Shulman (1987), an eminent teacher education scholar and educational psychologist, conceptualized the process of assimilating knowledge to enact practice as "pedagogical reasoning" in a response to public policies focusing heavily on developing teachers' subject matter knowledge and specific instructional practices. Pedagogical reasoning is when teachers use various sources of knowledge to make pedagogical choices in the classroom. This could include a variety of knowledge, not just research-based knowledge, much of which could be about contextual variables such as students and curriculum. Crucial to the process of pedagogical reasoning is the way in which a teacher uses these sources of knowledge to make choices about instruction in order to facilitate students' learning. Utilizing this

conception focuses on the experience of the teacher and allows for insight into both the types of knowledge that she thinks about during instruction as well as how she uses knowledge to make moment-to-moment decisions.

Shulman's theory about pedagogical reasoning was developed based on research with K-12 teachers. Whether or not early childhood teachers engage in pedagogical reasoning during practice has not been explored. There are many possible outcomes from examining this process in early childhood teachers. First, it could be that early childhood teachers do not engage in pedagogical reasoning. Given the empirically developed knowledge base that researchers believe early childhood teachers need to work with young children, this seems unlikely. Rather, in this dissertation I assumed that early childhood teachers reason about their practice although we do not know the types of information or how this information is used to inform practice. Teacher education research on K-12 teachers may suggest possible sources of knowledge that early childhood teachers use in their reasoning about practice. However, it may be that early childhood teachers do not use the same sources of knowledge in their pedagogical reasoning. Examining early childhood teachers' pedagogical reasoning will help illuminate what this process looks like and the types of knowledge that they use in their thinking.

Present Study

The present study brings together research in both the early childhood education and the teacher education fields. The early childhood research lays the foundation for discussing what we currently know about early childhood teachers' knowledge, how we study that knowledge, and how we attempt to improve that knowledge through professional development focused on building teachers' knowledge of children's learning and skill development (e.g., Breffini, 2011; Downer, Kraft-Sayre, & Pianta, 2009; Hamre et al., 2012; Heisner & Lederberg, 2011; Neuman

& Wright, 2010; Powell, Diamond, Burchinal, & Koehler, 2010). In addition, the methodological design builds from the early childhood field's investigations of the variable ways that teachers and children spend their time in classrooms (e.g., Early et al., 2010; Fuligni, Howes, Huang, Hong, & Lara-Cinisomo, 2012) and information about teachers' credentials and experience as correlates with instructional quality (e.g., Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Early et al. 2006; Gerde & Powell, 2009) in order to purposefully recruit participants into the study.

The teacher education literature provides resources to use in informing the theoretical orientation and research methodologies, helping to shift the focus of the research to investigating teachers' reasoning about practice. Specifically, this research informs the use of a phenomenological approach (Alexandersson, 1995; Polkinghorne 1983) to conceptualizing teachers' pedagogical reasoning and its connection to observable practice and the implementation of a stimulated recall procedure for accessing teachers' pedagogical reasoning (e.g., Clark & Yinger, 1977; Gass & Mackey, 2000; Shavelson & Stern, 1981).

The present study shifts from investigating early childhood teachers' depth of knowledge to knowledge in use, conceptualizing this knowledge in use as pedagogical reasoning. Although researchers have identified particular types of knowledge that they deem important for teachers of young children to know, there may be other sources of information also informing these decisions. More importantly, pedagogical reasoning is a theory that underscores that reasoning is a process of using multiple sources of knowledge in order to make decisions in the classroom. Thus is it also important to understand how teachers use knowledge within the process of reasoning about practice. To that end this study asks the following overarching research question: *How do prekindergarten teachers reason during their moment-to-moment instruction?*

More specifically the study asks:

1. *What types of information do prekindergarten teachers use during their pedagogical reasoning about moment-to-moment instruction during whole-group and small-group language and literacy activities?*
2. *How do prekindergarten teachers use information to inform their pedagogical reasoning during their moment-to-moment instruction during whole-group and small-group language and literacy activities?*

The findings from this study complement and expand our growing understanding of early childhood teachers' work in the classroom and their use of knowledge to inform practice.

Focusing on teachers' descriptions of their reasoning during instruction provides insight into both the types of information that teachers use in this pedagogical reasoning but also how that information is used together within the process of pedagogical reasoning. Not only does this research help us understand teachers' own view of their work in the classroom and what they value during instruction but also can assist researchers in thinking about their work with teachers of young children, including the development of professional learning opportunities.

Overview of the Dissertation

The goal of this study is to begin to explore and describe teachers' pedagogical reasoning during two instructional activities and the types of information used to inform that pedagogical reasoning. I specifically shift away from the term "knowledge" to the term "information" to be as inclusive as possible of what may be informing teachers' pedagogical reasoning. How early childhood teachers use information in their reasoning about practice has not been examined in the early childhood literature, particularly from the teachers' own perspectives. Investigating teachers' pedagogical reasoning requires a theoretical approach that seeks to understand

teachers' experiences (Creswell, 2003; Marton, 1981) and a method for accessing that pedagogical reasoning. A phenomenological approach was used to design the procedure and frame the analysis of the data focusing on both describing the instruction but also understanding teachers' experiences using information to inform that instruction. Teachers' reasoning about practice was accessed using a stimulated recall procedure which provided access to teachers' own descriptions of their experiences during instruction.

There are seven chapters in this dissertation. Chapter Two begins by reviewing the literature relevant to my research questions in both early childhood and teacher education. This is done in order to make an argument for the need to study early childhood teachers' knowledge in use, conceptualize the process of pedagogical reasoning, and anticipate sources of information that may inform the pedagogical reasoning process. Next, Chapter Three describes the rationale for the research design, the data collection procedures, and the data analysis. In the fourth chapter, detailed descriptions of the participants, the schools, and the instructional contexts that were examined in this study are provided. I have a separate chapter on this in order to make visible how context and individual experience is connected to reasoning about practice. Chapter Five is the first of two findings chapters. In this chapter the types of information that teachers report using to reason about individual moments of instruction is discussed and general patterns in this use of information are examined. This chapter foregrounds the types of information in teachers' pedagogical reasoning about moment-to-moment instruction, addressing the first research sub-question. The second findings chapter, Chapter Six, focuses more specifically on teachers' individual moments of pedagogical reasoning in order to examine how this process and teachers' use of information is connected to their enacted practice, addressing the second

research sub-question. The study concludes in Chapter Seven by discussing the major findings and implications of this work.

Chapter 2 Investigating Knowledge in Early Childhood Research: Literature and Theory

This chapter reviews the literature in order to present an argument for the why and how we should investigate early childhood teachers' use of information to inform their moment-to-moment instruction. This chapter begins by examining research of early childhood teachers' knowledge including the types of knowledge typically investigated. It then argues for an expansion of our current research on knowledge to investigating knowledge in use. In order to conceptualize how and why to investigate knowledge in use, the theory of pedagogical reasoning from the teacher education literature is introduced. Next, as no one has examined the pedagogical reasoning of early childhood teachers, possible sources of information that may appear in early childhood teachers' pedagogical reasoning are suggested based on both the early childhood research as well as the K-12 teacher education research. The next chapter describes the research methods.

Why Study How Early Childhood Teachers Use Knowledge to Reason During Practice?

Knowledge for teaching is something that has been studied in both the fields of early childhood as well as teacher education and is commonly viewed as an important component of teachers' practice in the classroom. Researchers investigate knowledge for teaching because it is this information that teachers use to make instructional decisions in their classrooms. However, there are many ways in which researchers have examined knowledge (Ben-Peretz, 2011) and many types of knowledge that have been enumerated, particularly in K-12 teacher education research (e.g., Borko & Putnam, 1995; Clandinin & Connelly, 1988; Turner-Bisset, 1999).

Researchers in early childhood education have also identified knowledge, particularly about children's language and literacy development as well as "best-practices" or developmentally appropriate practices (e.g., NAEYC, 2009) that facilitate children's learning. The identification of knowledge for teaching has emerged from many empirical studies investigating how young children learn and develop skills, particularly as they relate to language and literacy instruction (e.g., Lonigan, Farver, Phillips, & Clancy-Menchetti, 1998; National Early Literacy Panel, NELP, 2008; Storch & Whitehurst, 2002, Whitehurst & Lonigan, 1998). From these types of studies early childhood researchers have seemed to reach a general consensus on the types of knowledge teachers need and practices they should engage in in order to facilitate children's learning. Based on these findings researchers frequently provide teachers with information about children's learning and skill development in order to help them improve their practice (e.g., Downer et al., 2009; Hamre et al., 2012; Neuman & Wright, 2010; Powell, Diamond, & Koehler, 2009).

In this section the research literature is used to make an argument for expanding our present research to investigate teachers' knowledge differently in early childhood research in order to see how teachers use knowledge to inform their reasoning during instruction. This is done by reviewing current methods in early childhood for examining knowledge and how these have been found to be problematic. Next an argument is made for attending to teachers' perspectives of their work. In the following section, pedagogical reasoning is introduced as a way of conceptualizing teachers' work and their use of knowledge to inform their instruction.

Assessing Teacher Knowledge

After identifying types of knowledge that early childhood teachers need for working with young children, early childhood researchers have frequently attempted to assess teachers'

knowledge or changes in teachers' knowledge over time. In early childhood education, many of the measures used to assess teachers' knowledge are based on surveys and tests created by researchers and/or course instructors (e.g., Breffini, 2011; Hamre et al., 2012; Hindman & Wasik, 2011). These types of tools are useful for measuring change before and after an intervention, are relatively easy to administer, and assist in the generalization of findings (Desimone & Le Floch, 2004; Snow & Van Hemel, 2008).

Many early childhood teachers perform very poorly on current measures of knowledge (e.g., Cunningham et al., 2009; Hindman & Wasik, 2011; O'Leary et al., 2011). One way to interpret this pattern is to say that teachers do not know the information that they need to know for teaching young children. Another possible interpretation is that these measures do not assess the knowledge about teaching that teachers have or value. In fact, researchers in both early childhood (Friesen & Butera, 2012; Hapoo & Maatta, 2011) and K-12 teacher education (e.g., Hiebert, Gallimore, & Stigler, 2002; Munby, 1982) have suggested that teachers value knowledge that is different from that valued by researchers.

An even larger issue with the use of tests and survey measures of knowledge is that researchers are often unable to connect performance on assessments to outcomes in the classroom. Some early childhood professional development models have found changes to teachers' knowledge related to their intervention (e.g., Breffini, 2011; Gerde, Duke, Moses, Spybrook, & Shedd, 2014; Hamre et al., 2012). However, an examination of this literature reveals that even when researchers found changes in teachers' knowledge as a result of professional development they did not always find changes in teacher practice or student outcomes. For example, Neuman and Cunningham (2009) did not see changes in teachers' practice after coursework only, even though they had improvement on the course test.

Sometimes changes in teachers' knowledge did not result in changes in teachers' practice that translated to student outcomes. In a study targeting teachers' knowledge, Cunningham, Zibulsky, and Callahan (2009) found that growth in teachers' content knowledge about phonological awareness through a year-long professional development did not result in changes in students' outcomes.² In both of these studies the researchers hypothesized that knowledge measured on tests may not be the same type of knowledge that teachers use during instruction. In addition, Neuman and Cunningham (2009) suggested that teachers were unable to translate theoretical knowledge gained in coursework into practice in the classroom.

The disconnect between measured changes in knowledge but no observable change in practice or student outcomes reported by some early childhood researchers may also be related to how one defines change and measures that subsequent change. It may be that changes are different than those hypothesized by researchers and are therefore not accounted for in measures employed by the study or are not easily seen with the current measures available in the field (Dickinson, Freiberg, & Barnes, 2011).

Specifically, the use of surveys may make it difficult to see how knowledge, either pre-existing or addressed during a professional development intervention, is implemented into complicated classroom contexts. Measures such as surveys or questionnaires do not capture the complexity of social interactions or relationships (Dickson et al., 2011; Marshall & Rossman, 2006) and, because of this, these measures may not identify how knowledge is used as teachers interact with children in the classroom. Thus, what teachers know and can answer on a survey

² Gerde, Duke and colleagues (2014) did find changes in teachers' practices although no changes in children's outcomes through a 10 hour professional development model. They suggest that perhaps teachers' practice did not change enough to influence child outcomes. However, their intervention was much shorter and they hypothesize that given more time the changes in teachers' practice may lead to quantifiable changes in children's outcomes.

may not reflect what they use or value when making instructional choices in the classroom.

Examining Teachers' Knowledge in Use

The studies above exemplify two difficulties with the current early childhood methods for examining teacher knowledge. First, it may be that knowledge teachers use during practice is different from that traditionally assessed in early childhood education. Second, it is unclear how teachers assimilate new knowledge into their current knowledge in order to inform instruction. These problems suggest a gap in understanding what types of knowledge teachers use in their instruction as well as how that knowledge informs teaching. Investigating teachers' knowledge use during practice can begin to address these issues.

Others in the field of early childhood have also asserted the need to understand teachers' decision-making or use of knowledge to inform instruction. In their 2009 position statement, NAEYC called on researchers to recognize "teacher knowledge and decision making as vital to educational effectiveness" (p. 2). They were not just identifying that knowledge is important but also asserting that how knowledge contributes to instructional decisions or practice is equally important. Their position is that researchers need to understand how using knowledge in decision-making is connected to teachers' practice.

Studying knowledge in use is also important as researchers in both in early childhood and teacher education have suggested that knowledge used in the act of teaching is different from theoretical or formal knowledge (e.g., Buchman, 1987; Hiebert et al., 2002; Carlisle et al., 2009). Investigating how teachers use knowledge during practice can illuminate the types of knowledge that inform early childhood teachers' moment-to-moment instruction. For example, Friesen and Butera (2012) used observations of preschool teachers' teaching and interviews about practice to uncover teachers' use of knowledge. They specifically asked teachers about their decision-

making processes and found that early childhood teachers in their study valued experience more than formal knowledge when making their instructional decisions. Without asking teachers about their practice, they would not have learned about how teachers used, what Friesen and Butera termed “practical knowledge,” to inform their teaching.

Understanding how knowledge is used in teacher thinking would also provide insight into how new knowledge gained in professional learning experiences is integrated with existing knowledge and used to inform practice. As Hindman and Wasik (2011) state, “...teacher knowledge is important to consider when we think about PD [professional development] because it lies at the heart of how new information moves from a manual or a coach to the teacher’s own classroom” (p. 352). Understanding how teachers of young children use knowledge when they think about their practice is important because, although there is a growing body of research examining ways to improve the practice of early childhood educators leading to gains in teachers’ language and literacy practices (e.g., Gerde et al. 2014; Dickinson & Caswell, 2007; Lonigan et al., 2011; Powell et al., 2010; Wasik, Bond, & Hindman, 2006), it is less clear what underlying mechanisms of professional development actually lead to changes in teachers’ instruction and children’s outcomes (Powell & Diamond, 2011; Wasik & Hindman, 2011).³

There is still much to be learned about how teachers interact with information presented during professional development and how this influences their classroom practice. Looking at knowledge in use, both the types of knowledge as well as how it influences practice, could provide a different way of understanding how teachers might use or assimilate knowledge gained from professional development. This would go a long way towards answering some of the

³ There is also evidence that these models do not contribute to lasting changes in teachers’ practice (e.g., Cunningham et al., 2009; Lieber et al., 2010; Sanford, DeRousie, & Bierman, 2012). This may suggest that researchers are not changing teachers’ knowledge in ways that influence practice in meaningful ways.

lingering questions in the professional learning research about the mechanisms that contribute to changes in teacher practice.

Shifting the focus on how we study early childhood educators' knowledge can enhance and complement the field's current understanding of teachers and teacher learning. However, in order to understand teachers' knowledge in use, we need to attend to teachers' perspectives of their work. Attending to teachers' perspectives on their work in the classroom provides an insight into information that they value, that may or may not be different than information that researchers value, as well as how they describe their use of knowledge in decision-making during instruction. This type of investigation requires focusing more on teachers and their perceptions during instruction rather than what can be observed or measured from outside of practice.

Although there is emerging evidence of the need to understand early childhood teachers' use of knowledge or decision-making during instruction, this process has received very little attention from early childhood researchers. Few early childhood researchers have examined decision-making and this process of decision-making using knowledge is largely under-conceptualized in the early childhood research literature. The teacher education literature provides a model for theorizing and investigating how teachers use knowledge during instruction, thus providing a way to investigate knowledge in use. In particular, there is a need to understand how teachers describe the process of using knowledge during decision-making as it is connected to their moment-to-moment instruction. This requires conceptualizing the use of information as an intentional process and focusing on teachers' role in this process. Within the teacher education literature is a framework for conceptualizing this process as pedagogical reasoning about practice (Shulman, 1987). This is described in the next section.

What is Pedagogical Reasoning and Why Study Early Childhood Teachers' Pedagogical Reasoning about Practice?

This section describes Shulman's theory of pedagogical reasoning as an internal process of assimilating knowledge to inform reasoning about practice. Then how this theory can help researchers in early childhood conceptualize the use of knowledge in instruction is addressed. Next the importance of teachers' pedagogical reasoning for illuminating teachers' perspectives on their work in the classroom and how investigating these perspectives can help expand the early childhood field's knowledge-base are discussed.

Pedagogical Reasoning

In order to set the grounds for identifying types of knowledge that K-12 teachers use to inform their practice, Shulman's introduced the notion of pedagogical reasoning (1987). He defines pedagogical reasoning as the act of bringing together multiple sources of knowledge to think about practice. Pedagogical reasoning can be informed by a variety of knowledge that teachers may use in order to think about and enact instruction and thus is a way of conceptualizing teachers' knowledge in use.

Pedagogical reasoning is the process of using knowledge in order to make instructional decisions. Recognizing that instructional decision-making as a process is particularly important in conceptualizing the work that teachers do in the classroom. Shulman describes teachers as intentional and rational actors who use knowledge to inform their actions during instruction. He writes:

As we have come to view teaching, it begins with an act of reason, continues with a process of reasoning, culminates in performances of imparting, eliciting, involving or enticing, and then is thought of some more until the process can begin again. (p. 13)

Within the conceptualization of pedagogical reasoning is the assumption that teachers act with intention and continue to be purposeful in their teaching, using the information that they have to inform their practice.

Using the conception of pedagogical reasoning as a way of thinking about how teachers use knowledge to inform their practice places the teacher at the center of research on teaching and practice. Understanding teachers' pedagogical reasoning necessitates understanding their perspectives, or internal thinking, about their moment-to-moment instruction in the classroom. This conceptualization assumes that teachers are making strategic decisions about instruction based on various types of information that is meaningful to them. Attending to teachers' perspectives allows us to understand the information that is valuable to them during instruction as well as how they use that information to make decisions about practice.

The next section describes how conceptualizing teachers as intentional actors and attending to their perspectives in order to uncover the types of information they use in their pedagogical reasoning can expand both our understandings of the early childhood teachers' work as well as methods currently used to investigate practice and knowledge. Investigating teachers' pedagogical reasoning will provide insight into how they perceive teaching and learning in their classrooms and how they use knowledge in relation to the classroom context.

Investigating Pedagogical Reasoning in Order to Expand Our Understanding of Practice

Pedagogical reasoning focuses on the internal processes that teachers engage in during teaching. Understanding teaching from the inside of practice and from teachers' perspectives is different than how early childhood research typically examines teaching and teachers. Currently, many early childhood measures do not take into account teachers' perspectives or are external to practice. For example, there is considerable quantifiable data about early childhood teachers'

instruction, gathered through research studies that involve observations of classrooms (e.g., Early et al., 2010; National Institute of Child Health and Human Development Early Child Care Research Network, NICHD, 2000; Pianta et al., 2005). These studies do not take into account teachers' perspectives on their teaching or experiences in the classroom and are unable to capture teachers' pedagogical reasoning in the classroom. Observation tools which evaluate or check for practices that researchers know to be effective for children's learning (e.g., Pianta, La Paro, & Hamre the Classroom Assessment Scoring System, CLASS, 2008; Smith & Dickinson the Early Language and Literacy Classroom Observation, ELLCO, 2002) are beneficial in determining whether or not teachers implement practices that we know contribute to children's learning. They are problematic, however, in that they do not help us understand the pedagogical reasoning that results in teachers' decisions to use those practices. Moreover, these measures look for the presence or absence of particular practices; they are not inclusive to everything a teacher might do in her classroom.

In addition to not having connections between actions and pedagogical reasoning, behaviors we think of as discrete and easily defined are perhaps much more complex in teachers' minds. The types of practices that observational measures in particular account for may not truly illuminate the complexity of reasoning about and subsequently implementing a particular practice in a classroom. For example, being contingently responsive to a child's question (one item on the CLASS, 2008) may involve a complex process of using pedagogical reasoning not immediately visible. Without understanding a teachers' pedagogical reasoning during instruction, it is difficult to know what types of knowledge it takes to implement that practice.

Similarly, we have surveys and tests that assess different components of teachers' knowledge, sometimes using practice-based questions, but separate from the context of teachers'

classrooms. Teachers may not use the same types of knowledge in their pedagogical reasoning about practice than that which is assessed with more traditional measures of knowledge (Carlisle et al. 2009, Cunningham et al., 2009; Grossman, 1990). Investigating teachers' experiences of pedagogical reasoning in the classroom would provide information about the types of knowledge they do use to inform their moment-to-moment instruction.

Further underscoring the need to investigate teachers' pedagogical reasoning is the fact that practice does not exist in isolation from contextual factors. Teachers' use of information to think about instruction is situated in particular social contexts which have meaningful impacts on instruction (Cohen, Raudenbush, & Ball, 2003; Lampert, 2001).⁴ Teachers work in classrooms with many different children and these classrooms are housed in a variety of school settings, each with their own curricular requirements. Managing these various contexts is a key part of the work of teaching. These contextual variables may inform or influence instructional decisions in ways that may not be visible without understanding how teachers interact with these variables as part of their reasoning about instruction. Understanding teachers' pedagogical reasoning provides insight into how contextual variables influence teachers' practice. This makes context more than just a causal or correlational variable in teachers' practice, moving it into something that informs teachers' pedagogical reasoning.

⁴ There are many researchers who discuss the import of social context in ways that influence teaching and learning such as Lave and Wenger (1991; Wenger, 1998) and their investigations of communities of practice. Other researchers, including Palinscar (1988), use a socio-cultural lens for the examination of teaching and learning, arguing that teaching and learning are situated in individual contexts where previous and present experiences inform and shape interactions. Some researchers use this framework to think about how teachers are learners in the classroom (Freeman & Johnson, 1998). I have specifically chosen the Cohen et al. (2003) and Lampert (2001) references as they discuss the interactive nature between teachers, students, and curriculum as they are embedded within specific social contexts (classrooms and schools). These contextual variables are closely aligned with the research design discussed in the next chapter.

Conceptualizing early childhood teachers as engaging in pedagogical reasoning recognizes teachers as autonomous actors in the classroom who make informed decisions about their practice based on multiple sources of knowledge (Shulman, 1987). It gives researchers access to what knowledge teachers think about and how that knowledge is used to inform practice. As Nel Noddings (1986) observes, “We rarely ask how things might be changed so that teachers can accomplish the work that they see as *teaching* [her emphasis]” (p. 502). By understanding and valuing teachers’ experiences we can learn more about how they reason about their practice and use knowledge. The more the field learns about how teachers perceive their instruction and work in the classroom the better adept we will be at designing professional learning opportunities.

What Types of Information Might Early Childhood Teachers be Using to Inform their Pedagogical Reasoning?

Although the theoretical orientation of the present study assumes that early childhood teachers engage in pedagogical reasoning about their practice, presently, there are no investigations of early childhood teachers’ pedagogical reasoning and few of early childhood teachers’ decision-making processes. Thus there is limited research from the early childhood field to suggest what information might inform the pedagogical reasoning of teachers of young children. This section examines the early childhood research to see if there are possible indications of the types of knowledge teachers might use in their pedagogical reasoning. Whereas early childhood teachers frequently have different backgrounds and experiences from traditional K-12 teachers (Whitebook, Gomby, Dellm, Sakai, & Kipnis, 2009) an examination of the teacher education literature may also suggest possible sources of knowledge that could emerge in teachers’ pedagogical reasoning. Therefore, the K-12 teacher education research

literature is also used in order to anticipate possible sources of knowledge or information that may appear in early childhood teachers' pedagogical reasoning.

Early Childhood Literature

As discussed previously, researchers in early childhood education have focused a great deal on teachers' knowledge about how children learn and develop skills both through measurement tools (e.g., Hindman & Wasik, 2011; O'Leary et al., 2010) and through professional development (e.g., Breffini, 2011; Downer et al., 2009; Hamre et al., 2012; Heisner & Lederberg, 2011; Neuman & Wright, 2010; Powell et al., 2010). Given the importance of this information in the field, this may be one type of information informing teachers' pedagogical reasoning. Given the mixed literature on the connections between this knowledge and practice, however, it is difficult to anticipate the role of this type of information in early childhood teachers' pedagogical reasoning.

There are other sources of information that may also influence teachers' pedagogical reasoning. Correlational studies in early childhood education do seem to indicate that early childhood specific educational experiences are linked to better instruction (e.g., Gerde & Powell, 2009; Pianta et al., 2005). Other researchers have also found that more experience may positively contribute to teachers practice (e.g., NICHD, 2000). The role of experience in informing teachers' reasoning about practice is also supported by Friesen and Butera's (2012), qualitative investigation where early childhood teachers reported that they used knowledge gained through teaching experiences in order to inform their instructional decisions. Since there is a connection between practice and educational as well as teaching experience in the early childhood research literature, these background experiences may also emerge as sources of information used in in early childhood teachers' pedagogical reasoning.

K-12 Teacher Education Literature

One way to anticipate the types of knowledge that could emerge in early childhood teachers' reasoning about practice would be to look at the categories of knowledge proposed by Shulman (1987) in the same paper in which he presented the theory of pedagogical reasoning. These are: content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge (PCK), knowledge of learners and their characteristics, knowledge of educational contexts, and knowledge of educational ends (p. 8). Some of these categories of knowledge seem to overlap with what researchers in early childhood have identified as important, specifically as they reflect types of knowledge about how children learn and develop skills.

Other researchers in teacher education have also identified similar categories of knowledge to those proposed by Shulman as important for teaching. Sometimes they use the term subject matter knowledge but they also emphasize the need for knowledge about learners' development (e.g., Borko & Putnam, 1995; Bransford, Darling-Hammond, & LePage, 2005; Turner-Bisset, 1999). Some researchers in teacher education have also focused specifically on pedagogical content knowledge, (e.g., Grossman, 1990; Harris & Bain, 2010) although this is a very specific type of knowledge for teaching. Based on this prevalence in the literature, content knowledge or subject matter knowledge and general knowledge about how children learn might be present in early childhood teachers' pedagogical reasoning.

Shulman's list also includes knowledge that is more specific to classroom environments such as knowledge of the curriculum or knowledge about the specific learners. Researchers in teacher education have also discussed the importance of contextual information in teacher decision-making (e.g., Cohen, et al., 2003; Lampert, 2001) and this may be something that

appears in early childhood teachers' pedagogical reasoning. Also mentioned by Shulman is a category of knowledge about educational ends. This has emerged in other researchers' investigations of decision-making about practice along with the role of goals and strategies in teachers' use of knowledge (e.g., Wagner, 1987). These sources of information, about context and goals, may inform and influence early childhood teachers' pedagogical reasoning as well.

Some researchers have developed their own categories of teacher knowledge broadening the categories of information teachers use to inform their pedagogical reasoning (Ben-Peretz, 2011). Importantly, these conceptualizations have expanded to include an understanding of how experience is used in thinking about practice. For example, Elbaz (1983) argues that teachers hold practical knowledge and that knowledge is oriented in different ways and this influences both its storage and its use. Other researchers have built from Elbaz's work to incorporate experience as a type of teacher knowledge (e. g. Clandinin & Connelly, 1988; Hiebert et al., 2002). Thus, like in the early childhood literature, the teacher education research suggests that experience may also emerge in early childhood teachers' pedagogical reasoning about practice.

There are many types of knowledge that may inform early childhood teachers' pedagogical reasoning about practice. The early childhood research literature seems to suggest that knowledge about how children learn and develop skills is important information to use in teaching. Correlational research in early childhood education may also indicate that formal training and previous experience influence reasoning practice. Looking to the K-12 teacher education literature provides another way of anticipating the information that could inform teachers' pedagogical reasoning. Although there are various ways that researchers categorize and label knowledge for teaching, it may be that the categories of knowledge identified by Shulman along with knowledge from experience may also emerge in early childhood teachers'

pedagogical reasoning.

Present Study

This study employed a phenomenological approach in order to describe teachers' pedagogical reasoning about practice. How teachers use information in their reasoning about practice has not been examined in the early childhood literature, particularly from the teachers' own perspectives. The goal of this study was to begin to explore and describe teachers' pedagogical reasoning during instruction; both the types of information used to inform pedagogical reasoning as well as how information is used within their reasoning process. A phenomenological approach was used to design the procedure and frame the analysis of the data focusing on both describing the instruction but also understanding teachers' experiences using information to inform that instruction. This is described in detail in the next chapter.

Chapter 3 Methods

The rationales for the research design as well as the methodologies for the data collection and the data analysis are described in detail in this chapter. First, this chapter begins by describing phenomenology and its use as a theoretical approach to investigating teachers' pedagogical reasoning. Then the stimulated recall research method and the rationale for using it in this study to access teachers' pedagogical reasoning is explained. The next section describes the methods and includes a description of the original research contexts of setting and instructional activities in the study's design. The rationale for the research designs are grounded in the early childhood and teacher education literature and the research traditions of these fields. The subsequent chapter offers more nuanced information about the research context and differences between the design and the contexts actually studied. Then a description of the data collection procedures is described. This chapter concludes by describing the analytic methods used to support the findings presented in Chapters Five and Six.

Research Design

This section describes the rationale and use of phenomenology as the theoretical orientation to the study. Next an examination of how other researchers have studied teacher knowledge in use and the rationale for the use of a stimulated recall within this study is provided.

Phenomenology as a Philosophy and a Method for Studying Teachers' Pedagogical Reasoning

Teachers' reasoning about practice cannot be studied from the outside using external measures. Rather, in order to describe teachers' experiences of teaching and their use of

information during instruction, there must be a means for teachers to talk about their pedagogical reasoning. This section explains how phenomenology can be used as a philosophy and a method for understanding teachers' pedagogical reasoning during instruction and the affordances of this framework for addressing the research questions posed in this study.

Phenomenology is both a philosophy and a research method (Creswell, 2003) that seeks to describe individuals' experiences with a particular phenomenon (Alexandersson, 1995). Marton (1981) describes phenomenological investigations as research that aims at "description, analysis, and understanding of experiences" (p. 180). It is an orientation to research that strives to understand individuals' experiences in a particular setting.

There are two equally important components to phenomenological work, both describing the phenomenon as well as describing the participants' experiences of the phenomenon. Therefore, in this type of investigation, the researcher explains both *what* the individuals experienced and *how* they experienced it (Creswell, 2012; Polkinghorne, 1983). Marton (1981) differentiates between these two types of data. The description of the visible he labels "first-order data" and the perceptions of individuals as "second-order data" (Marton, p. 178). These two labels are useful for differentiating between the description of the phenomenon and the experience of the phenomenon.

In the context of this study, phenomenology is a way of understanding how teachers' reason about their practice as it is enacted in the classroom. In this sense, phenomenological research moves beyond traditional measures used to evaluate practice or assess teachers' knowledge in order to connect teachers' experiences, their pedagogical reasoning, with their

enacted practice.⁵ Freeman (1996) describes this as a shift “from examining actions to examining the perceptions on which those actions are based” (p. 222). In this way we can see how teachers use information in order to think about their visible instruction. For the purposes of this study, a phenomenological approach will help describe teachers’ reports of their reasoning during instruction, second-order data, with what is visible about their instruction, first-order data. Both of these components are equally important, both the teaching and what teachers’ say about their teaching.

The use of first-order versus second-order data is not meant to set up a contrast between what is observed and teachers’ pedagogical reasoning. Rather it is important in providing insight into teachers’ own descriptions of their reasoning about their practice. The second-order data is means for understanding the participants’ (the teachers’) point of view. The second-order data is how teachers describe their experience of the phenomenon.

This approach assumes then, that what teachers say about their pedagogical reasoning is equally as important as what they do in their practice. Investigating teachers’ experiences of the use of information in pedagogical reasoning can help address questions about what types of information teachers use and how that is related to their instruction. As Creswell (2003) observes about phenomenological research, “In this situation the researcher seeks to establish the meaning of a phenomenon from the views of participants” (p. 20). A phenomenological approach

⁵ There are many ways that researchers have employed phenomenology as an approach to understanding teaching and learning to teach. For example, Ora Kwo (1996) used a phenomenological approach to understand student teachers’ shifting perspectives of the work of teaching. She examined second-order data collected through student teachers’ written reflections in relation to first-order data collected through observations of their student teaching. Kwo described how the student teachers’ perceptions of teaching shifted over time in relation to their changes in practice. This type of data provided insight into teachers’ own views of their changing knowledge. It offered an alternative way of investigating how experience influences instruction using second-order data and analysis which provided access to student teachers’ experiences of learning, different from what could be learned from external measures of knowledge typically used in student teaching coursework.

provides insight into how teachers experience moment-to-moment instruction. It can account for various types of information influencing teachers' pedagogical reasoning because it allows for teachers to describe their use of information, whatever it may be.

A phenomenological approach incorporates context into the investigation of the phenomenon and experience. Thus in the case of this study it allows for not only seeing how teachers reason about practice but also how various environmental factors are part of the phenomenon itself. Moreover, it also provides an alternative way of conceptualizing how knowledge or information is used in teaching. Davis and Sumara (1997) state that knowledge is often described by researchers as an object or a "third thing" (p. 109), separate from the context and the phenomenon. In their phenomenological approach to research, however, they assert that knowledge exists within the intersection between an individual and the environment.

Understanding knowledge or information and its relationship between both the individual and the context (environment) are important for thinking about teachers' work in classrooms and schools. This may be particularly important as researchers try to understand how teachers assimilate new knowledge into their teaching practices (Wasik & Hindman, 2011).

Although there are multiple phenomenological approaches (Creswell 2012; Polkinghorne, 1983), the phenomenological approach in this study is used as a means for attending to the perspective of the teacher as she reasons about her instruction in the classroom. It focuses the investigation on both what is happening in a teacher's moment-to-moment instruction as well as how the teacher is using information to reason about those moments of instruction. The phenomenological perspective provides a way to conceptualize data collection and analysis but there still needs to be a method for collecting first-order and second-order data.

How Can We Access Teachers' Pedagogical Reasoning During Instruction?

There are many ways that researchers using a phenomenological approach have studied a phenomenon and investigated participants' experiences. For example, Kwo (1996) used observations of practice and employed a content analysis of teachers' journals to collect both first-order and second-order data about student teachers' experiences. Other researchers have used a phenomenological approach to study teaching and teacher learning but have employed differing research methodologies. Roth, Masciotra, & Boyd (1999) also used journal records but employed a case-study methodology to describe first-order data about teaching. Freeman (1996) used in-depth case-studies built from data collected through interviews, observations, and document analysis. Others have used videos of instruction along with stimulated recall interviews to access teachers' perspectives on their instruction (e.g., Alexandersson, 1995). In all of these cases, researchers provided a description of the phenomenon as well as an analysis of teachers' experiences of the phenomenon.

In order to use a phenomenological approach to investigate teachers' pedagogical reasoning and address the research questions proposed in this study, there were two things that the research method needed to do. First, it had to be able to capture how teachers used information in action and second, it also had to provide insight into teachers' use of information during pedagogical reasoning. A stimulated recall procedure, based on videos of teachers' instruction, provided access to both first-order and second-order data.

This section provides a rationale for the use of a stimulated recall procedure for accessing teachers' pedagogical reasoning during instruction. It begins by quickly reviewing various strategies that K-12 researchers in teacher education have previously employed to examine teachers' use of knowledge. Then the evolution of the stimulated recall procedure within the

teacher education research is described. Finally, how the procedure can be used within a phenomenological approach in order to investigate how early childhood teachers use information to inform their pedagogical reasoning is described.

Ways that Researchers Have Examined Teacher Knowledge in Use

Researchers investigating teachers and teacher learning in K-12 education have been successful at learning more about teachers' use of knowledge through a shift in research methodologies (Noffke & Zeichner, 2006). These researchers have used multiple methods, incorporating many qualitative approaches to understand teachers' knowledge and its use during instruction. These methods include: different types of interviews (e.g., Elbaz, 1983; Grossman & Richert, 1988), stimulated recall (e.g., Gatboton, 2008; Rich & Hannifin, 2008), teacher journaling (e.g., Yinger & Clark, 1981), autobiographies and personal narratives (e.g., Clandinin & Connelly, 1988; Tamir, 1991), case studies (e.g., Edwards & Ogden, 1998; Yee Fan Tang, 2003), and content analysis (e.g., Gorski, 2009). All of these different research methodologies have allowed investigators to learn about different components of teachers' knowledge and use of that knowledge in instruction.

One methodology that researchers have used to access teachers' internal processes is stimulated recall. In a stimulated recall interview, instruction is recorded and afterwards teachers view or listen to their teaching and describe their internal activities during the instruction (Clark & Yinger, 1977; Gass & Mackey, 2000; Shavelson & Stern, 1981). This process is a way of examining non-visible components of teaching without actually interrupting the act of teaching.

Evolution of Stimulated Recall within Teacher Education Research

The use of stimulated recall interviews in teacher education research developed from a cognitive processing orientation to teaching that viewed teaching as decision-making (Clark &

Peterson, 1976; Clark & Yinger, 1977; Fogarty, Wang, & Creek, 1983; Gilbert, Turdel, & Haughian, 1999; Parker & Gehrke, 1984; Peterson & Clark, 1978). Researchers have looked for differing interview structures that can provide access to higher order mental processes such as judgment, problem solving, and thinking. Those interested in learning more about thought processes have turned to individuals' verbal reports or recall of their cognitive processes. Verbal recall, however, is often limited in how much individuals are aware of and can remember (Ericsson & Simon, 1980; Nisbett & Wilson, 1977). Introducing a video stimuli, called "stimulated recall," where individuals are shown videos of their behavior in order to recall cognitive activity during the behavior, allows access to these mental processes while providing context to assist in the recall (Lyle, 2003; Shavelson & Stern, 1981). This procedure provides an entrée into an individual's internal perspective and has been used to investigate the thinking of coaches (e.g., Gilbert et. al, 1999; Lyle, 1999), nurses (e.g., Daly, 2001; Hansebo & Kihlgren, 2001), counselors/psychologists (e.g., Martin, Martin, Meyer, & Slemon, 1986; Salvatori, Baptiste, & Ward, 2000) and teachers.

Over time, researchers broadened the use of stimulated recall to look at the types of knowledge that teachers used to inform their decisions and thinking during instruction (e.g., McAlpine, Weston, Berthiaume, & Fairbank-Roch, 2006), teacher feelings and judgments during instruction (e.g., Westerman, 1991), and teacher explanations for decision-making (e.g., Butefish, 1990; Rich & Hannafin, 2008). This process is especially useful in examining non-visible components of teaching without actually interrupting the act of teaching (Clark & Yinger, 1977; Gass & Mackey, 2000; Shavelson & Stern, 1981).

Researchers have used this procedure with a variety of different types of teachers including pre-service teachers (e.g., Rich & Hannafin, 2008), elementary school teachers (e.g.,

Dunkin, Welch, Merrit, Phillips, & Craven, 1998; Westerman, 1981), secondary teachers (e.g., Butefish, 1990; Clark & Peterson, 1976), higher education faculty (e.g., McAlpine et al. 2006), and special education teachers (e.g., Stough & Palmer, 2001). Stimulated recall has been used to investigate different instructional activities such as lectures (Bloom, 1953) or instruction in different content areas like social studies (e.g., Clark & Peterson, 1976; Dunkin et al., 1998), math and science (e.g., Butefish, 1990; Nilsson, 2008), and foreign language instruction (e.g., Gatbonton, 2008).

Use of Stimulated Recall to Investigate Teachers' Pedagogical Reasoning

A stimulated recall procedure can provide access to both first-order data of teachers' instruction and second-order data of teachers' pedagogical reasoning about instruction. Using this methodology to investigate early childhood teachers' pedagogical reasoning about instruction can help us understand teachers' experiences in the classroom. Learning more about early childhood teachers' pedagogical reasoning and how it is connected to their visible practice can help understand both the types of information that teachers use as well as how that informs their instruction. This is a key step for developing more effective models of professional learning.

The next sections explain the research methods employed in this study. First the research context and the rationale for their selection are described. This is followed by the procedures used for data collection and data analysis.

Research Contexts

There were two main research contexts for this study. There are two school settings, each with four teachers representing various background characteristics. There are also two instructional activities of whole-group circle time/morning meeting and small-group language

and literacy activities. Understanding these research contexts is especially important from a phenomenological approach as “any account of experience will be particularly bound by context” (Alexandersson, 1985, p. 596). Thus the contexts are influential in the experience of the teacher and also form the foundation for the description of the phenomenon.

The next sections describe the way I conceptualized the design of the study. I employed purposeful sampling (Patton, 2002) in order to intentionally recruit participants. Based on observational measures of instruction, there is much information about early childhood classrooms and early childhood teachers’ observable practice. There is also a tradition of research on experience and its relationship with practice in the K-12 field. Both of these literatures informed the research design. My intention, however, was not to use the design criteria in order to be able to make claims about the generalizability of the data. Rather, drawing from these two literature bases to develop the research design allowed me to attend to teacher characteristics that have been found to be related to practice and may influence pedagogical reasoning.

In the next sections, these research bases are used to support the design choices related to the research contexts. More in-depth descriptions of the research contexts are provided in the next chapter (Chapter Four). This section is followed by a description of the data collection procedure and the analytic methods.

School Settings

Schools in this study were recruited for participation based on their sizable enrollment and the number of classrooms at their centers, thus increasing the possibility of finding four teachers per school who met the criteria for the study, described below. Using two different schools allowed insight into possible differences in teachers’ pedagogical reasoning and use of

information based on the school environment. Two early childhood centers in one large Midwestern city, the Friendship School and the ABC School,⁶ agreed to participate in the study. The schools served similar children and were both faith-based organizations. Each school had different learning goals for children as well as different center-wide structures for how content was to be delivered to children. For example, to address letter learning the Friendship School implemented a letter of the week curriculum and the ABC School used a published workbook-based program entitled *Beginning to Read, Write, and Listen K-1* (MacMillan/McGraw-Hill, 1995). Throughout the study, a school's learning goals and delivery mechanisms for content are referred to broadly as "curriculum." The next chapter provides more details about the schools and the school environments.

Participants

Four teachers from each school agreed to participate in the study. All of the teachers worked with prekindergarten children, four to five year olds. Within schools, broad markers for variations in individual teachers' knowledge gained both through formal education as well as through classroom experiences were used to differentiate various sources of information that might emerge in pedagogical reasoning. The design planned for four consenting teachers from each school to be selected so that they were equally representative of formal education and years of teaching experience, see Table 3.1. The specific design and support from the literature is provided below. More information about the actual participants' characteristics is provided in Chapter Four.

⁶ School names have been changed.

Table 3.1

Prospective Teacher Characteristics by School

	Degree Attainment	
Years of Experience	Participant 1: <ul style="list-style-type: none">• No/unrelated B.A.• 5 or fewer years of teaching experience	Participant 2: <ul style="list-style-type: none">• B.A. in early childhood related field• 5 or fewer years of teaching experience
	Participant 3: <ul style="list-style-type: none">• No/unrelated B.A.• More than 5 years of teaching experience	Participant 4: <ul style="list-style-type: none">• B.A. in early childhood related field• More than 5 years of teaching experience

Formal knowledge. Degree attainment in an early childhood related field served as one way of examining teachers’ use of information to inform their pedagogical reasoning. Formal knowledge gained from educational experiences may impact how teachers use information during instruction. This formal education in early childhood, defined as a bachelors or an advanced degree in an early childhood related field, was used to differentiate between teachers’ formal educational experiences. This design choice was based on the extensive, although mixed, research findings in early childhood about the relationship between degree attainment and practice. In findings from correlational studies, degree attainment is linked to better classroom instruction (Barnett, 1995; Campbell et al., 2002; Reynolds, Temple, Robertson, & Mann, 2002; Schweinhart, Barnes, & Weikhart, 1993) and has been found to have a null effect (Early et al. 2006) or minimal impact on instruction (Fuligni, Howes, Lara-Cinisomo, & Karoly, 2009; Phillips, Mekos, Scarr, McCartney, & Abbott-Shim, 2000; Vu, Jeon, & Howes; 2008). When teachers hold degrees directly related to working with young children, this does appear to influence language and literacy practices (Gerde & Powell, 2009; Pianta et al., 2005). Thus the

design looked at degree attainment related to early childhood education as a means for differentiating between formal educational experiences.

Teaching experience. Another way of examining teachers' pedagogical reasoning and use of information is through their experience, simply described here as the number of years they have been teaching in preschool classrooms. A five-year cutoff was used as a way of differentiating inexperienced and experienced preschool teachers as it is commonly referred to as a key year for teacher experience and instructional quality (Palmer, Stough, Burdenski, & Gonzales, 2005; Rivkin, Hanushek, & Kain, 2005). The research in both early childhood and K-12 is mixed about the connection between years of experience and higher quality instruction. There is evidence that teaching experience makes a difference for instruction (Berliner, 1986; NICHD, 2000; Rivkin et al., 2005). Yet, other researchers have found that experience only has a minimal impact on instruction (Guarino, Hamilton, Lockwood, & Rathbun, 2006; Nye, Konstantopoulos, & Hedges, 2004). This design was one way to account for if different levels of experience influenced pedagogical reasoning about practice.

Instructional Activities

The context of the instructional activity should influence teachers' pedagogical reasoning as different instructional activities have different structures and pedagogical aims. For the purposes of this study, two instructional activities were observed. This allowed insight into pedagogical reasoning in two activities in order to see if there were differences in the use of information to inform pedagogical reasoning across these instructional contexts. Selecting only two instructional activities comprised of various practices (Lampert, 2010) narrowed the scope of what could be observed while still leaving plenty of opportunities to access teachers' pedagogical reasoning.

The two instructional activities observed were whole-group instruction time, commonly referred to as “morning meeting” or “circle time,” and small-group language and literacy activities, often occurring during choice or center-time. These two instructional contexts were chosen because of their common frequency within early childhood classrooms as well as their potential role as activities that foster language and literacy learning.⁷ Next, the design choices along with the research supporting the decision to include these instructional activities into the study are discussed. Chapter Four provides a more comprehensive picture of how these activities were implemented at the participating sites.

Whole-group time. Whole-group instruction was chosen as one instructional activity for investigation as research has shown that teachers spend a large percentage of class time engaging children during whole-group activities (e.g., Early et al., 2010; Fuligni et al., 2012). Circle time or meeting time was selected for this study as it is an instructional context that is often associated with the delivery of curricular content (Early et al., 2010; Han, Roskos, Christie, Mandzuk, & Vukelich, 2005) and developing of children’s language and literacy skills (Dickinson & Smith, 1994; Han et al., 2005; Yifat & Zadunaisky-Ehlich, 2008). Circle time can be used to deliver other academic content including math (e.g., calendar), science, and social studies but is often an opportunity for language and literacy instruction; especially given the reliance on teacher language to deliver instructional content to children.

⁷ For the purpose of this study I have chosen to focus on language and literacy instruction as the majority of research on professional development has focused on language and literacy development along with socio-emotional development. (Snyder et al. 2012; Zaslow, Tout, Halle, Whittaker, & Lavelle. 2010). Moreover, many of the studies examining early childhood teachers’ knowledge and its relation to practice have focused on knowledge of developing language and literacy skills or teaching reading skills (e.g., Cunningham et al., 2009; Hindman & Wasik, 2011; O’Leary et al., 2011).

Small-group language and literacy activities. Language and literacy is an important component of early childhood classroom instruction (e.g., Burns et al., 2001; NELP, 2008; Snow et al., 1998). A dedicated language and literacy activity was selected for inclusion in the study because it was an opportunity to access teachers' pedagogical reasoning specifically about instruction related to language and literacy development. Although young children are not engaged as frequently in language and literacy activities (Early et al., 2010; Fuligni et al., 2012), instruction does occur within classrooms. Language and literacy developmental goals are key part of many frameworks for early learning standards (e.g., Michigan State Board of Education, 2013; NAEYC, 2009) and are a mandated component of the Common Core State Standards for K-12 (Common Core Standards Initiative, 2010). Thus it was deemed important to examine this instructional activity as teachers will be spending more time engaging in language and literacy instruction and this is already a strong focus of professional development research (Snyder et al. 2012; Zaslow et al. 2010).

The research contexts included the two school settings and two instructional activities. Detailed information about these contexts and the participants is provided in the next chapter.

Data Collection

Data collection lasted approximately one month, with data collection occurring simultaneously at both participating schools depending on teachers' schedules. Three types of data were collected in order to investigate both the types of information and how that information was used in teachers' pedagogical reasoning about practice. This included: 1) background information about teachers and schools collected through teacher questionnaires and interviews as well as interviews with center directors, 2) first-order observational data of the instructional activities as they were implemented, and 3) second-order data of teachers' reports

of their reasoning during instruction, data that was essential in understanding teachers' experiences. Methods for collecting the three types of data are described next.

Background Information

Different types of background information about both the school settings and the participants were collected. These types of information are described below, and the next chapter presents a more detailed description of the schools and teachers, including this background information.

Information about the school settings. Information about each school was collected through interviews with the center directors and obtaining curricular and promotional materials. Each center director was interviewed once prior to the start of the study, in order to gain information about the schools. These interviews were informal and a semi-structured interview protocol was used to ensure that similar information was gathered about each school, see Appendix A. These included a discussion of the types of families attending the school as well as the curricular focus of the school. During these interviews, directors discussed how the curriculum for the school was developed and their perspectives on the purpose of early childhood education. The directors also talked about lesson planning requirements and their expectations for teachers' implementation of the curricula. These interviews lasted about thirty minutes and started in the directors' offices but also continued during tours of the schools. The office interview portion of the meeting was audio-recorded and later transcribed. In these meetings the directors provided copies of published curriculum documents that they distribute to both families and the classroom teachers.

Information about teachers. Basic demographic information about teachers' backgrounds was collected through their completion of a survey in order to obtain information

related to the study inclusion criteria, see Appendix B. Prior to the start of the second stimulated recall interview, each teacher was asked to expand upon the information provided on the survey. Specifically, they were asked “What ages or grades were the focus of your degree work?” as well as “Have you taught other age/grade levels besides preschool? What were they?” This allowed insight into the age/grade levels studied during formal educational experiences as well as a more nuanced description of the teachers’ previous teaching experiences. Informal conversations with the teachers prior to and during the study also occurred. These provided insight into teachers’ personalities and views on teaching although they are not directly related to the stimulated recall interviews or included in the data analysis.

First-Order Data Collection

Each teacher was observed and video-recorded twice during whole-group circle time instruction and twice during language and literacy instruction. The video camera was set up in the classroom prior to the beginning of the instructional activity. Each instructional activity was recorded in its entirety, regardless of the length of the activity. There was variation in the length of teachers’ instruction both across teachers and instructional activities. Whole-group activity time ranged from 10 to 36 minutes ($M = 22.78$, $SD = 9.85$) and small-group language and literacy activity time ranged from 6 to 34 minutes ($M = 22.16$, $SD = 9.55$), all times were rounded to the nearest half-minute. More description of these activities is provided in the next chapter. The camera was focused on the teacher following her instruction and, as much as possible, children were not visually recorded during instruction.

Due to scheduling differences between the schools, the observations occurred differently. At the Friendship School, two teachers were generally observed in one day, each engaging in one instructional activity. At the ABC School, one teacher was typically observed each day, engaging

in the two different instructional activities. There were four observations per teacher, two of each instructional activity. This process resulted in 32 observations of teachers' instruction. This is displayed visually in Table 3.2.

Table 3.2

Distribution of Data Collection Over Time and Instructional Activity By: Individual Teacher, School, and All Participants

	Whole-group circle/meeting	Small-group language and literacy
Time 1	1 per teacher 4 per school 8 total	1 per teacher 4 per school 8 total
Time 2	1 per teacher 4 per school 8 total	1 per teacher 4 per school 8 total

Field notes were also taken during the observations of instruction. This served two purposes. The field notes were a means for recording information about the classroom environment and impressions of the teacher and children. Field notes were also used to record moments of practice to revisit during the stimulated recall interviews. These were moments where there was some indication that teachers were reasoning about their instruction, based on pre-determined criteria. This procedure is discussed in more detail in the stimulated recall procedure section of this chapter.

Second-Order Data Collection

Teacher interviews about planning and stimulated recall interviews about instruction were used to access pedagogical reasoning. Both were video-recorded.

Interviews about planning. Prior to the start of instruction, each teacher was asked about her plans for the activity to be observed. In general these interviews occurred in teachers' classrooms as they were preparing for their day. The average planning interview lasted about a

minute and a half ($M = 1.66$, $SD = 1.24$, times were rounded to the nearest half minute). Often children were present and families were coming in and out to drop off their children. Although teachers at both sites were required to write lesson plans for the week and submit them to the director, the physical lesson plans only contained the name of the activity, not specific information about how the activity would be implemented. As a result, the planning interviews were typically based on a discussion of the teachers' mental plans for the activity and may be part of the reason that the planning interviews were so brief.

Teachers were asked two short, open-ended questions about their plans, "What is your plan for whole-group/language and literacy instruction today? Why did you plan that/those activities?" (See Appendix C for the planning interview protocol.) There was a range in the detail of information that teachers provided about their plans. When discussing their plans for whole-group time teachers frequently discussed using a set routine for their circle time instruction. There was more variation in the discussions of language and literacy instructional plans.

The planning interviews were a way to facilitate the stimulated recall interviews. They provided insight into the participants' perceptions of activity, its sequence of events, and sometimes the rationale behind the individual practices. This is different than the types of information that one can gather simply from observing the activity. The planning interviews also provided insight into where teachers' enacted instruction deviated from their planned instruction, as can often be the case during teaching. These deviations were important for the stimulated recall interviews, described below. Whereas there are many ways that data from the planning interview could be used, for the purposes of this study, which seeks to understand how teachers reason about their moment-to-moment instruction, the planning interview data was used to help

inform the stimulated recall interviews.⁸ Other researchers have used data gathered in planning interviews to make connections with observed instruction (e.g., Fogarty et al., 1983; Gilbert et al., 1999; Mcalpine et al., 2006).

Stimulated Recall Interview Procedure

There were several steps to the stimulated recall procedure. They are described below.

Before the stimulated recall interview. After observation, all videos of instruction were transferred to a secured external hard drive connected to a laptop. Prior to the stimulated recall interview, each observation video was reviewed along with the corresponding field notes in order to select moments in which teachers might have been reasoning about their instruction. These were selected for use in discussions of teachers' pedagogical reasoning. Generally, decisions about which moments to select for the stimulated recall interview were informed by information gathered during the planning interview, child error or questions, and the enactment of instructional moves typically considered "best-practices" in early childhood education based on research (e.g., Bowman et al, 2001; Snow et al, 1998; NAEYC, 2009) and observational measures of practice (e.g., Pianta et al., CLASS, 2008; Smith & Dickinson, ELLCO, 2002). The various indicators that teachers may be reasoning about their instruction are presented in Table 3.3 along with the corresponding rationale for why these types of moments could indicate teacher pedagogical reasoning.

⁸Data collection about lesson planning, also referred to in the research on decision-making as 'pre-active' decision-making (Clark & Peterson, 1984; Westerman, 1991) has been used to provide insight into the thinking about practice that teachers engage in prior to instruction as well as the knowledge that they use to inform their planning and intended instruction (Fogarty et al., 1983; Gilbert et al., 1999; Mcalpine et al., 2006). Arguably, planning is an important part of teaching and does require the use of knowledge, which may be different than the knowledge used during instruction. This type of knowledge use, however, is not the focus of the present study.

Table 3.3*Instances of Instruction that May Indicate Pedagogical Reasoning Used in the Stimulated Recall Interview*

Visual cue	Examples from data	Rationale
Teacher deviates from plan described during the planning interview.	Teacher stops the audio recording mid language and literacy activity to clarify the task for children or teacher skips an activity that she said she would do	<i>When the teacher deviates from her intended plan it may indicate that she was reasoning about something that would lead her to that decision (Fogarty et al., 1983; Gilbert et al., 1999; Mcalpine et al., 2006).</i>
Student error or student generated question/exclamation	Child responding incorrectly with, “Thursday” when asked about the day that is “Tuesday” or one child asks the teacher “What does ‘too’ mean?”	<i>When children give answers, ask questions, or make statements that are unexpected teachers must reason about if or how they will respond to error or question. Teachers’ plans have been interrupted and this was seen as a moment where teachers would need to use pedagogical reasoning in order to decide how or if to respond to the student. Other researchers have also used this as a stopping point in stimulated recall interviews (e.g., Parker & Gehrke, 1984). In addition contingent response to students is also viewed as an important practice in early childhood (CLASS).</i>
Observation of teacher engaging in practices typically considered “best-practices” related to language and literacy instruction or teacher child-interactions	Teacher indicating to a child she should start writing her name on the left side of the paper or teacher asking “do you know what the word ‘lyrics’ means?”	<i>These are practices that are valued by the early childhood research community and are shown to be linked to children’s outcomes (e.g. the ELLCO or CLASS). This attempts to capture what information teachers use to reason about enacting these practices.</i>

These instances were noted in order to facilitate the stimulated recall process, specifically to make certain that at least four different points per observation were discussed during each stimulated interview. Fogarty, Wang, and Creek (1983) utilized a similar procedure and found it useful in facilitating data collection during their stimulated recall process.

Using the criteria presented in Table 3.3, specific moments were selected at which to stop the video during the interview. The four instances were chosen to include one of each of the three criteria. Typically, the fourth instance was chosen using the second criteria about a student error or statement. Once the four instances were identified, time markers for these moments were recorded to facilitate the interview processes.

Scheduling and physical setting of the stimulated recall interview. To increase the accuracy and validity of teachers' discussions of their pedagogical reasoning, the stimulated recall interviews were scheduled to occur as close in time to the instruction as possible (Ericsson & Simon, 1980; Lyle, 2003). Typically, interviews occurred within four hours of instruction, often during nap time at the Friendship School or at the end of the prekindergarten day (3 p.m.) at the ABC school. There were two interviews that occurred a day after instruction due to teachers' scheduling conflicts.

Unlike planning interviews, the stimulated recall interviews were conducted with only the participating teacher present, sometimes in her classroom and sometimes in another free space in the building. This allowed for privacy during the interviews and was intended to increase teacher comfort with the procedure. There was a difference in the stimulated recall interview scheduling by school. Due to the observation schedules, teachers at the Friendship school were observed and interviewed on four different days with one interview per day. Teachers at the ABC School were observed and interviewed on two different days with two interviews per day. Overall this resulted in 32 stimulated recall interviews.

The stimulated recall interview. There were several steps in the stimulated recall protocol and the full interview protocol is provided in Appendix C. Teachers were seated with a laptop in front of them and the video-recorder behind them in order to capture which moments of

the instructional activity the teacher was discussing. Prior to watching the video of instruction teachers were asked, “Is there anything you want to say about the activity?” Teachers frequently responded with statements about how well they thought the activity went or with information about children’s behavior and performance. There were often times that teachers would say there was nothing that they wanted to discuss.

Once teachers were ready, the stimulated recall procedure was explained, this explanation was repeated before each of the four interviews for each teacher. A dual stopping of the observation video was used in this study. Teachers in this study were invited to stop the video when anything “interesting or out of the ordinary” occurred. They were also informed that I would stop the video. Although using researcher judgment to stop the video is one way to sample data during the stimulated recall procedure, allowing the participant to stop the video has also been used in stimulated recall procedures (e.g., Gatbonton, 2008; Westerman, 1991). In fact, many researchers allowed for dual stopping in their interviews (e.g., Fogarty et al., 1983; Gilbert et al., 1999) and found it beneficial for data collection. Each teacher stopped the video at least once in each of her four stimulated recall interviews.

The advantages of my stopping the video were that it ensured a minimum number of discussions per teacher and allowed for access to teachers’ pedagogical reasoning about practices that are of interest to early childhood researchers. It is important to note, however, that my assertions based on observation of practice, the first-order data, did not always match with teachers’ pedagogical reasoning about the moment of instruction, second-order data. This was especially noticeable in pedagogical reasoning related to the enactment of “best-practices,” the third reason for stopping the video listed in Table 3.3. For example, several times the video was stopped because teachers were observed asking children about the meaning of words in ways that

could be classified as vocabulary-related instruction. When teachers were asked about their reasoning during these moments of instruction, teachers did not discuss reasoning about helping children learn the meaning of words or developing children's vocabulary. That is not to say that teachers were not engaging in pedagogical reasoning. Rather, their pedagogical reasoning did not reflect what I thought I observed in their instruction. Without a more nuanced understanding of teachers' pedagogical reasoning, it would not have been clear what they were trying to accomplish with their practice. There were many examples of this difference between the observer's perceptions of what was occurring and teachers' reported pedagogical reasoning during instruction throughout the data collection.

The dual stopping procedure was important because all of the intentional ways that teachers act using their information may not be accessible from observation alone. For example, in an interview with a teacher about her circle time instruction, she stopped the video to explain to me why she took the time to erase the number '2' that she had written on the board. She said,

And then I've got to remember the right way to make a 2 because the 2's have changed, in the formation of the 2's there's no little loop or anything and sometimes I'm sure it makes [my co-teacher] crazy. I need to have everything the correct way on the board. Because it's print and I told [my co-teacher] I said 'I like for the kids, they take in so much on a secondary level they don't know they're learning and if they see something and it's done the wrong way on the board they're just going to internalize it, whether it sticks or not nobody's really going to know for a while.' But I just like it to be the right way so I try not to make a big deal about it and just kind of like erase over it and do it that way. It's just a thing that to me is important.

An observer of this moment of practice would not be able to see the complex process of pedagogical reasoning informing this teacher's decision to erase the number and rewrite it. She is using various strands of information to reason about this moment of practice. Illuminating these moments of reasoning is an advantage of having both the researcher and the participant control the stopping of the video.

Allowing the participants to stop the video also contributed to the data collection procedure. Munby (1982) warns that what researchers' value as important may not be what teachers' value as important. Thus allowing teachers to stop the video provided an opportunity for participants to delineate what was important to them in their reasoning about their practice, not what was deemed important from observations. Letting the teachers stop the video for discussion also increased the representativeness of the phenomenon under study (Clark & Yinger, 1977) as the teachers were indicating in which moments they were reasoning about their practice.

After the explanation of the stimulated recall procedure, the video of instruction was started and the stimulated recall interview began. The interview question protocol, displayed in Table 3.4, was used to discuss each individual moment of pedagogical reasoning. The prompts were designed to remain neutral in order not to alter or direct the thinking process of the teachers (Lyle, 2003); however, they were not too general in order to ensure that teachers reported about their pedagogical reasoning during instruction (Ericsson & Simon, 1980).

Table 3.4

Stimulated Recall Interview Protocol: Questions about Individual Moments of Instruction

<i>If teacher stops the video</i>	<i>If I stop the video</i>
1. Why is this interesting or out of the ordinary?	1. At this moment, what were your thoughts? /At this moment what were you thinking about?
2. What was the reason for doing what you did next?/There are lots of things you could focus on, why did you focus on that?/tell me more about why you focused on that" <i>If necessary provide description about what teacher did next.</i>	2. What was the reason for doing what you did next? /There are lots of things you could focus on, why did you focus on that?/tell me more about why you focused on that" <i>If necessary provide description about what teacher did next.</i>
3. Why do you think that?	3. Why do you think that?

Some steps of the protocol had multiple prompt options. Each option was meant to elicit similar types of responses from teachers but was developed to both avoid monotony during the interview and for the flexibility to have language that was responsive to teachers' answers. The prompts in question one for if I stopped the video were randomly alternated in order to avoid repetition in the questioning protocol. In the second prompt, the protocol the questions were alternated based on how the teachers responded to the first prompt. In some cases, teachers would respond to the first prompt and address the questions from the second prompt, especially over time as they became used to the stimulated recall interview. In those cases the second prompt was skipped and the third prompt was asked.

I stopped the video at the four moments of instruction selected prior to the interview, described above, using the criteria presented in Table 3.3. There were two cases in which the teacher preemptively stopped the video to talk about the same moment of instruction and these were counted towards the four researcher-initiated discussions of pedagogical reasoning. The protocol questioning was followed based on who stopped the video, see Table 3.4.

In addition to these researcher-initiated discussions, teachers frequently stopped the video or began talking over the video. If teachers just stopped the video, I began the interview protocol. When teachers started talking over the video, I stopped the video and waited until their initial comments were completed and then began the interview protocol. In some cases, this required skipping to the second prompt as teachers would begin with why the moment of instruction was interesting or out of the ordinary. The number of teacher-initiated stopping of the video ranged from once per stimulated recall interview to 15 times in one stimulated recall interview ($M = 6.59$, $SD = 3.03$). The next section describes the data analysis.

Data Analysis

There were two main steps for the data analysis. The first step was preparing the data for analysis. This not only included transcribing the interview data but also writing descriptions of the first-order data that contextualized the second-order interview data. The second step was the actual data analysis. These procedures are described below.

Data Preparation

The first step in preparing the data was the transcription of the planning and stimulated recall interviews. All of the interviews were fully transcribed to include both the participants' and my language. During transcriptions, language that was repeated (e.g., "that, that" or "I, I") and fillers (e.g., "um", "you know", or "so") were removed. Standard English spelling was also used to cover the many ways we speak differently from what is spelled (e.g., the omission of the 'g' at the end of 'ing' verbs).⁹ As the present analysis does not involve an in-depth linguistic examination, this type of detail was not necessary for the data analysis and instead it was deemed more important to take out these grammatical differences in order to make it easier to read and analyze the transcripts.

This decision about the transcription method does reflect a specific research focus on the types of information that teachers' report using as opposed to a more linguistically focused analysis. That is not to say that teachers' language use is not important in understanding their pedagogical reasoning processes, rather that the omitted parts of speech are not connected to the present analysis. These types of transcription decisions can and have been used by other

⁹ In particular, teachers' grammar may be linked to negative perceptions of their "knowledge" although in fact may only reflect membership in particular discourse communities that are not reflective of the dominant discourse (Gee, 1989).

researchers to assist in the analytic process as long as the researcher is explicit about these steps (Gumperz & Berenz, 1993; Lapadat & Lindsay, 1999).

After transcription, the next step was to describe the phenomenon about which teachers were reporting their experience, providing the first-order data that contextualized the second-order, teacher interview data. This required reviewing both the stimulated recall and instructional activity videos in order to write a description of the activity on the video that stimulated the recall description with the teachers. Each video was watched and a brief description of the instruction proceeding the moment of pedagogical reasoning was written. This was an objective description of the teachers' and children's, when appropriate, visible actions and language that precipitated stopping the video. In addition to writing the descriptions, the data were also coded to indicate who stopped the video for discussion. This allowed insight into who was selecting the moment of instruction for discussion.

Determining the unit of analysis. As each time the video was stopped was connected to pedagogical reasoning about a specific moment of instruction, these were considered separate units for analysis, which I termed "episodes of reasoning." An episode of reasoning captured a teacher's description of her pedagogical reasoning as it related to a particular instance of her practice. Sometimes these episodes were short with only a sentence response; in other cases, the episode might last several minutes with three paragraphs of teacher language. These episodes were generated in response to either of the first prompts in the interview protocol, "What were you thinking about" (if I stopped the video) or "why is this interesting?" (if teachers stopped the video) as teachers always responded in some way to these questions. The prompt for if I stopped the video specifically asks about thinking and thus was expected to elicit descriptions of thinking or pedagogical reasoning. The prompt for when teachers' stopped the video also frequently

elicited teachers' pedagogical reasoning and this was determined both by the language that they used and the context of their discussion in relation to the first-order data.

One segment from the observation video could result in multiple "episodes of reasoning" in the stimulated recall interview. In many cases, teachers' responses to the protocol questions led them to discuss different moments of instruction or reasoning about practice separate from what precipitated stopping of the video. The topics that teachers covered and the information that they used in these subsequent discussions reflected pedagogical reasoning about a different part of instruction even if teachers were still looking at the stopped video. Therefore, these shifts to discussing pedagogical reasoning about different moments of instruction were coded as new episodes of reasoning.

Episodes of reasoning were delineated within the transcripts as a means for "bounding" teachers' pedagogical reasoning into individual units of analysis (Lampert & Ervin-Tripp, 1993). These episodes of reasoning were treated similarly regardless of their length. All of the transcripts were double coded for episodes of reasoning in order to ensure accuracy and trustworthiness in the identification of these episodes. Intra-rater reliability was calculated by dividing the total number of agreements by disagreements plus agreements. Agreement was 87%.

In total, 537 episodes of reasoning occurred during the interviews and these were delineated visually/physically within each stimulated interview transcript. Thus the prepared data for analysis looks like the example below of the episode of reasoning from Deanna's language and literacy instruction.

Episode 3.1

Context: Each child is working individually in their workbooks writing the word 'dog' on a lined page. Mira hands her completed page across the table to show Deanna. Deanna says, "good

job” then gets up and walks over to where Mira is sitting. On the paper the ‘G’ is written incorrectly. [I stop the video.]

Deanna: “She did a good job. And she needed reminding that she put the lowercase ‘g’ up at the top, and then flipped it. And that's usually not what she does. But true to anything, just because they did it one week doesn't mean they're going to do it the following week when there's a new letter. So this is a lovely example of reminding them ‘g’ was a couple of weeks ago. And remember that the ‘G’ goes circle and then the stick and the hook. So she had forgotten. And so I just said, “Good.” She wanted to show me, and then I just reminded her. And she saw it, and she didn't comment, which means she didn't like that she did it the wrong way.”

The context describes the classroom activity immediately before the video is stopped. In this case, it is a description of Deanna and Mira interacting around Mira's writing of the word “dog” in her workbook. At the end of the context section is the indicator *[in brackets]* of who stopped the video for discussion. Next, is Deanna's report of her pedagogical reasoning about practice. This excerpt is fairly representative of the typical length of response, although there was much variation. Embedding teachers' reports of their pedagogical reasoning within the context of the instructional moment is part of the phenomenological approach to understanding teachers' experiences. The first-order data serves as a lens for understanding how teachers' reports of their pedagogical reasoning were connected to their visible practice.

During this process it became evident that some of the teachers' comments in the stimulated recall interviews were not only about their reasoning during instruction but also post-hoc observations about their teaching or the classroom. In other words, there were instances in the interviews where teachers provided an evaluation of the activity or instructional move, rather than reported on their reasoning during the moment of instruction. For example, teachers used language like, “I probably should have,” or “I probably wouldn't,” or “I have been thinking about what I would change.” There were also instances during the interviews where teachers would make observations about their classroom based on the video, not necessarily related to their pedagogical reasoning about practice. This might include things like, “... there's so much

extraneous noise. I had no idea” or “Our rug got moved way up today.” The majority of these post-hoc observations were made when teachers initiated the stopping of the video (73 out of 76 stops). These instances of teacher post-hoc observations about the activity or the classroom were excluded for the purposes of this study in order to focus specifically on teachers’ reports about reasoning during instruction. It is important to note, however, that through the use of the interview protocols many of these initial post-hoc observations were transitioned to conversations about reasoning during instruction and were coded separately. There were 76 instances of teachers’ post-hoc observations across the stimulated recall interviews; these were not included in the 537 episodes of reasoning.

All of the interview data, including the planning interviews, were uploaded separately into the student version of the QSR NVivo software package (2013). The software was used to facilitate the coding process described below.

Data Coding

In order to address the specific research sub-questions about 1) *What types of information do prekindergarten teachers use during their pedagogical reasoning about moment-to-moment instruction during whole-group and small-group language and literacy activities?* as well as 2) *How do prekindergarten teachers use information to inform their pedagogical reasoning during their moment-to-moment instruction during whole-group and small-group language and literacy activities?* the episodes of reasoning were explored for patterns in how teachers described their use of information. Although the observations of practice occurred during the whole-group and language and literacy instructional activities, where there were multiple practices that a teacher engaged in, the individual analytic units were the episodes of reasoning. These episodes captured the moment-to-moment pedagogical reasoning, the use of information to reason about and

inform a specific instance of practice. Therefore, these were important individual units to consider as they captured how teachers talked about using information to inform their pedagogical reasoning during instruction.

Identifying categories of reasoning. I employed open-coding to examine the data for emerging themes. Using an open-coding strategy with the stimulated recall data allowed for multiple types of information to emerge during the coding process, including categories that may not be present in the current research literature (Corbin & Strauss, 2008).¹⁰ This is especially important as researchers sometimes assume that they have the same beliefs or value the same information as teachers (Munby, 1982). The coding procedure used here allowed for a more comprehensive search of themes reflective of teachers' experiences as they used information to reason about their practice. Teachers' own second-order descriptions were used in order to discover patterns in how they reported the use of information in their reasoning about practice (Patton, 2002), not a-priori categories of knowledge.

The coding process began by examining the episodes of reasoning and noting patterns within the data. This immersion in the data and the process of describing the data involved examining individual teachers' responses for patterns and then looking across teachers to identify patterns. A constant comparative approach (Corbin & Strauss, 2008) was employed to look for these emerging themes in information use within the data. Important to this analysis was the relationship between the first-order data and the second-order data, as the second-order data in part derived its meaning from how it was situated within the first-order data. How teachers

¹⁰ Moreover, researcher-based categories of early childhood literacy development knowledge are not necessarily helpful in understanding how teachers' knowledge is connected to their practice and children's outcomes (e.g., Carlisle et al., 2009; Cunningham et al. 2009; Dickinson et al., 2011). Therefore, these categories may not be comprehensive enough to inform the conceptualization of teachers' use of information in pedagogical reasoning about their moment-to-moment practice.

reported their pedagogical reasoning during instruction was linked to the description of what was visible about their instruction. Each of these two sources of data complemented each other in providing a much more complicated view of teachers' use of information in action.

Understanding sources of information that were dependent upon the immediate instructional context helped elucidate the categories of information (Davis & Sumara, 1997). Background information about the school setting and participants was also used in this process as another means for contextualizing and understanding how teachers discussed using information to reason about their practice.

During this coding process memos were written about potential themes in pedagogical reasoning and information. The memos were used to make connections across these themes, teachers, and broader contextual variables, leading to an initial set of broad categories of information used in pedagogical reasoning. The purpose of these categories was to identify the specific types of information that appeared in teachers' discussions of their pedagogical reasoning about practice; the types of information they used during instruction. As the open-coding process continued, various subcategories, or more specific types of information within the broader categories of information that teachers reported using, emerged and these were utilized to elaborate the schema in order to be as detailed as possible. As this process of coding proceeded, it also became apparent that the participants were frequently reporting the use of more than one source of information in each episode of reasoning.

Throughout the iterative process of coding, as the categories emerged they were confirmed by patterns of occurrence in other episodes of reasoning, either across teachers, instructional activities, or school settings. Then labels were created for the sub/categories and working definitions were generated as a schema, often using teachers' own language as one

means for ensuring validity in the categories of information. Data were examined using constant comparative analysis (Corbin & Strauss, 2008) to see if the coding schema fit the data and searches for data not captured in the coding system were conducted. Based on these findings, modifications or reframing of coding categories and subcategories were made (Parker & Gehrke, 1984). This process was repeated until there were no more revisions to be made to the categories.

After the codes were finalized, the NVivo software was used to code each individual episode of reasoning for all of the types of information that were discussed during the episode. This accounted for the multiple sources of information that a teacher might report using within a single episode of reasoning about practice. All of the episodes were double coded in order to ensure trustworthiness of the category and subcategory coding process. Intra-rater reliability was calculated by dividing the total number of agreements by disagreements plus agreements, with 91% agreement. All disagreements were reconciled using the coding criteria.

Six main categories and 31 subcategories of information were identified. The main categories of information informing teachers' pedagogical reasoning were about: instructional goals, information about children, contextual factors, feelings, past experiences, and the development of skills. There were 1,763 different categories and subcategories of information referenced in teachers' reports across the episodes of reasoning. The categories themselves form the basis of the analysis in the first findings chapter (Chapter Five, after the detailed description of the research contexts) and are discussed in detail in that chapter along with the complete coding sub/categories as well as corresponding definitions and excerpts from teachers' episodes of reasoning.

This large number of episodes of reasoning and quantity of references to the individual subcategories necessitate an analytic method that allows for observation of patterns within this

sizeable set of qualitative data. One way that the data are presented is by the number of references to categories and subcategories information across the episodes of reasoning. In addition, because teachers' pedagogical reasoning is the main focus of this study, a mean rate of references to individual subcategories of information per participant is used. This is done in order to examine the frequency with which teachers use each subcategory in their reports of pedagogical reasoning. This mean is calculated by dividing the total number of references to a particular subcategory by the number of participants.

Utilizing this type of analysis allows for a general examination of qualitative, context-specific discussions of teachers' pedagogical reasoning and provides a lens for examining, on average, how frequently teachers describe using various sources of information. Using this type of approach with a qualitative data set provides a means for describing patterns within the data (Maxwell, 2013). In addition, other researchers employing the stimulated recall procedure have also used quantitative methods to examine their qualitative findings (Mcalpine et al., 2006). This analytic strategy is also a means for examining variation in teachers' use of information across instructional activity and school setting, such as differences in reasoning about curriculum. The use of the means and standard deviations can begin to illuminate patterns in the use of information in these contexts.

Despite the advantages to using this analytic method, there are limitations. A frequency based analysis only provides access to what information is present in teachers' reasoning about their moment-to-moment instruction, not necessarily how information is used to inform practice in the process of pedagogical reasoning. I argue, however, that it is important to understand what information teachers report as meaningful to their decision-making process. This provides access to teachers' pedagogical reasoning in a way that may not be visible from observations of

practice. Teachers' episodes of reasoning frequently involved more than one source of information; on average teachers discussed about three different sources of information in their reasoning. The actual process of pedagogical reasoning through the assimilation of multiple sources of information in order to enact practice was not visible from the categories alone.

The purpose of the first findings chapter, Chapter Five, is to foreground the types of information that teachers reported using to inform their pedagogical reasoning in order to address the first research sub-question. The second findings chapter, Chapter Six, foregrounds how pedagogical reasoning is connected to teachers' enacted practice and addresses the second research sub-question about how teachers use information to inform pedagogical reasoning. Creswell (2012) says that phenomenology is a "process in which the researcher makes an interpretation... of the meaning of the lived experiences" (p. 80). There is an interpretative level in which the researcher derives meaning from how the participants describe their experiences. In order to make these interpretations, I examined specific episodes of reasoning as they related to the specific moments of instruction to see how teachers' use of information in the process of pedagogical reasoning was linked to their practice. This analysis required moving back and forth between the first-order and second-order data to see how teachers' descriptions of their pedagogical reasoning connected to their observed instruction.

The analysis used the categories of information identified in the first finding chapter to analyze the connection between teachers' discussions of their pedagogical reasoning and their enacted practice. One way of narrowing this examination was to look specifically at the process of reasoning using information about how children learn (a subcategory within the broader category of information about children). This source of information was selected because of the high value that early childhood researchers place on this type of knowledge for teaching,

reflective in measures used to assess teachers' knowledge (e.g., Cunningham et al., 2009; Hindman & Wasik, 2011; O'Leary et al., 2011) as well as in professional development efforts (e.g., Breffini, 2011; Downer et al., 2009; Hamre et al., 2012; Heisner & Lederberg, 2011; Neuman & Wright, 2010; Powell et al., 2010). Examining teachers' pedagogical reasoning with the subcategory of information about how children learn provided one means for seeing how teachers reason with information that is deemed important by researchers.

In order to conduct this level of analysis, only episodes of reasoning using information about how children learn were examined. The NVivo coding software allowed for identification of these 98 episodes. These episodes were explored for ways that the process of pedagogical reasoning about various sources of information along with the information about how children learn influenced teachers' practice. Of particular interest was how teachers' perceptions were influential to practice in ways that were not visible from the first-order data alone.

The findings from this study are reported in two separate chapters each of which foregrounds different aspects of the way that teachers report the use information in their pedagogical reasoning about moment-to-moment instruction and each addresses a research sub-question. Prior to discussing these findings, a more detailed description of the research contexts and the participants is provided.

Chapter 4 Detailed Description of the Research Contexts¹¹

The previous chapter described the design of the study and the rationale for selecting specific schools and instructional activities. This chapter describes the participants and observed instructional activities. The teachers participating in the study bring a variety of experiences and personalities to the classroom. During the data analysis it became clear that a more nuanced understanding of the participants, their schools, and the instructional activities themselves is necessary in order to understand the relationship between the first-order and second-order data that informs the findings presented in the subsequent chapters. Therefore, in this chapter a detailed description of each teacher, each school, and each instructional activity as it is implemented within the classrooms is provided in order to help understand how individual experience and broader context is connected to pedagogical reasoning.

The next section is a profile of the two schools and the eight teachers participating in the study. This is followed by an overview of the instructional activities as they are implemented by the participants. These descriptions are based on background information collected through the teacher questionnaires, interviews with directors, interviews with teachers, and document analysis (Marshall & Rossman, 2006) of the materials provided by directors.

¹¹ This chapter and the two subsequent findings chapters (Five and Six) are written in the present tense, marking a shift in tense from the previous chapters as well as the Discussion (Chapter Seven) which are written in the past tense. The present tense is used in keeping with the phenomenological approach in order to represent the lived experiences of the participants.

Setting and Participants

Eight prekindergarten teachers from two early childhood centers, in a large Midwestern city, agreed to participate in the study. All of the participants in the study are Caucasian females whose ages range from 27 to 67 ($M = 49.5$, $SD = 16.19$). It is important to note that the participants' backgrounds do not completely align with the recruitment criteria proposed in the previous chapter. More participants have over five years of early childhood teaching experiences than anticipated in the design (five rather than four). In addition, only one teacher participating in the study has formal credentialing related to early childhood education. About half of the participants, however, hold degrees in K-5/6 elementary education. This is an interesting pattern in teachers' background experiences; that those who were trained to teach elementary school are teaching younger children.¹² This may be in part due to the types of preschools where they are teaching or the lack of an early childhood degree option when receiving their training. Although not specifically focused on children zero to five, their educational experiences could have provided them with information about teaching and learning, pedagogical strategies, and an understanding of the development of emerging language and literacy skills. Neither of these background characteristics, degree or years of teaching experience, are used to make comparisons across teachers' pedagogical reasoning.

The centers are located almost a mile apart and both are based within Jewish synagogues. Each center serves similar families within the community. Children attending the schools range from one to six years old and are from mostly upper-middle to upper class families, the majority

¹² Although the proportion of teachers' with BA level degrees is higher in this study than perhaps is typical to the overall preschool teaching population (which is changing due to funding requirements) there are fewer teachers than expected with specific early childhood or child development related backgrounds. Fuligni et al. (2009) found that almost 70% of teachers in their study from private preschool programs, even those who had not completed a degree, had child development or early childhood education as a focus of their formal schooling.

of whom are Caucasian. Both schools also offer kindergarten but only about a third of the graduating prekindergarten children enroll in these classrooms, the majority of children enroll in kindergarten at their local elementary schools. The curricular focuses of the schools are different and described in more detail below.

Friendship School

The Friendship School is the larger of the two early childhood programs with higher enrollment numbers overall and smaller individual class sizes (approximately eight to ten children per classroom). The Friendship School also has lower tuition rates and offers three different attendance options of full day, preschool only (9 a.m. to 12:30 p.m.), and preschool through naptime (9 a.m. to 3 p.m.). The school is a U-shaped set of hallways on one side of the synagogue, with the playground in the middle. In general, the classrooms are small with room for eight to ten children and one teacher. Children are grouped in classrooms by age. Decisions about class placement are made based on enrollment numbers and children's birthdates so that there are just a few months difference in the age of children in each classroom.

In the interview with the center director, she says that her goal is to "help children develop social and emotional skills and prepare them to be successful in elementary school." This includes "helping children understand how to be in classrooms and to function independently." She says that children's development of literacy and numeracy skills are "just icing on the cake" and that she encourages her staff to develop children's socio-emotional skills.

The Friendship School also has several formal curricular documents that they use to guide instruction. The center's published materials for parents identify the curriculum as targeting eight different developmental areas for children including: "language development; math; science; social studies; health, social and emotional development; physical education;

sensory learning; and holidays.” The “holidays” developmental area includes a list of both secular and Jewish holidays. Within each developmental area are listed potential topics of study as well as different learning goals, although these may not be stated specifically as objectives. For example, the 14 language development items in the curriculum include a range of ideas from topics such as “stories” and “poetry” to learning goals like “alphabet recognition” and “encouraged to use words appropriately.” Thus the center’s curriculum contains a combination of learning objectives as well as thematic and content areas to be targeted. This range in types of content within the developmental areas may be in part due to the way that the curriculum is generated. The prekindergarten curriculum (and that for the other age levels at the school) is teacher-generated. Prior to the start of each school year, the teachers of similar-aged children meet to discuss the learning goals and revise them, with help from the director, according to what they agree is appropriate.

In addition to this more broadly articulated curriculum, the school also implements a center-wide thematic either weekly or bi-weekly curriculum often related to the season or the holiday. This curriculum is created by the director and the assistant director. Part of this curriculum also includes a letter and a number of the week(s), taught in alphabetic/numerical order, as well as a color of the week. Teachers are expected to teach all of these elements in addition to the curriculum. For example, data collection mostly occurred during the letter ‘e’, the number ‘5’ and the color ‘yellow’ and one weekly theme related to Thanksgiving and another for Chanukah. Teachers design their own learning activities for both whole-group and language and literacy instruction in order to address the weekly and larger curricular goals, although the director approves their lesson plans each week. Through observations and interviews there is evidence of teachers incorporating the letter and the number into their classroom activities,

especially during circle time. Individual teachers, however, choose to teach this content in a variety of ways.

The prekindergarten teachers pre-tested their children at the beginning of the school year using Pre-KIDS: Pre-Kindergarten Inventory of Demonstrated Skills (Center for Innovation in Assessment, 2007) an assessment aligned with the state standards designed to help teachers assess the skills of children entering kindergarten. The prekindergarten teachers, in consultation with the school director selected this assessment. According to the director, however, there is some variation across teachers in the administration and the interpretation of this assessment. This may be why only two of the four participants at the Friendship School make reference to this assessment in discussions about their practice. The assessment informs a school based “report card” that teachers give to parents about their child’s performance in the fall, November, and in the spring, May.

There are six prekindergarten classrooms at the school and four teachers agreed to participate in the study, including teachers from the oldest and the youngest prekindergarten classrooms. None of the participants in this study have assistant teachers who work with them regularly, although there is a floating assistant that is available to help in classrooms depending on the day. Table 4.1 presents basic demographic information about each teacher participating in the study from the Friendship School.¹³ A more thorough description of each teacher follows.

¹³ All participants’ names have been changed.

Table 4.1

Participants from the Friendship School

	Degree Attainment	
	Unrelated Degree	Related Degree
Years of Experience	<p>Five years or fewer</p> <p>Amanda</p> <ul style="list-style-type: none"> • B.A. in General Studies • 5 years of early childhood teaching experience 	<p>Jacki</p> <ul style="list-style-type: none"> • B.S. in Elementary Education (K-5) and a Special Education Certification • Less than one year of early childhood teaching experience (she has over 15 years of experience working in elementary school classrooms)
	<p>More than five years</p> <p>Catherine</p> <ul style="list-style-type: none"> • M.A. in Religion and Art • 6 years of early childhood teaching experience 	<p>Pamela</p> <ul style="list-style-type: none"> • B.A. in Elementary Education (K-6) • 12 years of early childhood teaching experience

Amanda. Amanda is in her late 20s. She teaches in the morning from nine to two and in the afternoon she works in the front office greeting families and helping manage office related duties. This is Amanda’s fifth year of teaching, not including the year she stayed home when her son was born. Her classroom has many pictures of her husband and son as well as the families of children in her classroom. Amanda has a Bachelor’s of Arts in General Studies from a local college. She later received an Associate’s degree in occupational therapy which she earned while working at the Friendship School. This is her first year teaching prekindergarten-aged children, although her second year with this particular group of children. She has also taught two and three year old children.

Amanda is visibly uncomfortable both being recorded and talking about her practice. More than once she discusses having “camera jitters” indicating that these affected what she did in the classroom during observations. She reports that she skipped steps of a task or went more quickly than she normally would because she was being observed. During the stimulated recall

interviews she often laughs when asked the protocol questions or responds by saying, “you always ask hard questions.” Despite her nervousness and her difficulty with the video, she almost always responds to the stimulated recall questions. Amanda rarely uses specialized language in her discussions about practice, rather she often uses colloquial language to discuss her children with phrases like “weeble-wobbly” or “antsies in their pantsies.”

Amanda sits on the floor with the children during circle time. She has even arranged her materials on the wall at eye level to the children so that she can access them from the floor and children can physically interact with the materials. Amanda seems to be very connected with the children in her classroom attending to their current physical and emotional states, such as the observations above that they were getting restless. She is also very emotionally supportive to the children, checking on their feelings and making sure that children receive positive support and know that they are doing good things. At one point she says, “I just wanted to make sure that Ebby realized that that was a really sweet thing. And that that’s the nice thing, and please do more.”

The children in Amanda’s class seem to require more behavior management than some of the other prekindergarten classrooms at the Friendship School. In fact, the director refers to Amanda’s class as a “handful.” In interviews, Amanda frequently discusses her practice in relation to behavior management issues. For example, when explaining some of her alterations to her circle time routine she says, “We have been having behavioral issues so I was trying to talk more about what friends do. Nice things that we do with our friends instead of the negative whacking and hitting.” This focus on behavior may, in part, be related to Amanda’s own management style, which is gentle and soft-spoken, or due to the fact that she has the youngest fours classroom.

Jacki. Jacki is in her mid-sixties and, in addition to teaching prekindergarten, she also teaches in the religious school offered by the synagogue that sponsors the Friendship School. This is Jacki's first year of teaching prekindergarten and teaching at the Friendship School. She has lived in several other cities before moving to the state to be near her daughter and her grandchildren. Prior to starting at the Friendship School, she worked in public elementary schools both in the same state and outside of the state working with special education students from grades K-5, more recently with upper-elementary aged students. Her formal training includes a Bachelors of Science in Elementary Education (K-5), graduate credits for a Master's equivalency in Elementary Education, and she is certified to teach special education, K-12.

Jackie was very receptive to participating in the study although she was very upfront about this being her first year of teaching prekindergarten. In fact, Jacki's discussions of practice often include references to her inexperience with teaching young children. For example, in the first stimulated recall interview about her circle time instruction she asked me what I thought of how circle went. She went on to say,

I don't even know what all the elements of circle time are supposed to be. I know on the chart there's rhyme time, and colors, and stuff. And some days we have time to get to that and some days we don't. Today I just had time for nothing.

Jacki's circle time routine was developed based on the circle time chart that was in her classroom when she started at the Friendship School. The chart has activities for calendar, counting, place value, colors, the letter of the week, and days of the week. She uses this to guide her instructional practice during circle time. At one point, she observes that, "It used to be circle time everybody sat in a circle." This was what she did when she taught at the elementary level. Now she has children sitting in rows so that they can see the chart and participate in the activity.

Her discussion of what she perceives as her inexperience is not limited to the specific elements of an instructional activity. In the same interview she also says,

I'm still trying to figure out what four year olds can and can't do. I've never taught four year olds before. Kindergarten's as low as I've, age-wise, been and that was a long time ago anyway. There are days when they really surprise me with what they know and then there are days when it's like have we not been doing this every day for six weeks?

Jackie frequently discusses the efficacy of particular instructional strategies during the stimulated recall interviews, drawing from her knowledge of individual students. For example, observing a rhyming activity that was challenging for the children Jackie says, "she's one that I thought really understood the whole concept of rhyme." She then goes on to reflect that maybe the activity was difficult as she has recently spent so much time focusing on "beginning sounds." This example represents two frequent patterns in Jackie's reasoning about practice, the use of information about individual students as well as reflections about how and why she would change an activity.

Jackie frequently uses specialized language, such as "rhyming" and "initial sound" in her discussions.

Catherine. Although she is the youngest participant in the study, Catherine has over five years of experience teaching three and four year old children as she taught while working on her undergraduate and graduate degrees. Catherine's classroom is decorated with many owls, her classroom mascot, and she often incorporates owls into her apparel. Catherine's formal education is in religion with a focus on Christianity. She holds a Bachelors of Arts in Religion and a Masters of Arts in Educational Arts Ministries. She describes her Master's training as focused on:

... no particular age group. I took some courses that were purely about education, like human development and growth, personality. I took classes related to education in the church, visual arts, theology, and spirituality. So it was a combination between an educational foundation and a creative, how to incorporate the arts, not only into education but to worships.

Her background in the arts is frequently incorporated into her teaching at the Friendship School. She says, “it does influence the way I approach the arts because they’re very important to me. So I try and do at least two or three kind[s] of creative projects even as simple as using a coloring page a week but it can be much more complicated than that or more steps to it.”

Catherine taught music during the previous summer camp at the Friendship School, in addition to her regular class, and often discusses incorporating music into her current classroom and activities. During one of her language and literacy activities she uses an iPad to play a music video about Humpty Dumpty both incorporating music and technology into her instruction.

Catherine sometimes refers to her experiences as a learner and how that relates to her instruction. For example, she says, “well, I know as a student, I was more interested in things when I felt like I really understood what was happening,” when making a connection between something the class was doing and something they did over the summer. She reflects that as a learner she was often bored and so addressing the needs of all her students is something she tries to attend to. She says,

I know from personal experience as someone who was incredibly bored at some of the schools that I went to...I want to be as engaging for the kids who are at that higher level of thinking, and are more developmentally either at pace with, or even beyond some of where their peers are. So I try and work with all different levels of engagement, or all different places where they’re at.

Catherine does appear to try and work with individual students to make sure they are engaged in the activity and working at their individual level. During her language and literacy activities she spends a large portion of her time circulating among the students and working with them one-on-one and notes that she “likes to give them that individual attention.” Catherine discusses wanting to develop children’s “pre-reading skills” as part of her explanations about her

reasoning during practice, although she does not use specialized language to talk about this developmental process.

Pamela. Pamela is in her late 50's and has been teaching prekindergarten since her younger son started kindergarten, 12 years ago. Pamela's prekindergarten classroom is the oldest group of fours at the Friendship School. In addition to teaching, she also assists in organizing children's participation in school-wide activities. For example, she helps coordinate the staging and singing in the school's annual Chanukah play. She has a Bachelor's of Arts in Elementary Education.

When reflecting on her educational experience she says,

I think the only good thing about doing Pre-K after you've already got the El[ementary] ed[ucation] is, you have a pretty good idea of what's necessary for kindergarten and first grade. So, I think that's a bonus. But by the same token, one of my worst faults is, I could go over their heads. And I have to pull it in. I can see worse things.

Pamela's understanding of what would be expected of children in the early elementary grades does influence much of her discussions of reasoning about practice. She says that she is "trying to introduce something every month different" in order to keep her students "interested" and these activities are based on what she thinks children will be expected to do in kindergarten.

However, she also reports being aware of the fact that these topics can be challenging for students. Pamela qualifies many of her discussions of practice by saying that it was okay if children did not remember what is being taught. For example, when talking about teaching her students diacritical marks for vowels (which she does not call diacritical marks but teaches them to students as the "lines and the happy smiles"), she states that, "Now, it's going to be in their brain. They're not going to remember it next year." Much of the content that Pamela's introduces such as the vowel sounds, syllables, phonics, and writing (all of which she discusses in her

pedagogical reasoning) is done so that her children will be somewhat familiar with the concepts in kindergarten and first grade although she does not expect them to remember these concepts.

Pamela is also very cognizant of her students and their participation in activities. She says more than once that although she knows a task is difficult, she continues to do it because the children are engaged. She often refers to stopping if children are no longer engaged although, this never happens during observations. Pamela wants children to feel confident about them, even when the task is not easy. For example, at the end of challenging activity focusing on initial sounds she says, “[I am] trying to find a word that she would get quickly. So that she would feel good.” Pamela’s experience of the activity is also important. In explaining her reasoning about teaching, she often talks about teaching certain topics because they are interesting for her and she enjoys teaching them.

Friendship School overview. The teachers at the Friendship School have a variety of background experiences that emerge in their discussions about practice. Their pedagogical reasoning about instruction is in part mediated by the environment at the Friendship School. As mentioned earlier, teachers participate in the creation and revision of the learning goals and selection of the assessment tools. However, they do not participate in the development of the weekly/bi-weekly curriculum which is created by the director prior to the start of the school year. Teachers are given autonomy within their classrooms in how they choose to address the learning goals and the weekly thematic curriculum, although these plans are approved by the director. Teachers also express their own personal goals for children that they are targeting which are not explicitly stated within the curriculum documents. For example, several teachers discuss focusing on accurately writing the letter of the week, although the prekindergarten curriculum only lists “drawing (pre-writing skill)” as part of “Language Development.” Teachers at the

Friendship School have some say in the instructional decisions that they make, although there is much oversight from the director.

ABC School

The ABC school has smaller enrollment numbers and a higher tuition than the Friendship School. There are three prekindergarten classrooms at the ABC School with several enrollment options for children. The first is all week prekindergarten which lasts from 9 a.m. to 3 p.m. each day and is prekindergarten students only. There are two classrooms that have prekindergarten class every day. There is also an extended day option, where children can come before or stay after prekindergarten and during that time they are in mixed-aged classrooms, often with younger children and different teachers. Families also have the option of bringing their children three days a week (Monday, Wednesday, and Friday) to a third prekindergarten classroom. In two classrooms there are about 20 children that attend each session, one that is all-week and the other that meets three days a week. The third classroom is physically smaller and has 12 children enrolled and is all week. Each of the classrooms has at least two teachers, two with lead teachers and one with co-lead teachers.

The school has two wings that are adjacent to the synagogue. There is newer wing that houses the younger classrooms, the school office, and the gross motor/multi-purpose room and through which all families must enter to get to school. The other wing is part of the original building and is where the three prekindergarten classrooms and the one kindergarten classroom are located. The prekindergarten teachers share their classrooms with the religious school so they must close up all of the shelves at the end of each week, and reopen them on Monday mornings.

In the interview with the director, she uses the phrase “academic focused” to explain the ABC School’s curriculum. During the course of our informational interview, she describes

herself as, “old-school.” Going on to say that “I think it’s important to focus on learning letters, phonics, and handwriting. I don’t like to do all of this new stuff.” When asked about how they selected and developed the curriculum, the director stated that it is her goal, “for children to [be] in academic environments.” She explains that much of the curriculum selection is based on what is expected by the local school districts. “A lot of them will go to city schools... and this is what they [the schools] want.” The director says she has adopted these goals and curriculum based on the expectations told to her from people working in the schools as well as the experiences of parents whose children used to attend the ABC School.

The ABC School’s promotional materials for parents describe using an “academic curriculum” in their prekindergarten program but also state that they take “a play-based approach to learning.” In addition, the ABC has a published “Goals and Objectives” document that is posted in each prekindergarten classroom. This document posting seems to underscore the academic culture of the school and unified set of learning objectives for the prekindergarten classrooms. The developmental areas for which they have goals are: “socio-emotional development, cognitive development (which includes: acquisition of learning and problem-solving skills, logical thinking skills, acquisition of information so as to understand our immediate surroundings, verbal communication skills, development of language arts skills, meaningful math, science, and social science), physical development, physical environment, introduction to Jewish learning and celebration, and introduction to the Hebrew language.” These last two developmental areas related to Jewish education are a strong focus of the program and part of the ABC School’s broader instructional offerings. Children attend Hebrew class each day, taught by the school’s Hebrew teacher. Within each of the developmental areas, and sub-areas

for the cognitive skills, are several specific learning goals. For example, as part of “verbal communication skills” children are expected to “Follow simple directions (3-4 at a time).”

The ABC School has a designated “Language Arts” time where they focus on language and literacy instruction. For this time-block, the classes divide into smaller groups based on children’s “ability.” The teachers refer to these groups as the “higher-ability” and “lower-ability” groups. It is not exactly clear how ability is determined although, based on teachers’ discussions it seems that the lead teacher and the director make the decision together. The “higher-ability” group, seen as the more advanced learners, uses a kindergarten-based phonics and writing curriculum entitled *Beginning to Read, Write, and Listen K-1* (MacMillan/McGraw-Hill, 1995). This curriculum focuses on individual letters, letter sounds, and writing of the letters. Each letter is studied using a workbook that the teachers and children progress through in a specified order (based on difficulty of forming the letter, not alphabetical order). There are also several listening activities using a cassette tape. The “lower-ability” group, or children viewed as “not ready” are generally taught by the assistant teachers. They also focus on the same letter, however, they engage in different activities such as using letter themed picture books to introduce the sound and then separate worksheets to develop phonics and handwriting skills. One teacher explains the “lower-ability” instruction as using, “the visual, the auditory, the multimodal approach... just [to] get on all different levels.”

In addition to the “language arts” instruction time, teachers at the ABC School also spend a proportion of their time teaching what they refer to as “sight words.” These are comprised of both sight words and high frequency words (e.g., “the,” “can,” “my,” and “dad”). Although not listed in the prekindergarten learning goals, teachers say that they are required by the director to teach these words in a predetermined order as part of the curriculum. Teachers also frequently

reference goals related to children learning calendar information such as months and days and these are explicitly stated in the “Goals and Objectives” document. Neither the teachers nor the director discussed using any types of formal assessments with the children.

All four of the lead prekindergarten teachers at the ABC School agreed to participate in the study, representing all three of the prekindergarten classrooms. Table 4.2 presents the basic demographic information about the teachers and a more detailed description of each teacher follows.

Table 4.2

Participants from the ABC School

		Degree Attainment	
		Unrelated Degree	Related Degree
Years of Experience	Five years or fewer		Beth <ul style="list-style-type: none"> • B.A. and M.A. in Elementary education (K-6) • Three years of early childhood teaching experience (she has over 20 years of experience teaching kindergarten)
	More than five years	Linda <ul style="list-style-type: none"> • A.A. in Secondary Education • 22 years of early childhood teaching experience 	Abby <ul style="list-style-type: none"> • B.A. in Elementary education (K-6) and an Early Childhood Certification and Reading Endorsement • 15 years of early childhood teaching experience Deanna <ul style="list-style-type: none"> • M.E. in K-12 Education • 15 years of early childhood teaching experience (she also has two years of experience teaching third grade three years of experience teaching eighth grade English)

No participating teacher from the ABC School has less than five years of experience and no related degree; therefore that section of the table is not completed. There are, however, two

participating teachers with a related degree and over five years of experience and they are both described in the corresponding part of the table.

Beth. Beth is close to retirement age but continues to teach because she does not “want to retire yet.” She is one of the co-lead teachers in the full week larger prekindergarten classroom, she co-teaches with Linda (another participant in the study). She holds a Bachelors of Science and a Master’s of Science in Elementary Education (K-8). This is her third year teaching preschool-aged children.

Beth says that this school year was a difficult transition for her as she was used to being the only lead teacher in her own classroom. Prior to taking this position she had been a kindergarten teacher for over 20 years, however, her school closed the kindergarten program and she took a position as a preschool teacher at a different school. She ultimately left the school because, “...then they changed the curriculum. They brought somebody in to rewrite curriculum because it's so competitive out there. And what they were asking of these three- and four-year-olds was crazy.” She repeatedly reports being much happier with the curriculum at the ABC School.

Beth is the only lead teacher who teaches the “lower-ability language arts” group. Her co-teacher, Linda, leads the “higher-ability” group from their classroom. Beth’s lessons are held in another classroom, so for the time block she takes all the materials with her into the other classroom. At first this just included students in her classroom but now includes two students from another prekindergarten classroom (Deanna’s room). About teaching the “lower-ability” language group Beth says, “...normally I work with the kids that are slower than some of the other kids. And all that means is that they're just—that’s what they are today. Doesn’t mean in another week they won't be moving somewhere else, or in her group [higher-ability].”

Beth is very invested in her teaching and the children that she works with. She says about teaching, "...fortunately, this is not just a job for me. I mean, it is a passion that I have." This passion is evident in many of her discussions and in the way she talks about individual students. She links this passion to her own experiences as a learner and her desire to help children become successful readers, saying,

I just think, if you love reading, and see, I don't that much. I love reading about education. I love *Latest Things in Education*, and that I'll read all the time. But I really don't sit down with novels or books... I just—I struggled. That's why I wanted to teach. I struggled as a kid in school, and... I always had to read and reread and stay up and, you know, go over stuff, over, and over, and over again. Nothing ever came easy for me.

Beth describes wanting to become a teacher because she had difficulty as a student and she talks about ways to connect with each child in order to help them become successful readers and learners.

Beth is very attentive to children and their needs, discussing information that she has about individual children and how that connects to her interactions with them. She is also very affectionate towards children giving them frequent hugs; she says "I am a very emotional person." She also seems to actively share co-lead teacher responsibilities by participating in decision-making and family conferences.

Linda. Linda is in her mid-sixties and has been a preschool teacher for over 20 years. She is very friendly and talkative and welcomed me into her classroom even offering me snack during snack time. Linda is a member of the synagogue that runs the ABC School and has been teaching prekindergarten at the school for 17 years. Linda holds an Associate's degree in English Secondary Education. Along with Beth, she is the co-lead teacher of a full week prekindergarten classroom and teaches the "higher-ability language arts" group.

Linda is openly excited about and pleased with watching herself on video during the stimulated recall interviews. She often comments on how well she is doing as a teacher, saying things like, “I’m so good” or “I’m good. I address their questions.” These comments are more evaluations or reflections on her practice, which she always views as positive. For example, after observing a segment of circle time where she is addressing a behavioral issue by telling the child the consequences for continuing the bad behavior she says,

That is great [talking about herself]. I explained to him that I was not negotiating. Good angel. Bad angel. This is what’s going to happen. He was pushing the buttons to see what would happen. Not going to work.

Linda also comments on how she thinks the children perceive her actions such as, “they think I’m hysterical” or “they love it when I do that.” For Linda, watching the video is a very exciting and positively reinforcing task and many times she comments to me and other teachers that she enjoys the process.

Linda talks quite frequently about “what it means to teach” in her interviews. For example, when I ask about why she would focus on a particular topic she says, “Because I’m a teacher” or “that’s what I do, I teach” often with a shrug or in a tone that implies no further explanation is needed. Linda talks frequently about developing “life skills.” She is particularly focused on life skills as they relate to social interaction. One of her circle time routines is having a “greeter” who goes around the room and shakes each child’s hand while saying good morning and looking them in the eye. She is particularly proud of this activity stating that many families have thanked her for including this in her teaching and she emphasizes the importance of having children look each other in the eye.

Linda has personality and enthusiasm when talking to children. However, she gives the impression of being fairly strict in the type of work that children are expected to produce,

particularly as it comes to forming/writing letters. She takes pride in being strict with the acceptable behavior in the classroom and often comments on children's behavior both good and bad. For Linda, equity in the classroom is very important. She wants children to know that she is "fair and square" everyone will get a turn and everyone is treated equally. Linda says, "I try very hard not to treat one any different than the other."

Abby. Abby is in her early forties and is the only teacher in the study with an early childhood specific certification. In addition, she holds a Kindergarten Endorsement and a Reading Endorsement along with her Bachelors of Arts in Elementary Education. She is also certified with the Dyslexia Institute. Abby has over ten years of experience teaching in preschool and, along with her assistant teacher, started the three day a week prekindergarten class at the ABC School several years ago. Abby's class is large, there are more children enrolled in this classroom than any of the other prekindergarten classes, and she has two assistant teachers. This is the first year that Abby has had a second assistant teacher as part of her team.

Abby teaches the "higher-ability language arts" group but leaves her classroom for the time block, taking her materials with her. She often comments on how her goal is to cover the same curriculum as the other prekindergarten classrooms only at a more accelerated rate. This requires her to jump around in the workbook instead of following it consecutively. She makes the decisions about how to reorganize the activities so that they all fit together. Abby says that she confers about instruction with one of her assistant teachers, who leads the "lower-ability" group. Abby explains that they have been working together for a long time which is part of the reason for their collaboration but that also, "that's just kind of her personality too. She's not going to sit in back and be quiet."

Abby is quite familiar with the *Beginning to Read, Write, and Listen K-1* (MacMillan/McGraw-Hill, 1995) curriculum, often explaining the purpose of the activity in the workbook and how that relates to developing skills. For example, in summarizing one day's lesson she says, "Really just tying in the whole phonemic awareness and using fine motor skills with the cutting and glue. And kind of all tying that in with the lesson." When asked why she would focus on that she says, "Just so we can learn all of our letter sounds, so we can put them together, so we can start sounding out words, reading words, practice writing the letters, and getting that early language in."

Abby uses specialized language about literacy development such as in the example above or in phrases like, "blends" and "initial sound." In addition, she seems to be quite familiar with children's language development in general, commenting on what they can and cannot do. At one point she observes that something the workbook is asking the children to do is hard for them because "it is an end of kindergarten skill."

Deanna. This is Deanna's first year teaching at the ABC School, although she has over 20 years of experience teaching preschool. Last year, she taught at the Friendship School but took a position at ABC School this year because her husband works at the synagogue. Deanna also taught two years of second grade and three years of eighth grade English. Deanna holds a Bachelors of Arts in Elementary Education and a Master's in Education, K-12. She is the lead teacher of the smaller full week prekindergarten program. Her room is about half of the size of the other two prekindergarten rooms and for this reason seems full and busy, particularly during less structured activities such as morning arrival and choice time.

Deanna is very interactive with her children and frequently gets down to their level or sits near them during circle. She says, "I like to get as close as possible." Deanna has one child in her

classroom who receives occupational therapy services and another child who works with a speech language pathologist. She often discusses the needs of these students in her interviews, in particular as they relate to ensuring that children do not feel different or bad. She says about interacting with one, “I was trying to be polite” when she noticed that he needed some assistance. She also says, “I don’t want him to feel different.”

This is Deanna’s first time teaching the *Beginning to Read, Write, and Listen K-1* (MacMillan/McGraw-Hill, 1995) curriculum, although she talks a great deal about understanding the intentions of the curriculum. She expresses an interest in being able to implement her own language and literacy instruction, stating,

I just wondered if there were another way of teaching it that didn’t seem so ‘This is the way everybody has to do it. This is the way everybody is going to learn.’ I would love to be able to provide other opportunities, and that they still get the same material.

Deanna indicates some hesitation in the methods/practices embedded in the curriculum, specifically as the curriculum is designed for kindergarteners but is being used in a prekindergarten setting. After discussing her concerns, many of her subsequent explanations about practices attempt to distance herself from the curriculum. Deanna says things like, “Because it’s the curriculum” or “they are supposed to learn that.” She also uses statements indicating that specific instructional moves are not based on her decisions such as, “because the book tells me to,” or “that’s the way they want us to do it.” In this way she indicates that her actions are reflective on the curriculum’s goals not her own.

Deanna also admits to some tension with other teachers whom she believes have “accused” her of not following the curriculum. This tension is observable in my interactions with other teachers who indirectly talk about and complain about Deanna. Despite this tension,

Deanna gives the impression of being focused on her students and their needs and is very concerned about making sure that I feel welcome in her classroom.

ABC School overview. The teachers at the ABC School also have a variety of experiences that emerge in their interviews. Their discussions about instruction are very much driven by the curricular requirements at the ABC School. The director at the ABC School seems to make most of the decisions regarding curriculum and goal selection and teachers do not participate in the process. They do, however, participate in selecting how children are placed into “ability” groups and are able to design their own circle time activities, although they must target “sight words” and other learning goals. The “language arts” instructional block is heavily scripted for both “ability” groups and seems to leave less room for teacher decision-making during instruction. However, despite using a highly scripted curriculum, teachers at the ABC school equally discuss their pedagogical reasoning about practice during their language and literacy instruction.

Instructional Activities

As described in the previous chapter, whole-group circle time and small-group language and literacy instruction are the focus of the observations and stimulated recall interviews. There are many similarities as well as differences in how teachers implement these activities within their classrooms. The next section describes what these instructional activities look and feel like at the participating schools.

Whole-Group Circle Time

The participants from both schools use the phrase “circle time” to label their whole-group morning time activity; therefore this phrase has been adopted to describe the whole-group instructional activity. Participants’ circle times occur during the morning, prior to lunch time,

although implementation of circle time varies both by teacher and by day. For example, on Monday, Catherine's circle time is at 9:30 a.m., on Friday it is at 10:45 a.m. Teachers frequently discuss planning their circle time at different times for specific days but also moving their circle time around in the morning to accommodate other activities. The length of circle time also varies in similar ways, by teacher and by day. They range from 10 to 36 minutes, although they generally last about 20 minutes ($M = 22.78$, $SD = 9.85$).

During circle time, the children typically sit in rows facing the teacher who either sits or stands at the front of the room near the calendar materials. There are some differences, however; Amanda sits on the floor with her children in a circle and Deanna sits in a child sized chair with her students in an arc around her. All of the teachers have published circle time materials that they use in their classrooms. The Friendship School teachers all use the same chart that has a blue background with a calendar, a space for weather (in which they can identify how the weather feels and the clothes that one needs in that type of weather), a section for the letter of the week with steps on how to form the letter and pictures of words that start with the letter of the week, a color strip, and a gumball machine with attachable "gumballs" to use for counting. Some teachers at the Friendship School also use materials that are not on the calendar, for example, Jacki has a chart next to the calendar where she records words that start with the letter of the week. The teachers at the ABC School also have similar materials related to the weather, calendar, and letter of the week but they do not have a unifying circle time chart. ABC School classrooms all have white boards that the teachers use to record elicited language from children during circle time. The teachers at the ABC School also use hand written cards for their "sight words."

There are a variety of specific tasks that teachers ask of children during circle time. These seem to be routinized as both the teachers and the children move seamlessly from one activity to another. In fact, many of the teachers comment in their stimulated recall interviews about noticing that they skipped an element of circle time or about children reminding them to do a specific task. All of the participants include some form of calendar activities as part of this instructional time. For example, Pamela at the ABC School has children identify the day of the week, locate the day on the calendar, and recite a sentence such as, “today is Friday, November 20th, 2013.” Most teachers also facilitate discussions about the weather. The teachers at the ABC School all include practice of “sight words” and a recitation of the pledge into the circle time activity. Some teachers have a calendar helper who leads the activity whereas other teachers call on varying children or the group to move through the activities.

The following is a description of one of Catherine’s circle time observations at the Friendship School. It represents many of the common practices teachers engage in during this activity.

Circle time begins with Catherine standing in front of the children with her circle time chart behind her on the board. She begins by reminding students of the rules for behavior during circle time and settling children into place (30 seconds). Catherine officially starts circle time by asking “Whooo’s here today?” and having children individually come to the board and write their names on small laminated sentence strips under an owl displaying the same “Whooo’s here today?” question. She assists children as they write their names. They then count “how many friends are here today” (8 minutes). Next they move over to the calendar and discuss the month, the year, and the date. Catherine asks the students “if yesterday was Wednesday, what is today? And what day will tomorrow be?” and the group sings the days of the week song. (1 minute). She points to the weather section of the chart and she directs students’ attention to the window to see whether they should change the weather picture from yesterday. They decide it’s the same as yesterday (30 seconds). The class briefly discusses the season (30 seconds) and then moves on to the letter of the week ‘e’. Catherine reads a sentence about “Edna the elephant” and leads the children in practicing making both the upper- and lowercase forms of the letter ‘e’ in the air with their fingers (1 minute). Children now have the opportunity to share words that start with the letter ‘e’. Catherine prompts, gives hints (e.g., “remember yesterday we were exer....”), and reviews as they go. This eventually shifts to a

conversation about things they are “excited” about based on someone listing the word “excited” (4.5 minutes). Catherine then reads aloud two storybooks that one child brought in from home (11 minutes). She concludes circle time by asking children to line up for the bathroom. (Total 27 minutes.)

This circle time is typical because Catherine engages children in multiple activities that seem to be relatively routine. She covers a range of content, including: identifying which students are present, work with the calendar (although she spends less time on this than other teachers do), weather, and work on the letter of the week. Catherine has a storybook reading in this circle time, but that is rare in this study, occurring in only three of the observations, all from the Friendship School. Because of the storybook reading, this circle time is a bit longer than the average length of a whole-group circle time activity.

Language and Literacy Instruction

There is a much larger variety in the types of activities and the length of activities that teachers engage in during language and literacy instruction. In part, this is due to the different curricular requirements of the schools. Teachers from the ABC School have a daily scheduled 30 to 35 minute “language arts” block in which they implement the *Beginning to Read, Write, and Listen K-1* curriculum (MacMillan/McGraw-Hill, 1995) or a modified version of instruction focusing on the letter of the week. Thus the language and literacy instruction is fairly similar across teachers at the ABC School. The teachers at the Friendship School choose when they are going to engage children in language and literacy activities and how to achieve the language and literacy related center-based goals. There is much more variety in the types of language and literacy activities at the Friendship School.

Although I had anticipated observing small-group instruction, which I had expected to involve four to six children, there are typically about eight to ten children present during language and literacy focused activities. For the ABC School, this represents smaller groups, as

the classes split into the “higher-ability” and “lower-ability” groups for instruction. At the Friendship School, the classes overall are smaller so these activities generally include the entire class.

At the ABC School, the language and literacy instruction typically begins with the class dividing into two groups, with one group taking their materials and moving to another classroom. Children are then seated at one or two tables with pencils, sometimes scissors and glue, and their workbooks. Then the teacher uses scripted directions to guide children through various activities in their workbooks. All of the ABC teachers, except for Linda, stand during this time and circulate around the room. Linda sits but has all of the children seated at the same table with her, and she can observe all of their work from her seat.

The following example is a description of one of Deanna’s language and literacy observations. Deanna is at the ABC School so this is typical of the implementation of the scripted curriculum.

Deanna begins by settling children into their seats, asking each child whether they “are ready,” distributing each child’s workbook, and asking them to turn to page 1 (2 minutes). She reminds them that they have a new letter of the week and directs them to the page they completed yesterday about the “dog show” and reviews the types of dogs that they learned about by having them put their finger on specific types of breeds (1.5 minutes). Deanna then draws children’s attention to the top of the page saying “there’s a picture that begins with a /d/” and then tells them to turn to page two and asks them about the “/d/ sound” at the top of the page (1 minute). The picture is of a ‘doll’. Deanna walks to the white board and has the children help her write the word ‘doll’ by emphasizing the individual sounds in the word ‘doll’. She then has the children help her spell the word ‘dog’ using the same procedure and asking a child how to form the letter ‘g’. (2 minutes). Deanna then returns children’s attention to their workbooks where the word ‘dog’ is written twice. She explains that the first word ‘Dog’ has an uppercase ‘D’ and that would go at the beginning of a sentence pointing to a sentence already on the board that starts with the word ‘Dad’. She then directs them to a version of the word with a lowercase ‘d’ and explains that “you use this one in the middle of a sentence” and writes an example “I have a dog.” (3 minutes). Deanna then gives children instructions to write the words in their workbook and reminds them to make sure they use the right upper- or lowercase letter. She circulates around the room as children work helping them form the letters (3.5 minutes). When everyone is done, they move to the next page and she

draws their attention to the picture that begins with a /d/. The word is 'dresser', however, some children say the word "jesser." Deanna emphasizes the two different sounds then calls on each individual child to produce the /d/ sound. Then she writes the word 'dresser' on the board (3 minutes). Deanna gives children the go ahead to start working on the next page that is practice for writing uppercase 'D's. It starts with a line of tracing over the letter 'D', then a line with dots to complete the letter 'D', and then a blank line for them to independently write the letter 'D'. Again she circulates around the room giving children assistance and feedback as needed (8.5 minutes). She brings everyone back together to show them how to make a lowercase 'd'. She says she wants to show them so they know how to "do it the correct way" and then asks them to review the quality of different 'd's as she writes them on the board (3 minutes). Deanna then tells children they can do a similar activity with lowercase 'd's on the next page (8 minutes). She concludes by having children put their books away and line up for the bathroom. (Total 35.5 minutes.)

This is fairly typical of the instruction at the ABC School. Teachers move through the pages of the workbook giving information and directions according to the script of the curriculum. One difference is that Abby, due to her three day a week schedule, does not move consecutively through the workbook, rather she moves back and forth between pages depending on the pacing. Beth's instruction is also different as there is no dedicated workbook. She begins her lessons by reading a book with words that start with the letter of the week. Her subsequent activities all use worksheets, focusing on phonics or letter formation.

There is a variety of language and literacy activities at the Friendship School. As there is no designated language and literacy instruction time, I asked the teachers to select the activities for observation. This means there are a wide range of activities from this school. Observations of Amanda's instruction include a cooking activity (following a recipe printed on chart paper) and a reading of a big book with a rebus poem about making fruit salad (with props). Both of Pamela's activities are phonics based, with a game focused on initial sounds and another activity identifying upper- and lowercase letters by their sounds. Jacki has a rhyming activity (with puzzles) and a writing activity based on a storybook (where she does the writing) both of which end with children working independently. One of Catherine's activities begins with watching a

video of the nursery rhyme Humpty Dumpty and ends in a craft project. Her other language and literacy activity begins by reading about ‘f’ words, the letter of the week, in a child’s dictionary and then having children draw pictures in their journal of an ‘f’ word and writing a sentence using that word.

The language and literacy activities at the Friendship School take varying amounts of time, ranging from eight to 35 minutes ($M = 16.25$, $SD = 9.56$). Teachers and children use a variety of materials during these activities including: a chalkboard, toilet paper rolls with letters written on them and star stickers, rhyming two-piece puzzles, a storybook, pre-printed handouts for coloring and matching, an iPad, a dictionary, cooking ingredients and a toaster oven, a big book, and plastic fruit. Teachers and children are also arranged in various places throughout the classroom; sometimes on the rug or sometimes at tables with teachers sitting, standing, and circulating around the room.

Overview of Instructional Activities

Although there is some variation in length of and activities implemented during circle time, there seems to be a consistency across teachers in the types of content and tasks used during the activity. Language and literacy instruction, however, varies greatly both by school and then by teacher within the Friendship School. Although the “language arts” lessons at the ABC school are similar in activities and goals, teachers at the Friendship school use a variety of instructional activities to achieve a variety of goals. Much of this variation in instruction can be attributed to curricular differences between the schools and requirements, or lack thereof, for language and literacy instruction. In addition, the structural variables, such as where students are located and materials used are quite different across the instructional activities. Circle time was

more static and oriented towards the front of the classroom whereas there was more variety and movement during language and literacy instruction, particularly at the Friendship School.

Chapter 5 The Types of Information that Teachers Report Using in Their Pedagogical Reasoning about Instruction

Understanding more about the types of information that teachers use and value when making instructional decisions is important as the early childhood research community continues to investigate the most effective ways for improving teachers' practice. Typically, researchers do not examine early childhood teachers' use of information or pedagogical reasoning during their moment-to-moment instruction. Although researchers have assessed teachers' knowledge and changes in knowledge on tests, these measures do not necessarily provide access to the variety of information that teachers may use as they are making decisions about their teaching.¹⁴ In addition, it is unclear from the research how these measures of knowledge are related to practice and children's outcomes. This is important as many researchers have found limited success in changing teachers' practices through professional development focused on how children learn and develop skills.¹⁵ Researchers have hypothesized that knowledge traditionally measured on tests is different than knowledge that teachers use during practice.¹⁶ Therefore, examining the types of knowledge that teachers report using to reason about their practice can help us understand more about the information teachers use in their pedagogical reasoning.

¹⁴ For example, researchers often use survey measures or pre/post-tests from course work to assess teachers' knowledge (e.g., Cunningham et al., 2009; Hindman & Wasik, 2011; O'Leary et al., 2010).

¹⁵ For example, the findings in studies by Cunningham et al. (2009) and Neuman and Cunningham (2009) that although they were able to increase teachers' scores on tests of knowledge about how children develop reading skills, they were unable to see how this translated into teachers practice.

¹⁶ Researchers have also discussed the idea of a specialized knowledge that teachers use specifically during instruction (e.g., Carlisle et al. 2009; Cunningham et al., 2009; Grossman, 1990; Shulman, 1987).

Moreover, traditional measures of knowledge do not take into consideration the way that external or structural variables, including both school setting and instructional activity, inform teachers' pedagogical reasoning about practice. The schools participating in this study have different curricula, one that is highly scripted and one that is more teacher-developed, as well as differing levels of teacher autonomy. The activities of circle time and language and literacy instruction are also different; teachers have different pedagogical purposes for these instructional times and use different activities and materials to engage children in these instructional settings. These are important variables which can influence how teachers reason with information about their practice. There may be differences in the ways that teachers use information to think across instructional activities and by school, and more data is needed about how teachers use information to engage in pedagogical reasoning within these contexts.

This chapter seeks to identify what types of information teachers use to inform their pedagogical reasoning during practice in both circle time and language and literacy instructional activities, addressing the first research sub-question. The ways in which teachers think about practice and use information to inform their moment-to-moment instruction is not visible from traditional measures, assessments of knowledge or observational measures of practice. The stimulated recall procedure provides a means for accessing teachers' reasoning during their moment-to-moment instruction. Using teachers' own discussions of their reasoning about practice provides a way to examine and find patterns in the types of information that teachers use to make decisions about their instruction.

This chapter provides a broad exploration of the types of information teachers report using to reason with during individual moments of instruction and identifies general patterns in this pedagogical reasoning. One main finding from this data is that teachers report using

information related to the immediacy of the instructional moment, such as information about their students, goals, or the curriculum, rather than information more formal research-based information or information learned through past teaching experiences. In addition, the patterns in the data suggest differences in teachers' use of information by instructional context and school setting. Teachers seem to use different information more frequently in different instructional contexts and school-level curricular choices influence the types of information that teachers use. The next section provides a more detailed explanation of the analytic method and the main findings in the chapter. The subsequent sections provide descriptions of the types or categories of information teachers report using in their pedagogical reasoning and illuminate patterns in the data.

Overview

Understanding broadly how participants in this study discuss using information in their pedagogical reasoning requires looking across the stimulated recall interview data and examining individual teachers' context-embedded episodes of reasoning. Although teachers' pedagogical reasoning is specific to particular moments of instruction, there are still similarities in the types or categories of information that teachers discuss using in their pedagogical reasoning. These broad categories are important as they can provide insight into the types of information teachers use to inform their moment-to-moment decisions.

Individual episodes of teachers' reasoning about specific moments of instruction form the basic unit of analysis for the present findings chapter.¹⁷ In exploring the episodes for emerging

¹⁷ These individual episodes are comprised of teachers' discussions of their reasoning about a particular moment of practice, either the moment of instruction that is viewed prior to stopping the video or a discussion of thinking about the instruction that is about to occur (as described in the Methods chapter).

themes in teachers' descriptions, six different categories of information emerge.¹⁸ These categories of information are about: goals, information about children, context, feelings, past experiences, and the development of skills. Subcategories to the main categories also emerged through further coding and these are described in detail in the next sections. These subcategories provide a more detailed perspective on the specific types of information teachers discuss using in their pedagogical reasoning. Overall, teachers reference 1,763 subcategories of information within the 537 episodes of reasoning.¹⁹

The way that teachers in this study report using information in their pedagogical reasoning about practice seems to indicate that teachers rely more frequently on information that is specific to the instructional context. This includes their goals for instruction, information about the children in their classroom, context specific variables like the curriculum, and information about the feelings of the participants in the activity (all categories or subcategories information). Past experiences, understandings about how children in general learn and what they know and can do, as well as information about skill development appear less frequently in teachers' discussions of how they use information in their pedagogical reasoning about instruction. These categories or types of information are not specific to the immediate classroom. All of the frequencies are reported in the following sections. Illuminating the types of information that

¹⁸ These emerged through using the open-coding process. Labels were created for these categories of information that teachers use to inform their thinking, often using the teachers' own language. See Methods Chapter. As a reminder, a-priori categories of "types" of information were not used in the coding process. Rather an open-coding approach was used as very little research in early childhood education has examined teachers' pedagogical reasoning in this way. In addition, the research presented in the literature review suggests that researcher-based categories of information are not necessarily helpful in understanding how teachers' knowledge is connected to their practice and children's outcomes. Therefore, these categories may not be helpful for conceptualizing teachers' use of information in thinking about their moment-to-moment practice.

¹⁹ On average teachers discuss using at least three different sources of information per episode to inform their thinking.

teachers refer to using during their instruction is important for thinking about the types of resources that teachers value when making moment-to-moment decisions.

Information related to the broader contexts of school setting and instructional activity, circle time compared to language and literacy, are also part of the particulars of the instructional context that seem to inform teachers' reports of their decision-making processes. The average rate with which teachers report using different sources of information varies by both instructional activity and school setting. In large part, these sources of information are reflective of the curricular differences between the two schools.²⁰ The Friendship School has a stronger socio-emotional developmental focus with less specified learning goals for children. The ABC School employs a scripted language and literacy curriculum along with having more specified learning goals for children. Teachers at the Friendship School discuss using information about their activity-specific and pedagogical goals as well as the curriculum more frequently than those at the ABC School. Teachers also report the use of information differently across instructional contexts employing a broader range of information within circle time but using more information about the curriculum in language and literacy instruction.²¹

The next section describes each category of information teachers report using in their pedagogical reasoning and the more nuanced subcategories within each category. How these

²⁰ This use of information may be driven by the curricular direction of the school. It may also be reflective of teachers' own orientations towards teaching which may lead them to seek employment at one school or another based on the curricular focus. For example, Beth's dislike of the curriculum at her previous school resulted in her decision to leave and work at the ABC School. This is something that she discussed frequently (see Chapter Four). This is explored more in the section about Feelings. Both of these possibilities do suggest that the curricular focus (either because it is required by the school or teachers are drawn to schools due to the curriculum) in some way informs teachers' pedagogical reasoning.

²¹ Given the small sample size and the complex backgrounds of the participants in the study, it is difficult to make generalizations about patterns in teachers' pedagogical reasoning by formal training and years of teaching experience. Although past experiences do not seem to inform teachers' pedagogical reasoning as much as information from the immediate context, individual identities do influence pedagogical reasoning and this is more apparent in the analysis provided in the next findings chapter.

themes are related to the immediacy of the instructional moment or activity is described.

Variations in teachers' reports of their pedagogical reasoning by instructional activity and school are also explored. The next findings chapter examines teacher pedagogical reasoning as a process relying more on first-order and second-order nature of the data to describe how these categories function together within teachers' pedagogical reasoning to inform their practice.

Categories of Information in Teachers' Pedagogical Reasoning

This section provides a detailed description of each of the six categories or types of information that teachers report using to inform their pedagogical reasoning. These are information about: goals, children, context, feelings, past experiences, and the development of skills. Table 5.1 presents each of the six main categories of information and a brief definition of the category as well as the number of teacher references to the category across the 1,763 overall references to subcategories of information.

Table 5.1

Brief Descriptions and the Frequency of References to the Six Categories of Information

Category of Information	Brief definition	Number of overall references (<i>n</i> = 1,763)
Goals	Information about the learning and developmental objectives that teachers have for children differentiated by learning goals or temporal goals.	756
Children	Information about children, about both specific children in their classroom as well as children more broadly.	503
Context	Information about variables that are part of the external environment and that inform the instructional setting.	174
Feelings	Information about feelings or emotional states during the instructional activity.	163
Past experiences	Information teachers have gained through their personal experiences with the world.	86
Developing skills	Information about how focusing on a particular content or strategy develops children's skills more broadly.	81

In the next sections, the categories are presented based on how frequently they occur in teachers' discussions of their pedagogical reasoning. Each individual category is defined and elaborated with examples from episodes of teachers' reasoning. In order to balance the need to talk broadly about patterns in the use of information with the reality that these episodes are specific to individual moments of instruction, two types of examples are provided. Excerpted quotations from teachers are presented in tables along with definitions of the subcategories of information to provide exemplars of teachers' pedagogical reasoning using those subcategories. These excerpts are disconnected from the context and can sometimes be difficult to interpret as pedagogical reasoning about practice without the full episode. Therefore, examples of full episodes of teachers' pedagogical reasoning with a description of the instructional context are also provided in order to give a more detailed presentation of teachers' use of information. This allows for a more nuanced picture of the relationship between the first-order and second-order data.

The discussion of teachers' use of information is supported by reporting the number of episodes in which each subcategory of information is referenced as well as by tables presenting the mean and standard deviation of references to information per teacher overall, by who stopped the video, by instructional activity, and by school setting. These provide a means for examining patterns in the ways that teachers use various sources of information. In each section there is a discussion of how the information is or is not related to the immediacy of the instructional moment, if there seems to be a difference in reporting of the use of information based on who stopped the video, and concludes with a cautious discussion of differences in teachers' use of information in their pedagogical reasoning by instructional activity and school setting.

Goals

This category of information is comprised of the learning and developmental objectives that teachers have for children. These are the “goals” that teachers report trying to accomplish during their instruction. This category emerged from teachers’ discussions of what they are trying to achieve and why in particular moments of instruction. As the stimulated recall procedure asks teachers what they are thinking about, it elicits discussions of teachers’ pedagogical reasoning about the task on which they are working. Whereas it seems intuitive that teachers would discuss their goals when talking about their practice, there are interesting differences in the types of goals that they reference in their pedagogical reasoning. Teachers’ goals can be conceptualized in two ways: as learning goals that are pedagogical or socio-emotionally focused or by temporal markers, as goals that are activity-specific or are ongoing.²² This results in four different subcategories of goals which are defined with excerpts below in Table 5.2. Also included in the broader goal category are teachers’ discussions of pedagogical reasoning about the teaching strategies that they are using to achieve their various goals. Teaching strategies are included in the goals category as teachers often discuss thinking about the strategies that they are employing to achieve their goal.

It is important to note that often episodes contained multiple sources of information and thus could be coded for multiple subcategories simultaneously. For the most part, the excerpted examples only include one source of information; excerpts that have multiple codes are indicated along with their other codes.

²² The planning interviews with teachers (described in the methods section) also provide some insight into teachers’ goals for the activity as teachers typically discuss during planning what they are hoping to achieve. However, teachers’ discussions of their moment-to-moment thinking also provide insight into the range in goals that they are thinking about (both in terms of learning focus and temporal focus).

Table 5.2

Description of the Subcategories of Goals

Goal Subcategory	Definition	Excerpts from teachers' reports (data)
Learning goals		
Pedagogical	Goals related to learning academic content – e.g., identifying a sight word or writing a name.	“But I only want you to see that each one of these words begins with the /s/ sound. And so, then it helps them focus in, because underlined it's more prominent than the rest of the words, the letters.” – <i>Beth</i> “...I wanted him to get used to writing the lowercase.” – <i>Catherine</i>
Socio-emotional	Goals related to children's affective development – e.g., learning to wait one's turn or how to be nice to a friend.	“..be able to talk, so a lot of times we get children up there who are not very confident with speaking but it gives them the opportunity to really look and talk and be in front of the class” – <i>Abby</i> “And so I want them to be able to do it on their own and if they want help, then say, ‘I'd like some help, please.’” – <i>Deanna</i>
Temporal goals		
Activity-specific	Goals that are to be achieved during the activity and could be related to content or task – e.g., forming the letter ‘e’ ^a or completing the listening activity.	“I was hoping they would realize we did not get to our goal of 20” – <i>Amanda</i> “When they go to the weather I want them to really think about everything that's going on, so is there clouds, is there sun, is it snowing, is it windy” – <i>Abby</i>
Ongoing	Goals that are ongoing, that teachers have been working on across activities – e.g., not hitting other children or learning how to figure out the answer on their own. ^b	“The fact that they can use the initial sound of a word to help them identify the word. I'm trying to make them aware of—they're really getting very good at initial sounds.” – <i>Jacki</i> ^c “...everybody has a voice, and everybody gets a turn, and that's important.” – <i>Linda</i>
Teaching strategies	The method that teachers think about using in order to achieve a goal – e.g., rephrasing a question or calling on another student to help.	“I wanted her to try to say both of them, truck, and—and then to say doll. And see if she could, after she says doll, figure out that that begins with /d/.” – <i>Abby</i> “I was giving her hints...I remember giving her a hint.” – <i>Beth</i>

^aBoth of these are examples that would also be coded as pedagogical goals. ^bThis is an example of an excerpt that would also have been coded as a socio-emotional goal. ^cAlso coded as a pedagogical goal.

Double coding was common for the goal categories. Teachers frequently referenced a learning goal as well as a temporal marker for their goal. Given this frequency of double coding one might question the necessity of differentiating between learning goals and temporal goals. The ongoing goals, a temporal goal, are coded separately as these are goals that are not always as apparent in the teachers' planning for the activity, yet still emerge in their moment-to-moment reasoning about practice. Thus pedagogical goals, one type of learning goal could also be an activity specific goal, a type of temporal goal. There were many iterations of this double coding.

Teachers' use of information about goals manifests itself in how teachers make decisions about specific instructional moments. For example, in Episode 5.1 below, during language and literacy instruction Jacki is using information about a student error in labeling an object and reasoning about how that will impact her ability to achieve a pedagogical goal to have children match rhyming pairs. This is also an activity-specific goal.

Episode 5.1

***Context:** The group is working with two piece puzzles that have rhyming words. Jacki holds up her picture (of two mice) and says, "and I have?" A child says "a mouses" [I stop the video.]*

***Jacki:** "They're not real good with irregular plurals...they still say mouses. They don't say mice. And, when you're looking for rhyming, you know, mouses is fine if you're doing the initial sound, but it's not fine if you want them to rhyme..."*

Jacki using information about how saying "mouses" will make it difficult for the children to be able to match the ending sounds with pictures to complete both the pedagogical and activity-specific goal related to rhyming. Her subsequent instructional moves, correcting the child by telling her the word is "mice," helps her address this problem so that children can eventually rhyme "mice" with "dice." Jacki's description of her plan for the activity in the planning interview also informed the categorization of this episode as related to an activity-specific goal.

In the next example, Episode 5.2, Amanda discusses using information about an ongoing, socio-emotional development goal that she has for Isaac's behavior in order to inform her pedagogical reasoning during circle time.

Episode 5.2

Context: Amanda has cutouts of the number '4'. The class counts that there are nine fours and then Amanda has them close their eyes while she hides the fours around the room. Children start searching for the cutouts. You hear one child say – "Ebby you can find this number four." Amanda says "Oh, Isaac that is so kind." [Amanda stops the video.]

Amanda: "I had to give Isaac more positive reinforcement, because he's having some behavior issues. So I'm trying to focus more on the good things that he's doing. And that was really sweet of Isaac to find that for Ebby. [To] Give her the chance to find one."

Her ongoing goal of helping Isaac manage his behavior with more positive reinforcement, a socio-emotional related goal, influences Amanda's pedagogical reasoning about how to respond to Isaac in this particular moment of instruction. She chooses to focus on his behavior before returning to the academic task related to the number four.

Of all of the categories of information that teachers report using to inform their pedagogical reasoning, their goals for what children will learn and be able to do are discussed the most frequently. That is, the combined category of goals accounts for almost half of the information that teachers report reasoning with during their instruction ($n = 756$ of 1,763 total references). Table 5.3 presents how many references on average teachers make to these various goal subcategories. The data are presented as the mean number of references made by a teacher to the individual subcategories of information in order to demonstrate how common various sources of information are across a teacher's discussions of her pedagogical reasoning.²³ The

²³ For example, the first cell containing the mean number of references of overall pedagogical goals represents, on average, the total number of references an individual teacher makes to pedagogical goals across all of her episodes of reasoning. This was calculated by dividing the number of references to the subcategory of pedagogical goals, $n =$

standard deviations allow one to see variations in information use across individual teachers.

Table 5.3

Mean (Standard Deviation) of References to Goals Made per Teacher Overall, According to Who Stopped the Video, by Instructional Activity, and by School

	Overall <i>n</i> = 756	From Teacher Stops <i>n</i> = 350	From My Stops <i>n</i> = 406	Circle <i>n</i> = 430	Language and Literacy <i>n</i> = 326	Friendship School <i>n</i> = 399	ABC School <i>n</i> = 357
Learning goals							
Pedagogical	34.38(8.23)	14.63(5.04)	19.75(6.61)	19.00(5.13)	15.38(4.27)	37.75(3.86)	31.00(10.61)
Socio-emotional	5.5(3.42)	3.25(2.60)	2.25(1.28)	3.75(2.49)	1.75(1.83)	4.00(2.16)	7.00(4.08)
Temporal goals							
Activity-specific	30.13(7.74)	12.75(5.23)	17.38(6.09)	16.13(5.87)	14.00(4.04)	34.50(2.38)	25.75(9.11)
Ongoing	12.63(4.41)	6.88(3.23)	5.75(2.82)	7.88(2.47)	4.75(3.58)	10.75(3.30)	14.50(5.00)
Teaching Strategies	11.88(3.04)	6.25(2.12)	5.63(1.92)	7.00(2.83)	4.88(3.09)	12.75(3.10)	11.00(3.16)

Note. The *n*'s reflect the number of total references to the category of information (the sum of the references to the individual subcategories). These means were calculated by dividing the total number of references to the subcategory by the number of teachers; by eight for the "overall," "stops," and "instructional activity" columns; and by four for the "school" columns.

Teachers frequently use information about goals that are related to the immediate instructional moment. Each teacher makes, on average, about 30 references to activity-specific goals over the course of her interviews ($M = 30.13$, $SD = 7.74$) in 45% of the total episodes of reasoning ($n = 241$ of 537 episodes). Ongoing goals appear, on average, less frequently than the activity-specific goals ($M = 12.63$, $SD = 4.41$), occurring in only 101 episodes. Discussions of pedagogical goals also appear in more than half of all the episodes ($n = 275$ of 537) with each teacher reporting reasoning about pedagogical goals on average 34 times ($M = 34.38$, $SD = 8.23$). Teachers' descriptions of reasoning about socio-emotional goals are less frequent than

275, by the number of participants, eight. The standard deviation demonstrates that there is a range in the number of references each teacher makes to her pedagogical goals. The subsequent columns describe the number of average references a teacher makes to pedagogical goals based on who stops the video, the instructional activity, and the school.

pedagogical goals, only occurring in 44 episodes and, on average, each teacher only references these goals 5.5 times ($SD = 3.42$). Teachers discuss using information about strategies for helping children with their goals in about 18% of the episodes ($n = 95$) and about four times per teacher.

When examining the patterns in how teachers use information about their goals, there seems to be more reliance on goals about the immediate context, activity-specific goals, rather than ongoing goals. However, ongoing goals do play a role in teachers' reports of their pedagogical reasoning. These ongoing goals are interesting in that they are often not a specific part of teachers' lesson plans but opportunities to work on these goals emerge as teachers engage in various activities. These types of goals become relevant in the specific instructional context; for example, Amanda's opportunity to work in positive reinforcement as part of a circle time math-related activity. Therefore they become activity-specific as they are implemented as a result of how activities unfold.

On average, teachers report discussing their pedagogical goals more frequently when I stop the video ($M = 19.75$, $SD = 6.61$ compared to $M = 14.65$, $SD = 5.05$). This is also true for activity-specific goals with teachers discussing using this information more when I stop the video ($M = 17.35$, $SD = 6.10$ compared to $M = 12.75$, $SD = 5.23$). This may in part be due to the criteria for stopping the video which looks for "best-practices" and deviations from initial plans.

There are also differences in how teachers use information about their goals to think about instruction based on both the instructional activity and the school setting. On average, teachers make more references to all types of goals during circle time as compared to language and literacy instruction, see Table 5.3. This may be due to the wider range in instructional tasks and content covered by teachers during circle time as compared to their language and literacy

activities. Teachers also report using more information about strategies for achieving their goals during circle time ($M = 7.00$, $SD = 2.83$ compared to $M = 4.88$, $SD = 3.09$), which is not surprising given that there is more overall discussion of reasoning about goals by teachers during circle time.

Teachers from the Friendship School seem to make more references, on average, to their pedagogical and activity-specific goals than teachers from the ABC School ($M = 37.75$, $SD = 3.86$ compared to $M = 31.00$, $SD = 10.61$; and $M = 34.50$, $SD = 2.38$ compared to $M = 25.75$, $SD = 9.11$). Although the sample size is too small to determine if this difference is meaningful, this pattern is interesting. The ABC School's learning goals for children are more specified than those at the Friendship School particularly in the scripted language and literacy curriculum. It could be that having less specified learning goals raises the Friendship School teachers' awareness of their goals during moment-to-moment instruction as they try to ensure that their goals are being met. It may also be that step-by-step directions in the scripted curriculum ensure that teachers are addressing the activity-specific pedagogical goals so teachers do not need to think as frequently about these goals during instruction.

Teachers' discussions of the four subcategories of goals and the subcategory of teaching strategies for achieving those goals are the most common types of information in teachers' pedagogical reasoning about practice. This is information that is related to the immediacy of the instructional moment. Even ongoing goals become relevant to the immediate moment as opportunities to target these goals arise within the activity. This finding may be somewhat intuitive based on the nature of the data collection which may naturally elicit teachers' reasoning about goals. It is interesting, however, that there are differences in pedagogical reasoning about goals across both instructional contexts and schools. Teachers may think about their goals

differently by school and instructional activity, again using information about these variables to inform their pedagogical reasoning.

Information about Children

During their discussions of pedagogical reasoning about instruction, teachers talk a great deal about children. They report using a variety of information about children to inform their pedagogical reasoning and so this emerged as a category of information that teachers use in their reasoning about practice. References to information about children are the second most frequent category of information in the data occurring 503 times across the 1,763 total references.

Teachers' information about children is divided into two types of subcategories, information about children in their classroom and information about children more broadly. These categories are separated because of the way that this information is obtained by teachers. The first is classroom specific and related to the information that teachers have about the children immediately in front of them. The second type of information about children is more general and can come from multiple places to contribute to teachers' understandings about children in general.

Within each broader category there are more specific types of information about children that teachers report using. Table 5.4 provides definitions and exemplars of teachers' pedagogical reasoning with this information. At the classroom level, there are three types of information about children including: information about individual children, information about groups of children, and ways to gain further information about children. At the more general level, teachers make references to information about children "of this age." These types of information could be generally about "children of this age" using that or similar language or the families of children of this age; although both of these categories are rare. There are two other subcategories of general

information that teachers report using. These are conceptions of how children learn as well as information what children know and can do.

Table 5.4

Description of the Subcategories of Information about Children

Goal Subcategory	Definition	Excerpts from teachers' reports (data)
Specific to children in their classroom		
Individuals	Information about individual children – e.g., signs that a specific child was getting restless or information about how well a child might perform on a particular task.	<p>“but she’s one that doesn’t participate as much. So when she said, “Princess Jasmine,” I just wanted to go with it.” – <i>Amanda</i></p> <p>“Claire’s been very moody and just been on a different level for the last couple of days. And I don’t know if dad’s out of town, sometimes that matters.” – <i>Beth</i></p>
Groups	Information about what groups of children – e.g., class likes to read stories or some groups of children need extra support for an activity	<p>“Any time you can do something with a song they [referring to her language arts small group] seem to really like it better, so that’s kind of what we were doing there.” – <i>Abby</i></p> <p>“There are certain kids, [I] have to repeat myself at least two or three times before they’ll listen to me. And I think it’s because they just need that. They need that reinforcement—for certain kids—of hearing my voice more than once.” – <i>Catherine</i></p>
Assessing	Information gained during the activity as it becomes part of the pedagogical reasoning process – e.g., learning more about an individual child’s ability to read the days of the week.	<p>“That’s why there was such a lag because I watched his little head bob as he’s, you know, going through the entire calendar to get there. So that was really very eye-opening for me because just watching him do it.” – <i>Jacki</i></p> <p>“This was yesterday afternoon. The reason I did this is because I wanted to see if they remembered overnight what we did.” – <i>Linda</i></p>
Children in general ²⁴		
“Children of this age”	Specific references using the term “of this age” or references in general	<p>“Everybody wants to raise their hand whether they—especially at this age, whether they know it or they don’t...” –</p>

²⁴ The accuracy of these subcategories of information was not coded.

	about preschool children.	<i>Abby</i> "So in preschool, it's all about feeling like you're that helper." – <i>Pamela</i>
How they learn	Information about how prekindergarten children learn – e.g., explanations that children learn through being engaged	"So I figure that it should start out being correct and it's much easier to learn the right way than to unlearn something and then relearn it." – <i>Beth</i> "You know I truly believe preschool through probably kindergarten is just so much repetition. But they get it. If they're listening at all they get it." – <i>Pamela</i>
What they know and can do	Information about what prekindergarten children in general can do – e.g., most need help gripping pencils	"Some kids just, it's not something they're grasping yet. I mean, sight words is [sic] kind of a kindergarten skill, but we introduce it in pre-K." – <i>Abby</i> "The upper case B has two loops. Invariably, the kids get confused with the Bs and the Ds." – <i>Linda</i>
Families	Information about families "these days" and the at home lives of children – e.g., most parents let children use electronic devices.	"...because sometimes they don't get it at home, because nobody's there to do it." – <i>Beth</i> "They go home, or they might go through a drive-thru. And then, what do they do? They put the kids in front of the computer. Or the iPad. And, I mean, and that's sad." – <i>Beth</i>

These various types of information about children inform teachers' pedagogical reasoning and influence their practice in many ways. In the example below, Episode 5.3, Beth describes her pedagogical reasoning about how she is assessing a child's knowledge about the sound the letter 's' makes. She is also judging the child's response against information that she has about that particular child.

Episode 5.3

Context: Beth is explaining the "frame game" (where the children place plastic square frames over pictures on a worksheet that start with a target letter) to the groups. She says they are looking for pictures that start with the /s/ sound. Then after they have found all of the pictures they are going to go back and color them. Beth asks, "We are going to color in all of the pictures that start with what letter Nellie?" and Nellie says /s/. [I stop the video.]

Beth: “To see if she's even close to where she is... I'm thinking she wasn't that far off, for Nellie. You know, you have to know your kids. And I'm thinking, ‘Okay, that was closer than she would've been a week ago.’”

Beth reports using information about what she already knows about this child in relation to the information that she has just gained in assessing the child, “she wasn't far off for Nellie” and that “she is closer than she would've been a week ago.” Thus she uses information about the individual child and assesses information about the child as part of her reasoning about practice. In this episode Beth also acknowledges the importance of having information about children saying, “you have to know your kids.”

Using information about specific children in one's classroom is different than the way teachers discuss using general information about children during their reasoning about practice. For example, participants discuss how their conceptions of children's learning are incorporated into their reasoning about the use of particular strategies. In Episode 5.4, Linda's understanding that children learn through routine is related to her explanation of her pedagogical reasoning about how to relate to the visitors in her classroom.

Episode 5.4

Context: *Linda is circulating around the group while the children practice writing the letter ‘S’ on a page of the workbook. Grandparents are visiting that day and are seated outside of the circle and the teacher has to maneuver around them to look at the children's books. [Linda stops the video.]*

Linda: “... you know, we had work to do and that was important, whether you're here—the same thing with the grandparents, with the fathers. We're going to have mothers, step-moms... so that they know that our routine is not going to change, usually—sometimes it does—and, we're carrying on. That's how they learn the best. What's the beginning, middle, and end? ... the routine changes sometimes, they'll call me on it or call Ms. Beth about it, and sometimes they get a little crazy because kids learn by routine what's coming next, what's expected, and what's first, second, and third. That's how they learn at this age.”

Linda explains, “That’s how they learn at this age.” She reports using information about how children learn, through routine, to inform her decision to continue through her regular procedures for language and literacy instruction, pretending that there are no visitors.

Table 5.5

Mean (Standard Deviation) of References to Information About Children Made per Teacher Overall, According to Who Stopped the Video, by Instructional Activity, and by School

	Overall <i>n</i> = 503	From Teacher Stops <i>n</i> = 265	From My Stops <i>n</i> = 238	Circle <i>n</i> = 297	Languag e and Literacy <i>n</i> = 206	Friendship School <i>n</i> = 262	ABC School <i>n</i> = 241
Specific to children in classroom							
Individuals	17.50(5.95)	8.38(3.38)	9.13(4.55)	10.88(5.46)	6.63(2.92)	16.25(4.86)	18.75(7.41)
Groups	12.13(7.49)	6.38(4.93)	5.75(3.06)	8.50(6.21)	3.63(1.85)	15.50(9.98)	8.75(.96)
Assessing	12.75(5.50)	6.38(4.10)	6.38(2.62)	6.50(2.98)	6.25(4.68)	12.00(4.83)	13.50(6.76)
Children in general							
“Children of this age”	1.13(1.81)	1.00(1.60)	.13(.35)	.63(.92)	.50(.93)	1.00(2.00)	1.25(1.89)
How they learn	12.25(8.26)	7.13(6.01)	5.13(2.70)	6.75(4.13)	5.50(4.38)	14.50(10.79)	10.00(5.42)
What they know and can do	6.88(4.39)	3.75(2.82)	3.13(2.70)	3.63(2.97)	3.25(2.43)	6.25(4.27)	7.50(5.07)
Families	.25(.46)	.13(.35)	.13(.35)	.25(.46)	0.00(.00)	0.00(.00)	.50(.58)

Note. The *n*’s reflect the number of total references to the category of information (the sum of the references to the individual subcategories). These means were calculated by dividing the total number of references to the subcategory by the number of teachers; by eight for the “overall,” “stops,” and “instructional activity” columns; and by four for the “school” columns.

Table 5.5 displays the mean number of references teachers make to using various sources of information about children. Across the episodes there are more references to information about specific children, 339 (summing the individuals *n* = 140, the groups *n* = 97, and the assessing *n* = 102 subcategories) than to references to information about children in general, 164 (summing the “children of this age *n* = 9, the how they learn *n* = 98, the what they know and can do *n* = 55, and families = 2 subcategories). On average, each teacher makes about 12 references

to using the specific types of information, more than almost all of the general information subcategories. The only exception to this is information about how children learn, which teachers report using to inform their pedagogical reasoning in about a fifth of the episodes ($n = 98$). The mean number of references to information about how children learn is 12.25 ($SD = 8.23$). Typically, teachers are depending on information from the immediate instructional context to inform their reasoning about practice. This is information related to what they know and can learn about the specific students in their classroom.

There are rare references to more broad statements about children this age ($n = 9$) and only two references to families of children this age. In fact, only one teacher discusses using information about families in her episodes of reasoning about practice. The explanation for this is unclear, although overall, teachers do not seem to use general information about children as frequently as they do information about the specific children in their classroom. They may have more detailed information about particular families that they can use in their pedagogical reasoning and this would emerge in the subcategories of information about specific children in their classroom.

There do not seem to be many differences in how teachers discuss the use of information about children based on who stops the video. There are, however, differences in how teachers report using information about children by both instructional activity and school. Teachers report, on average, using information about groups of children more during circle time than during language and literacy instruction ($M = 8.50$, $SD = 6.21$ compared to $M = 3.63$, $SD = 1.85$, respectively). This is also true for their use of information about individual children ($M = 10.88$, $SD = 5.46$ circle time compared to $M = 6.63$, $SD = 2.92$ language and literacy). This pattern may be due to the differences in the types and quantity of activities present during the two

instructional activities. The averages in Table 5.5 also show differences in how teachers discuss using information about children by school. On average, teachers at the Friendship School reference information about groups of children almost twice as much across their interviews. Although it is difficult to draw conclusions about this difference, it could be related to the smaller class sizes at the Friendship School making it easier for teachers to think about the group as a whole.

Although teachers discuss using a range of information about children to inform their pedagogical reasoning about practice, they more frequently rely on information about the specific children in their classroom. Teachers do not as commonly discuss general information about what children know and can do, and information about how children learn is only present in about 20% of teachers' episodes of reasoning. The utilization of information about specific children to inform pedagogical reasoning about moment-to-moment instruction is another example of how teachers use information about the immediate context, and the children in front of them, to inform their pedagogical reasoning.

Context

In teachers' discussions of their pedagogical reasoning about practice they often reference variables that are part of the external environment and that inform the instructional setting. These variables are related to the school context and requirements for curriculum implementation. Moreover, these variables are also related to structures in the environment such as scheduling and noise. Because these variables are part of the environment, they are defined as information about the context. Contextual variables are the third most frequent source of information in teachers' reports of reasoning about their instruction ($n = 164$, of 1,763 of total

references). These subcategories include: the curriculum, center based assessments, environmental factors, and scheduling and are described in more detail in Table 5.6.

Table 5.6

Description of the Subcategories of Context

Goal Subcategory	Definition	Excerpts from teachers' reports (data)
Curriculum		
In general	General information about instruction as linked to the curriculum – e.g., focusing on a letter of the week or teaching sight words. ^a	<p>“Well, that’s part of, our number this week is five... since he’d chosen that, I figured we might as well start practice, have him practice what the five, the number five looks like.” – <i>Catherine</i></p> <p>“it’s part of our requirement. That they know the sight words before they get into kindergarten.” – <i>Deanna</i></p>
Critiquing	Information that teachers have about the difficulties or problems with the curriculum – e.g., the pictures in the workbook are confusing or the listening tape does not pause long enough between questions.	<p>“So that, I find, is challenging, the way the book is set up, sometimes... But I find that that page was kind of challenging, just the way it was set up in general.” – <i>Abby</i></p> <p>“The one thing that I don't like about this book they use for the language art[s], it doesn't introduce the sounds in the purest form... you've got consonant blends in there.” – <i>Beth</i></p>
Understanding	Information that teachers have about the intents of the curriculum – e.g., to focus on letter sounds or the purpose of the dotted lines in handwriting activities.	<p>“I heard somebody say, ‘a bell,’ so then I wanted to kind of double check and look in the book, just to see if it was... I wanted to take a minute to look, double check with the book.” – <i>Deanna</i></p> <p>“So we’re trained, from this book, to go this way to make the ‘O’. He was making a good O, but he was going this way. So I was holding it so he could feel what direction to go in.” – <i>Deanna</i>^b</p>
Relates to other activities	Information about how a current activity or children’s statements relate to other classroom activities – e.g., something that the class did the previous day or how an activity is one step of a multi-day activity.	<p>“We just read a story <i>Ten Fat Turkeys</i> so that’s probably where she got it.” – <i>Amanda</i></p> <p>“Because we do a lot of stuff with the initial sound and I didn’t want him thinking in terms of words that started with /e/ like /e/ /e/ /e/ /f/ I wanted him to think about words that start with /f/ /f/.” – <i>Jacki</i></p>
The Pre-KIDS Assessment	Information about a child or children’s actual or expected	<p>“...he did very well on his assessments so I was pleased. I mean, he’s doing better than</p>

	performance on the Pre-KIDS: Pre-Kindergarten Inventory of Demonstrated Skills assessment used at the Friendship School - references to performances of individual or groups of children on this assessment.	I thought he was.” – <i>Jacki</i> “After doing assessments I just realized that the number part is more where my children are not struggling but they just don’t, they’re not as comfortable with it.” – <i>Pamela</i>
Environment	Information about the physical environment – e.g., pedagogical reasoning related to the classroom being crowded or the noise levels (not part of a post-hoc observation).	“It is so loud... that background noise, and I get—all of them were able to successfully do the work.” – <i>Abby</i> “...because I was busy getting glue sticks and climbing over grandparents.” – <i>Linda</i>
Scheduling	Information about the schedule of the daily activities – e.g., having to go to the library or being stuck indoors all day due to rain.	“They were antsy in their pantsies... we were cooped up inside.” – <i>Amanda</i> “I knew that we had to, you know we were cutting it close timeframe wise and I wanted to go through and do the sight words.” – <i>Beth</i>

^aThese are references that may also be coded as pedagogical or activity-specific goals depending on how the teacher is using the information to think about practice. ^bThis is also coded as a teaching strategy and the full text of the episode is also coded as pedagogical and activity-specific goals.

Information about curriculum informs much of teachers’ pedagogical reasoning and there are multiple types of curricular information that teachers report using in their pedagogical reasoning. These discussions of reasoning about curriculum are especially interesting in light of the differences in the types of curricula used by both schools. Teachers from both schools report using general information about the curriculum to inform their pedagogical reasoning. Yet, there are also patterns in teachers’ pedagogical reasoning with more in-depth information about the curriculum. Specifically, there is evidence of teachers using information related to the intent of the curriculum as well as teachers’ critical evaluation/critiquing of the curriculum. Although less frequent, these moments of teacher pedagogical reasoning about the curriculum are important

insights into how teachers interact with and think about implementing curricula in their classrooms.

An example of how teachers report using information about curricula to inform their pedagogical reasoning is presented in Episode 5.5. Here Deanna identifies information about an important element of curriculum and explains how that informs her instruction.

Episode 5.5

Context: *Classroom is working in their letter 'd' workbook. Teacher asks, "Please turn to page 15." One child observes, "It has a drop on it." The teacher says, "/d/d/d/ drop." [I stop the video.]*

Deanna: "It's the letter of the week. And in our curriculum it's more important to say /d/, rather than 'd'. But I say it both. It's just what we're told to do."

Deanna discusses her understanding of the curriculum in her reasoning about how to respond to the child's statement about the drop. She conceptually understands that the curriculum's intention is to focus on the sound that a letter makes instead of the letter name. Because she understands the curriculum, she is able to use that to inform her reasoning about her next instructional move, emphasizing the /d/ sound at the beginning of 'drop'.

Understanding the curriculum is different than when teachers discuss their critiques of the curriculum. For example, in Episode 5.6, Abby explains her reasoning about why she tells her language arts group that the question asked on the audiotape is hard.

Episode 5.6

Context: *Children are working in the workbook with a listening tape. They are supposed to look at a pair of pictures, listen to the voice on the tape say the two pictures, and then circle the one that starts with a /d/ sound. The children are working on a pair with a drum picture and a tuba picture, the tape recording has already played. The teacher asks, "What do you think, this is kind of a hard one?" [I stop the video.]*

Abby: "...because they did the blend. And so this book is kind of notorious for doing, sometimes even the wrong letter sound. But we really were trying to, on that short /d/, and they sometimes add blends, which is fine, because you can kind of hear the /d/. It's not blending that 'd' and 'r'

kind of throws them off. So I try to have them isolate that first /d/, and really focus /d//d//d/drum.”

Abby identifies what she sees as a problem with the curriculum, the blend of two letters' sounds together that make difficult for children to hear the pure /d/ sound at the beginning of the word, thus making the task more difficult. Her awareness of this problem, as she sees it, with the curriculum informs her instructional practice of telling her students that it is a difficult task and then giving them more time to work out the answer.

Table 5.7 presents the average number of references per teacher to using information about context to inform their pedagogical reasoning. In total, teachers report using information about contextual variables 174 times (of 1,763 total references). Of the various contextual information subcategories, on average, teachers report using information about the curriculum in general ($M = 5.25$, $SD = 4.33$) and how an activity relates to other parts of the curriculum ($M = 7.50$, $SD = 3.12$) the most. It is interesting that teachers report thinking about how the curriculum connects to other activities as a way of situating the current instructional moment within other instructional activities. Teachers are thinking about the specific moment of instruction as it relates to other particular moments of instruction. This pedagogical reasoning and the connections across curricular activities is something that is not immediately observable from practice. One could not necessarily understand how a specific instructional move is related to other elements of the curriculum or previous moments of instruction just from observing teaching. This type of pedagogical reasoning about the curriculum influences how teachers make their moment-to-moment decisions.

Table 5.7

Mean (Standard Deviation) of References to Contextual Information Made per Teacher Overall, According to Who Stopped the Video, by Instructional Activity, and by School

	Overall <i>n</i> = 174	From Teacher Stops <i>n</i> = 85	From My Stops <i>n</i> = 89	Circle <i>n</i> = 75	Language and Literacy <i>n</i> = 99	Friendship School <i>n</i> = 72	ABC School <i>n</i> = 102
Curriculum							
In general	5.25(4.33)	2.25(1.28)	3.00(3.46)	2.25(.38)	3.00(3.85)	3.50(3.32)	7.00(4.97)
Critiquing	2.25(2.96)	1.5(2.51)	.75(1.49)	.50(1.07)	1.75(2.66)	0.00(.00)	4.50(2.65)
Understanding	2.75(3.69)	1.38(1.69)	1.38(2.50)	.25(.71)	2.50(3.66)	0.00(.00)	5.50(3.42)
Relates to other activities	7.50(3.12)	3.13(2.03)	4.36(2.20)	4.13(2.59)	3.38(2.13)	8.75(3.40)	6.25(2.63)
PreK-KIDS							
Assessment measure	.75(1.75)	.13(.35)	.625(1.41)	.38(.74)	.38(1.06)	1.50(2.38)	0.00(.00)
Environmental	2.00(2.33)	1.25(1.83)	.75(1.17)	.63(.74)	1.38(2.13)	2.50(3.32)	1.50(1.00)
Scheduling	1.25(1.04)	1.00(1.07)	.25(.46)	1.25(1.04)	0.00(.00)	1.75(.96)	.75(.96)

Note. The *n*'s reflect the number of total references to the category of information (the sum of the references to the individual subcategories). These means were calculated by dividing the total number of references to the subcategory by the number of teachers; by eight for the "overall," "stops," and "instructional activity" columns; and by four for the "school" columns.

Information related to the physical environment and scheduling are also present in teachers' reports of reasoning about practice but are referenced infrequently. Interestingly, discussions of information about scheduling are only present in circle time, perhaps because this is a more malleable activity for teachers to tweak depending on the particular scheduling needs of the day.

The most striking pattern in this data is the differences in the way that teachers report using information about curriculum by instructional activity and school. Given the implementation of the scripted "language arts" curriculum as well as the more specified language and literacy developmental goals at the ABC School it is not surprising that there are differences in reasoning about curriculum related information across both instructional activity and school.

Teachers from the ABC School, on average, make references to the curriculum in general more frequently than those from the Friendship School ($M = 7.00$, $SD = 4.97$ compared to $M = 3.50$, $SD = 3.32$). ABC School participants also discuss information related to understanding the curriculum ($M = 5.50$, $SD = 3.42$) and critiques of the curriculum ($M = 4.50$, $SD = 2.65$) whereas the participants from the Friendship School never talk about these types of information. On average, teachers make more references to reasoning about curriculum subcategories during language and literacy instruction. The exception being references to information about how something relates to other parts of the curriculum, which is slightly higher during circle time ($M = 4.13$, $SD = 2.59$ in circle compared to $M = 3.38$, $SD = 2.13$ in language and literacy instruction). Discussion of understanding and critiquing the curriculum are especially prominent in teachers' pedagogical reasoning about the moment-to-moment practice related to the implementation of the ABC School's scripted curriculum.

Information about the context and, in particular, the curriculum informs teachers' reasoning about practice. Context related variables are, by their nature, important to the immediacy of the instructional activity. Teachers are using information coming from around them in the environment, information about items that are generally beyond their control and often mandated, as in the case of the curriculum. There are differences in how teachers report using information about the curriculum, relying on this information more frequently at the ABC School and in language and literacy instruction. Teachers seem to attend to information about scheduling more frequently during circle time which may be a more flexible instructional activity that can be adapted to these contextual variables.

Feelings

Feelings or emotional states during the instructional activity also emerge as a type of information in teachers' pedagogical reasoning about practice. In this study, teachers report using information about children's feelings as part of their instructional decision-making processes. Some teachers also discuss information about their own feelings as they relate to the activity. Thus there are two subcategories related to feelings presented below in Table 5.8.

Table 5.8

Description of the Subcategories of Feelings

Goal Subcategory	Definition	Excerpts from teachers' reports (data)
Children's feelings	Information about how children are feeling during the instructional activity – e.g., are they engaged or do they feel confident.	“Just to make her happy. . . .no need for her to try to get upset, because her socks didn't match somebody else's.” – <i>Amanda</i> “Because she felt confident and secure that, right or wrong, we would help her along, and she got it, and that was important.” – <i>Linda</i>
Teacher's feelings	Information about how teachers are feeling during the activity – e.g., feelings about a child's performance or feelings related to the success of the activity.	“Otherwise I would be bored.” – <i>Pamela</i> “Oh, he's starting to recognize as a lot of the children are what we do, what's on the board, and we're always willing to share everything that we do. And I love the fact that they're excited and aware so, I pointed it out and reminded them what we do.” – <i>Deanna</i>

Information about children's feelings can influence teachers' practice and how they reason about what they are doing in their classroom. Frequently teachers report being concerned with making sure that children do not feel badly. For example, Deanna discusses using information about how to adjust her instructional moves so that a particular child does not feel isolated during language and literacy instruction (Episode 5.7).

Episode 5.7

Context: *Children are working independently on writing the word ‘dog’ in their workbooks. Deanna walks over to Cormac (a child who works with a specialist to help develop his fine and gross motor skills) and kneels down by his chair and puts her hand on top of his as he is writing. [I stop the video.]*

Deanna: “He doesn’t want to feel different from anybody else. And I don’t think I make him feel different than anyone else. So I was quietly showing him a few things. And then I’d say, ‘Do you need that red thing to hold them on the table?’ [a special tool to assist him with his occupational therapy] And then reminding him how to do it. So if I said it a little louder as a lesson for everybody, then he would have felt like I— so I didn’t want him to feel isolated.”

Deanna’s pedagogical reasoning about not isolating Cormac and not wanting him, “to feel different from anyone else” informs her decision to whisper and use physical guidance to help him with his writing instead of employing a different strategy.

In addition to attending to children’s feelings, there is evidence of teachers’ own feelings about the activity emerging in their reasoning about practice. In the example below, Episode 5.8, Jacki discusses her feelings about a particular child’s response.

Episode 5.8

Context: *The group is looking at their circle time chart. It has a rectangle part that has the days of the week listed from left to right. Each day is a different color. Jacki asks, “what color is Monday?” and calls on a child. The child says “red” which is incorrect. [I stop the video.]*

Episode: “I actually was just pleased he gave me a color because lots of the times his answer, he—I don’t always feel like he’s listened well enough to the question to answer it correctly. So I was actually pleased that I got a color today and not a day of the week, or a number, or something like that...”

Jacki is “pleased” because, although the child gave an incorrect answer, he was at least able to give the correct category of answer. Her subsequent decision to move on to another child without spending too much time on the incorrect answer was related to this pedagogical reasoning.

Information about feelings is related to the immediate instructional activity and how both the teacher and the children are responding in the moment-to-moment instruction. This context

specific information about feelings appears 163 times (of 1,763 total references) in teachers’ discussions of their pedagogical reasoning. Table 5.9 presents the frequency of the use of information about feelings by instructional activity and school setting. Although on average teachers report using information about children’s feelings more frequently ($M = 12.25$, $SD = 5.23$), teachers are also attending to their own feelings ($M = 8.13$, $SD = 4.58$).

Table 5.9

Mean (Standard Deviation) of References to Feelings Made per Teacher Overall, According to Who Stopped the Video, by Instructional Activity, and by School

	Overall $n = 163$	From Teacher Stops $n = 97$	From My Stops $n = 66$	Circle $n = 80$	Language and Literacy $n = 83$	Friendship School $n = 91$	ABC School $n = 72$
Children’s feelings	12.25(5.23)	7.50(2.39)	4.75(3.37)	5.50(2.98)	6.75(3.49)	15.00(5.48)	9.50(3.70)
Teacher’s feelings	8.13(4.58)	4.63(2.56)	3.50(2.51)	4.50(2.27)	3.63(2.56)	7.75(3.10)	8.50(6.24)

Note. The n ’s reflect the number of total references to the category of information (the sum of the references to the individual subcategories). These means were calculated by dividing the total number of references to the subcategory by the number of teachers; by eight for the “overall,” “stops,” and “instructional activity” columns; and by four for the “school” columns.

There seems to be some difference in the number of references to information about children’s feelings based on who stops the video. When teachers stop the video, on average, they discuss children’s feelings more than when I stop the video ($M = 7.50$, $SD = 2.39$ compared to $M = 4.75$, $SD = 3.37$). This could be because teachers were encouraged to stop the video whenever something interesting or out of the ordinary occurred and children’s feelings may in some way be linked to what they finding interesting. This difference was not as pronounced across information about teachers’ own feelings.

There was one noticeable difference in teachers’ pedagogical reasoning about practice with information about feelings by instructional context and school. Teachers at the Friendship School, on average, discuss using information about children’s feelings more across their

interviews than those at the ABC School ($M = 15.00$, $SD = 5.48$ compared to $M = 9.50$, $SD = 3.70$). It difficult to know if this difference is real and if it is perhaps related to the stronger emphasis on socio-emotional development at the Friendship School. It may also indicate that teachers who are personally focused on children's socio-emotional development sought employment the Friendship School because of this curricular focus. Either of these possibilities might indicate that the relationship between school curricular focus and teachers' attention to children's feelings is something to explore in other studies.

Whereas it might be intuitive to expect teachers to attend to children's feelings, both of efficacy and enjoyment of the activity, the emergence of teachers' own feelings about the activity is interesting. The fact that some teachers are also attending to how they feel about the activity, both as it relates to children's performance but also their own enjoyment of the activity suggests a more emotional attachment to teaching that influences teachers' pedagogical reasoning. These types of in-the-moment experiences, or present experiences, might be especially meaningful for teachers' instruction (and personal feelings of efficacy as a teacher) but have not been explored in-depth as they relate to early childhood instruction. Teachers' emotional investment in the instructional activity and how that influences their pedagogical reasoning is discussed more in the next findings chapter.

Past Experiences

In teachers' discussions of their pedagogical reasoning there are also references to information that they have gained through their personal experiences with the world. This information could be based on their educational experiences, time at home with their own children, or previous classroom instruction. These types of information are grouped together as they are related to the use information from past personal experiences. Experiences from

teachers' pasts emerge in the subcategories of formal training,²⁵ previous teaching, teachers' experiences as learners, and information teachers learned from their own children. These subcategories are presented below in Table 5.10 along with their definitions and excerpts of teachers' reported pedagogical reasoning using these subcategories. In teachers' discussions of their pedagogical reasoning there are also several references to "what it means to teach." Teachers often explain their ideas about "what it means to teach" in the context of what they are doing in the classroom. These conceptions are based on past experiences that have informed their understanding of "what it means to teach." Therefore, this idea is grouped within the category of experience.

Table 5.10

Description of the Subcategories of Experience

Goal Subcategory	Definition	Excerpts from teachers' reports (data)
Formal Training	Direct references to information from teachers' formal or official educational experiences	"we had that in-service at the beginning of the year. And there's a woman that came in was talking about if you focus on that one child doing all negative and all the other children are doing you know what you're asking them to do—all the positive—your attention's in the wrong spot." – <i>Amanda</i> "That's the way I was taught. If you let them do it, instruct, they will actually learn it better." – <i>Pamela</i>
From own children	Direct references to information learned through being a parent	"I think I learned this when my kids were little." – <i>Beth</i> "...like I used to, with my own kids..." – <i>Pamela</i>
From teaching	Direct references to information learned from past experience teaching	"I find it personally more effective to stop on the page because then they can have that visual cue..." – <i>Catherine</i> "That's just how I've done it, trying to get them to think what the next number is. I

²⁵ Both educational and professional development experiences are grouped together because a) they are both formalized training experiences and b) they are relatively infrequent in teachers' reports.

Teacher's experience as learner	Direct reference to information or experience from being a learner	find that, or I found, when I worked in public school, that kids had a lot of trouble with numbers before and after." – <i>Jacki</i> "But I always had to read and reread and stay up and go over stuff, over, and over, and over again. Nothing ever came easy for me." – <i>Beth</i> "I know from personal experience as someone who was incredibly bored at some of the schools that I went to..." – <i>Catherine</i>
What it means to teach	Phrases with terminology related to the identity of teaching or information about what teachers are supposed to do	"But at least we as teachers have to show them." – <i>Deanna</i> "our job as teachers and educators is to give them the tools and to make sure that they know." – <i>Linda</i>

Note. The excerpts in this table are particularly difficult to connect to pedagogical reasoning without the full context of the episode. The example episodes below provide a more contextualized understanding of how information from experiences is used in pedagogical reasoning about practice.

In the next example (Episode 5.9), Linda uses the idea of “what it means to teach” to explain her pedagogical reasoning about the steps she took to help clear up a misunderstanding about what it means to be a sister or a daughter that occurs during circle time.

Episode 5.9

Context: *Linda is asking the children to tell her words that start with the letter ‘d’. Some of the children are having a difficult time thinking of words. Linda is giving clues to one boy, “Your sister, she is your mom and dad’s what? Not a son but a...” then Cameron helps out and answers daughter. A third child says, “I thought it was a sister.” [I stop the video.]*

Linda: “I said that was Myer’s sister’s name. That’s when I said, “It’s Mom and Dad’s,”—because they didn’t know that. That was a hard concept for them. But I try to explain it and engage them so that they can distinguish between the different words and thoughts and classifying it. Because I’m a teacher.”

Linda discusses multiple sources of information in this episode of reasoning about practice. In addition to information about the difficulty of the concept for the students in her class, she also discusses thinking about the strategies that she uses to clear up the misconception “try[ing] to explain it and engage them.” These strategies are based on her understanding of “what it means

to teach.” To Linda, explaining things and engaging children is part of the work of teaching. That’s why she engages in a particular practice.

Information from other types of experiences also inform teachers’ reports of reasoning about practice. For example, in Episode 5.10, Amanda explains that she kept emphasizing that the toaster oven was hot because of a previous experience using a glue gun in the classroom.

Episode 5.10

Context: Amanda is explaining to the children that the toaster oven is hot. She repeats that it is hot and draws an imaginary line that children are not supposed to pass. Again she repeats, “It’s hot” emphasizing the word ‘hot’. [Amanda stops the video.]

Amanda: “I had a hot glue gun, just like from past experience, and I had it taped off, roped off, far away from the kids, and they still were so interested. I’m like, ‘It’s hot. Don’t touch that. It’s hot.’ So, I just wanted to make sure that they knew it was far over there and to stay away and not to touch it because I didn’t want them to get burned...”

Through her previous teaching experience, Amanda has learned that children need multiple warnings and this information explicitly informs her reasoning about instruction.

Overall, teachers do not report using information about past experiences frequently during their moment-to-moment instruction. References to past experiences are only present in 86 references to use of information (of 1,763 total references). Table 5.11 presents how frequently teachers report using information from past experiences in their reasoning about practice. Teachers do not often include information from previous experiences in their discussions of pedagogical reasoning in the way that they discuss using more context specific information. For example, formal learning experiences as part of these discussions are rare, with only three teachers referencing formal learning experiences in a total of seven episodes ($M = .50$, $SD = .76$). There are only 28 total references to previous teaching experience during teachers’ episodes of reasoning ($M = .38$, $SD = .74$). Teachers’ low frequency of use of information from previous experiences is interesting given the import in the empirical literature of teachers’

educational and teaching experiences as they relate to their observable classroom practice and children’s outcomes.²⁶ It seems that teachers are not using information gained through past experience to inform their pedagogical reasoning about moment-to-moment instruction.

Table 5.11

Mean(Standard Deviation) of References to Experiences Made per Teacher Overall, According to Who Stopped the Video, by Instructional Activity, and by School

	Overall <i>n</i> = 86	From Teacher Stops <i>n</i> = 50	From My Stops <i>n</i> = 36	Circle <i>n</i> = 57	Language and Literacy <i>n</i> = 29	Friendship School <i>n</i> = 30	ABC School <i>n</i> = 56
Formal training	.50(.76)	.38(.52)	.13(.35)	.38(.74)	.13(.35)	.50(.58)	.50(1.00)
From own children	.63(1.19)	.38(.74)	.25(.71)	.50(.93)	.13(.35)	.75(1.50)	.50(1.00)
From teaching	.38(.74)	2.0(1.51)	1.38(1.51)	1.88(1.89)	1.50(2.33)	3.50(2.38)	3.25(3.40)
Teacher’s experience as a learner	1.63(3.46)	1.13(2.10)	.5(1.41)	1.38(3.50)	.25(.71)	.75(.96)	2.50(5.00)
What it means to teach	4.25(4.46)	2.25(2.25)	2.00(2.62)	2.63(3.62)	1.63(2.45)	1.50(1.29)	7.00(4.97)

Note. The *n*’s reflect the number of total references to the category of information (the sum of the references to the individual subcategories). These means were calculated by dividing the total number of references to the subcategory by the number of teachers; by eight for the “overall,” “stops,” and “instructional activity” columns; and by four for the “school” columns.

References to pedagogical reasoning with information about one’s experience as a learner or one’s experience as a parent are also rare. Past experiences, along with discussions of “what it

²⁶In findings from correlational studies, degree attainment is linked to better classroom instruction (Barnett, 1995; Campbell et al., 2002; Reynolds et al., 2002; Schweinhart et al., 1993). In other studies, however, degree attainment has been found to have null effect (Early et al. 2006) or minimal impact on instruction (Fuligni et al., 2009; Phillips et al., 2000; Vu et al.; 2008). When teachers hold degrees directly related to working with young children, this does appear to influence language and literacy instructional practices (Gerde & Powell, 2009; Pianta et al., 2005), however, only one participant in the study (Abby) has a formal degree specific to early childhood instruction. The research on experience and its relation to practice is also mixed. There is evidence that teaching experience, or the amount of time that a teacher has been teaching, makes a difference for instruction (Berliner, 1986; NICHD, 2000; Rivkin, et al., 2005). Yet other researchers have found that experience, or number of years as a teacher, only has a minimal impact on instruction (Guarino et al., 2006; Nye et al., 2004). Friesen and Butera also reported that teachers’ depend on information learned on the job (2012).

means to teach” all emerge in teachers’ pedagogical reasoning although they do not appear frequently. This is explored more in the next findings chapter.

The only differences in the use of information from past experiences by instructional context and school are found in discussions of “what it means to teach.” There are differences in teachers’ reports of use of information by school, with a mean of 1.50 ($SD = 1.29$) references at the Friendship School compared to a mean of 7.00 ($SD = 4.97$) at the ABC School. In part, this difference could be because Linda in particular frequently mentions her conceptions about what it meant to teach. There do not seem to be differences in how teachers discuss their use of information from experience to think about practice based on who stops the video.

Overall, information from past experiences does not seem to inform teachers’ reasoning about practice very frequently. In fact teachers attend to feelings about the activity (both children’ and their own) more frequently than they refer to using information from their past experiences. This pattern in information use, however, supports the broader finding that teachers use information from the immediate instructional moment to inform their thinking. The lack of differences across school and instructional activity may also be related to the minimal role this type of information plays in teachers’ pedagogical reasoning about practice.

Developing Skills

Teachers’ use of information about skill development, although infrequent, sometimes occurs when they are prompted to clarify why they would focus on particular aspect of instruction. This category emerges as teachers talk about how focusing on a particular topic develops children’s skills more broadly. In their discussions of pedagogical reasoning, participants make connections to information about how what they are doing will contribute to children’s reading skills, writing skills, math skills, skills children need as they transition to

kindergarten, and “life skills.” The phrase “life skills” is used by many teachers as a means of describing everyday skills children need to have in order to function in classrooms and outside of school, and thus it was used as a label of for the subcategory. Table 5.12 provides more detailed definitions and excerpts of these subcategories. All of the examples in the definitions represent information that received multiple codes as teachers only discuss skill development in relation to more specific parts of their instruction. Typically discussions of skill development occur in episodes that have information about learning goals and/or temporal goals and may also be coded for information about the curriculum.

Table 5.12

Description of the Subcategories of Developing Skills

Goal Subcategory	Definition	Excerpts from teachers’ reports (data)
Reading skills	Information about how an activity links to developing children’s reading skills – e.g., “pre-reading skills” or learning letter sounds.	“Because I think it’s a good early reading skill to focus on the beginnings of words. That whole left to right orientation.” - <i>Jacki</i> ^a “Focus on learning the letters? Because then we can start to learn words, then we can start to read.” – <i>Catherine</i> ^a
Writing skills	Information about how an activity links to developing writing skills – e.g., forming letters.	“They know using those ‘when, where, what’, so it gets them ready for when they’re reading and writing, what’s the difference between a question, asking, and a statement, which is telling.” – <i>Abby</i> ^a “Because with writing their names...first letter of your name is always uppercase. The rest is lowercase...in English, this is basically how we do uppercase, to know that it’s a special name... basically just for differentiation.”– <i>Beth</i> ^a
Math skills	Information about how an activity links to developing math skills – e.g., pattern making or place value.	“Because it’s just important to know that is [sic] five more than three... I mean it’s kind of like opposites and rhyming it’s one of those things that helps them figure out how to make a pattern or how to make, how to figure something out number wise.”– <i>Pamela</i> ^a “Well, it’s great skill for them to learn,

“Life skills”	Information about how an activity links to developing “life skills” – generally containing the phrase “life skill(s) or “common sense”	obviously. I just focused on counting...”– <i>Amanda</i> ^a “I think it’s important to make those type of connections just for common sense.” – <i>Amanda</i> ^a “So that they know that where it’s hot this time of year. What part of the country... it’s just life. It’s a life skill.”– <i>Linda</i> ^a
Transition to kindergarten	Information about how an activity links to skills children will need in kindergarten – e.g., counting to 20 or recognizing letters.	“I just think that it helps them just, you know learn the difference and in kindergarten I know they’re going to talk more about punctuation.” – <i>Beth</i> ^a “It’s a skill they need to have for kindergarten. In the kindergarten readiness thing that we follow ‘knows the days of the week.’” – <i>Deanna</i> ^b

Note. The excerpts in this table are particularly difficult to connect to pedagogical reasoning without the full context of the episode. The example episodes below provide a more contextualized understanding of how information from experiences is used in pedagogical reasoning about practice.

^aAlso coded as pedagogical and activity-specific goals. ^bAlso coded as pedagogical and activity-specific goals as well as for information in general about the curriculum.

Discussions of information about skill development only occur when prompted by follow up questioning. For example, when asked to explain why she would focus on sequencing during a language and literacy activity Amanda explains that sequencing would help children develop both reading and life skills (Episode 5.11).

Episode 5.11

Context: The group is preparing to make cookies following a recipe that Amanda has printed on a large chart. The recipe has numbered steps. Amanda points to step one and begins to read – “step one is...” [I stop the video.] During her explanation of her thinking she says she wants to focus on sequencing. I ask, “Why would you focus on sequencing?”

Amanda: It’s important to know. It’s like for reading, I mean, pre-reading skills and things happen in an order. We don’t wash our hands, go to the bathroom and then eat. We go to the bathroom, wash our hands, and then eat. I don’t know. Just it’s important for everyday life.

Amanda does report connecting her reasoning about practice to information about children’s development, although she does not specifically say how sequencing is a pre-reading skill. She

also discusses information about how sequencing is important for “everyday life” or is a life skill. Similar to Amanda, other teachers discuss using information about developing children’s reading skills, as well as most of the other skills, without much specificity in explaining how the instructional moment is directly linked to a trajectory of development. For example, Catherine says, “it’s that pre-reading skills [sic] that we want to start building in prekindergarten,” in a discussion about wanting to teach the letters “holistically.” Linda also frequently makes comments about her instruction using phrases like, “It’s a life skill” or they need that “for life.” These more general comments about children’s skill development contextualize the activity that teachers are working on without directly outlining which skills are being developed.

There are 81 (of 1,763 total) references to how instructional moments connect to children’s development across all domains in teachers’ reports of their pedagogical reasoning. Table 5.13 provides information about the average number of references to information about skill development in individual teacher’s discussions of their pedagogical reasoning. Teachers most frequently refer to information about developing children’s reading skills ($M = 3.13$, $SD = 2.85$). Although there is much focus on children’s writing during instruction, particularly in the curriculum at the ABC School, teachers rarely discuss how their instruction relates to developing children’s writing skills ($M = .63$, $SD = .89$).

Teachers do not frequently report using information about children’s skill development to inform their reasoning about practice. This is an interesting finding; however, information about skill development is not information immediate to the instructional context. Rather information about skill development may contribute more to teachers’ planning for instruction than their moment-to-moment instruction, thus informing their overall reasoning about an activity but not providing immediate input into decision-making during practice.

Table 5.13

Mean (Standard Deviation) of References to Skill Development Made per Teacher Overall, According to Who Stopped the Video, by Instructional Activity, and by School

	Overall <i>n</i> = 81	From Teacher Stops <i>n</i> = 38	From My Stops <i>n</i> = 43	Circle <i>n</i> = 57	Language and Literacy <i>n</i> = 29	Friendship School <i>n</i> = 30	ABC School <i>n</i> = 56
Reading Skills	3.13(2.85)	.63(1.06)	2.50(2.07)	.13(.35)	1.50(1.41)	2.25(2.06)	4.00(3.56)
Writing Skills	.75(.89)	.5(.76)	.25(.71)	.25(.46)	.38(.52)	.50(.58)	1.00(1.15)
Math Skills	.88(1.64)	.38(.74)	.50(.93)	.25(.71)	.50(.93)	1.75(2.06)	0.00(0.00)
Life Skills	1.88(2.17)	1.38(2.13)	.50(.76)	.88(1.36)	.75(1.16)	1.25(.96)	2.50(3.00)
Transition to Kindergarten	3.50(1.77)	1.88(1.36)	1.63(1.30)	.88(1.13)	1.75(1.04)	3.00(2.16)	4.00(1.41)

Note. The *n*'s reflect the number of total references to the category of information (the sum of the references to the individual subcategories). These means were calculated by dividing the total number of references to the subcategory by the number of teachers; by eight for the "overall," "stops," and "instructional activity" columns; and by four for the "school" columns.

As might be anticipated by the criteria for stopping the video, on average teachers discuss information about developing reading skills slightly more when I stop the video than when teachers stop the video ($M = 2.50$, $SD = 2.07$ compared to $M = .66$, $SD = 1.06$). There are also patterns that suggest teachers use more information about reading skill development during language and literacy instruction and at the ABC School. This may be due to the "language arts" curriculum at the ABC School and suggests an area in need of further examination. Overall, the mean number of references to the development of skills are quite low.

Recapitulation

This chapter presents the pattern in the participants' use of information about the immediate instructional context in order to inform their pedagogical reasoning. Teachers seem to think a great deal about their students, content (goals and curriculum), and sometimes themselves rather than information from outside of the instructional context. Although not as common, teachers also reference information about how children in general learn. There are differences in

the use of information by instructional activity and school setting, suggesting that these factors influence teachers' use of information in their pedagogical reasoning. These findings are important to consider when thinking about professional learning opportunities and will be discussed in the concluding chapter.

Chapter 6 How Teachers Report Their Pedagogical Reasoning with Information about How Children Learn: What that Means for Their Moment-to-Moment Instruction

The purpose of this findings chapter is to investigate how teachers use information in their pedagogical reasoning in order to address the study's second research sub-question.

Whereas the analysis in the previous findings chapter, Chapter Five, illuminates the types of information teachers report using in their pedagogical reasoning, it does not provide an understanding of *how* information is used to inform pedagogical reasoning. Pedagogical reasoning is a process in which teachers assimilate various sources of information to make one instructional decision. The analysis in this chapter focuses on the process of pedagogical reasoning; it investigates how various subcategories of information function together and influence each other in ways that connect to visible practice.

The previous findings chapter identified six main categories of information informing teachers' pedagogical reasoning. These are information about: goals, children, context, feelings, past experiences, and skill development. Within these main categories are several subcategories of information. Although one of the main findings in the previous chapter is that teachers seem to use information more from the immediate instructional context rather than other types of information gained from previous teaching or formal educational experiences, some of the subcategories of information in their pedagogical reasoning reflect information that early

childhood researchers have identified as important knowledge for teachers.²⁷ In particular, the subcategory of how children learn, nested under the main category of information about children seems to reflect knowledge that researchers value.²⁸

This findings chapter focuses on teachers' pedagogical reasoning using the subcategory of information about how children learn, providing one way of examining how teachers use multiple sources of information to reason during practice. This source of information, conceptions of how children learn, is important to consider as many researchers in early childhood education seem to identify this knowledge as important for teaching.²⁹ Given the value placed on this information by the field, it is important to understand how teachers use this information in their pedagogical reasoning about practice and enacted instruction, even if they report using it less frequently in their teaching.

This is especially important as information about how children learn as well as how children develop reading and writing skills are key components of many language and literacy focused professional development models.³⁰ Although professional development models are often designed to improve teachers' knowledge, it is unclear how teachers use information about learning gained during professional development in their reasoning about instruction. Thus the

²⁷ It is important to note that these categories reflect similar types of information, although the actual information itself may not align with researchers' understandings or developmentally appropriate practice (e.g., Kostelnki, Soderman & Whiren, 2011; NAYEC, 2009).

²⁸ The subcategory of what children know and can do, also nested under information about children could also be considered as formal knowledge, however, in their reports of their pedagogical reasoning teachers discuss this source of information about half as frequently as information about how children learn.

²⁹ The identification of knowledge for teaching has emerged from many empirical studies investigating how young children learn and develop skills, particularly as they relate to language and literacy instruction (e.g., Lonigan et al. 1998; NELP, 2008; Storch & Whitehurst, 2002, Whitehurst & Lonigan, 1998).

³⁰ Developing teachers' knowledge is frequently discussed in the research literature, publications from professional organizations, and also in discussions of what professional development should include (e.g., Buysse, Winton, & Rous, 2009; Fukkink & Lont, 2009; Sheridan, Edwards, Marvin, & Knoche, 2009). Many researchers have incorporated knowledge development into their profession learning designs. For example through coursework (e.g., Breffini, 2011; Hamre et al., 2012; Heisner & Lederberg, 2011; Neuman & Wright, 2010) or through web-mediated training and resources (Downer et al., 2009; Powell et al., 2010). These are just a few of the many examples.

relationship between these conceptions and teachers' pedagogical reasoning about instruction is significant. Information for designing and evaluating professional development can be learned from examining teachers' reports about their pedagogical reasoning using these conceptions.

Examining teachers' pedagogical reasoning using conceptions or information about how children learn may also provide insight into how teachers' assimilate new knowledge with other sources of information. Although researchers strive to improve teachers' understandings of how children learn, this information is only part of what teachers in this study report using to inform their pedagogical reasoning during instruction. In fact, the participants in this study frequently report using multiple sources simultaneously to inform their practice.³¹ This information about how children learn must be considered as part of a process of pedagogical reasoning that uses multiple sources of information connected both to the context of instruction as well as the teachers' personal identity and expectations for students. These conceptions together with other sources of information contribute to teachers' pedagogical reasoning in complex ways. Even when trying to unpack how specific conceptualizations that teachers hold about learning influence their moment-to-moment instruction, other variables may interact with this information to inform the pedagogical reasoning process and subsequent practice.

The stimulated recall procedure provides a means for linking teachers' moment-to-moment pedagogical reasoning with enacted practice in a way that is not possible from standardized observational measures or traditional tests of teachers' knowledge. Thus, this data collection method provides an alternative means for examining the information that teachers report using to inform their practice. The previous chapter discussed how the stimulated recall

³¹ As described previously, teachers frequently discuss at least three different sources of information within their thinking about practice.

procedure can help illuminate the types of information that teachers use to inform their pedagogical reasoning. This chapter explores how the stimulated recall procedure also provides an opportunity to observe the connections between the enacted practice and teachers' perceptions of the instruction. This allows for a detailed description and examination of the complicated process of pedagogical reasoning about practice.

The findings in this chapter are based on a close analysis of the second-order data from teachers' pedagogical reasoning within the context of the first-order observational data. Moving back and forth between these two sources of information makes visible the process of pedagogical reasoning that teachers use to inform their instructional decisions. This helps illuminate the connection between the use of information and enacted practice, something that can help in the design of professional learning opportunities. This investigation is accomplished by identifying the sources of information, both about how children learn as well as other types of information described in the previous chapter, that teachers report using in their pedagogical reasoning and then analyzing teachers' observable practice in order to understand how pedagogical reasoning is connected to their instructional moves.

This analytic process uncovers how teachers bring together the multiple sources of information in their pedagogical reasoning and then connect this reasoning to their practice. This type of study offers insight into the complex ways that teachers use information to inform their pedagogical reasoning within the act of instruction. It can also help researchers better understand the actual practices of teachers.

Overview

This chapter provides a close examination of how the second-order data from teachers' discussions or perceptions of their teaching is related to the first-order observations of their

enacted classroom practices. Using a phenomenological approach, this analysis provides insight into teachers' pedagogical reasoning in order to understand how teachers discuss using multiple sources of information to inform a specific instructional move. Interviews with the teachers in this study illuminate that how or what teachers think about children's learning influences their practice. However, participants generally describe using information about how children learn in connection with other sources of information. This use of information results in a complex pedagogical reasoning process using multiple sources that come together to inform practice. Focusing on a source of information that is deemed important by researchers, how children learn, provides a lens for examining patterns in how teachers reason about practice with this type of information.

Findings from the previous chapter show that discussions of how children learn occur in almost one fifth of the episodes of reasoning. Each teacher in the study discusses using information about how children learn; yet there is variation in the number of times teachers talk about these conceptions. Pamela, Beth, and Catherine most frequently discuss their theories of how children learn, in 20, 18, and 27 separate episodes respectively. The other teachers' discussions of their conceptions about learning are less frequent, between 5 to 8 episodes per teacher. Whereas these frequency differences are interesting and worth pursuing with a larger data set, the purpose of this chapter is to examine the relationship between conceptions of learning and other sources of information within pedagogical reasoning and subsequent practice.

This chapter examines the connection between the participants' discussions of how children learn as it relates to their instructional practice. One main finding that is discussed in this chapter is that the process of pedagogical reasoning is complex. Even as teachers employ conceptions of learning to inform their reasoning about practice, other sources of information

also influence their pedagogical reasoning in ways that have direct impacts on instruction. By examining their pedagogical reasoning about practice, we are able to see how multiple sources of information influence teachers' moment-to-moment decisions. These multiple sources of information interact with each other in ways that have immediate impacts on teachers' observable practice but would not be visible without understanding the teacher's perspective. This is an affordance of using the stimulated recall procedure over other measures of teacher practice. Although this chapter will discuss various conceptions held by teachers of how children learn, the purpose of this chapter is not to examine these conceptions, rather to see how these conceptions are used within the process of pedagogical reasoning and result in specific instructional moves.

The findings begin with a close examination of Pamela's discussions of her pedagogical reasoning. These examples are used as they exemplify the most complex responses elicited during the stimulated recall procedure and demonstrate some of the main strands of information teachers report using in their pedagogical reasoning. Next, is an examination of how the use of other sources of information in teachers' pedagogical reasoning complicates teachers' reports of reasoning about learning and subsequent enacted practice. These sources of information are related to conceptions of how children learn and information about students and goals, broader contextual features, ideas of oneself as a teacher, and expectations about student success. Finally, I will conclude by examining teachers' discussions of pedagogical reasoning about how children learn in conjunction with information about children's development of reading and writing skills; information that is also often a key component of many language and literacy focused professional development programs.

Pamela

This analysis begins by examining three different discussions of pedagogical reasoning from Pamela. This is done because these episodes demonstrate the complex process of pedagogical reasoning and piecing together of information, both about the students, but also using her own theories of learning that are part of her reports of moment-to-moment reasoning about practice. Pamela is also one of three teachers, along with Beth and Catherine, to have more than ten episodes where she discusses her conceptions of how children learn. Pamela's discussions of her pedagogical reasoning reveal several conceptions of how children learn and her pedagogical reasoning is quite complex and often influenced by multiple sources of information.

The excerpts from Pamela's pedagogical reasoning are intentionally left close to their original length in order to fully represent the complexity of her reports about her pedagogical reasoning process. Superscripts are used, specific to each passage, to help identify the different strands of information in Pamela's pedagogical reasoning.³² In this first example from an episode of Pamela's reasoning during circle time instruction, there are multiple salient pieces of information that she uses to inform her pedagogical reasoning (Episode 6.1). These different strands of information work together to inform her reasoning about teaching the meaning of the word "envy." Here one can see how three different sources of information including: how children learn, participants' feelings, and her goals come together to inform her decision to ask children what the word envy means. In this passage, Pamela explains a conception that learning occurs through being told information.^a She also uses information about participants' enjoyment

³² This convention is also used throughout the chapter to assist in identifying the use of information in teachers' pedagogical reasoning.

of the activity, both herself and the children.^b In addition, Pamela explains her learning goals through asserting that it is okay if children do not remember the information that she is teaching.^c

Episode 6.1

Context: Pamela is reading a sentence on the circle time chart that contains 'e' words for the letter of the week. In the sentence she reads the word 'envy'. After saying the word 'envy' she pauses and asks, "what does envy mean?" [I stop the video.]

Pamela: "Its, just another little tidbit of information. I mean I could sit around and let them color all day or they could put puzzles together. But it's more fun for me^b if I bring them more into, teach them more,^a or share with them, different things that they'll need to know and that will help them grow.^a Otherwise I would be bored.^b I mean I could sit there and just let them do their own thing. I could give them art crafts to do every day. We could read a book and then we could do one project and then one center but for me it's easier, they're little people, and they really do like to know. They may not always remember it and that's okay or that word may come up again and they'll say I know what that means.^c They still may not remember it but they enjoy learning.^c And as long as they will sit there and kind of get into it and they answer me back and forth. They're not just sitting there like puppets then I go with it.^b If they shut down or they, if like they had continued to be all over the map I would have just said lets go on... I like them to know things so if I see something that I can teach them then I'm going to do it.^{b,c}"

Pamela's discussion illuminates many elements that contribute to her reasoning about practice and embedded conceptions of what it means to teach and learn. Although the instruction is related to the letter of the week and defining a vocabulary term for the children, her discussion of the information informing her pedagogical reasoning is not specifically about teaching the letter 'e' or vocabulary. Rather, Pamela describes reasoning with information about teaching and learning. The information that she is using in this moment of pedagogical reasoning is her conception that children learn by being told information. Because she thinks that children learn by being told information, she is focused on this activity as a means for telling, thus defining the word envy. She does not link this to building reading or vocabulary skills and in her subsequent instructional moves she continues to have children list 'e' words without defining any other words.

This moment of pedagogical reasoning is linked to Pamela's conception of herself as a teacher as well as her feelings about the activity. She is telling children information because that is what she likes to do, as a teacher and it is fun for her to teach them "little tidbits of information." Interestingly, her discussion of what she could do in lieu of this specific activity reinforce her conception that children learn through being told information. Her options of what she could let children do – work on puzzles, art projects, or listening to stories instead of being taught information, suggest that she does not think that children learn in these activities, that they will not learn information that they need to know. These activities are less teacher-directed and thus may not provide as many opportunities for telling. Focusing on teaching information seems to form her reasoning about what it means to be a teacher and a learner. Teachers' give information; students learn information by being told things. This conception of herself as a teacher, in addition to affective responses to the activity, is another strand informing her pedagogical reasoning, she "likes them to know things."

Pamela discusses how her goals from the activity inform her pedagogical reasoning explaining that it is okay if children do not get the concept or remember what she is teaching them. Her pedagogical reasoning is influenced by an understanding that children may not remember what is being taught but "that it is okay." In a way she is giving herself permission to continue teaching something that may not be learned by the children in her classroom. This idea is repeated in other episodes of her reasoning, particularly in her discussions of phonics based instruction. Pamela explains her continuation of the activity, even if children are not learning lasting information, because they are participating. She discusses attending to children's engagement as part of her pedagogical reasoning process. Pamela says, "...as long as they will sit there and kind of get into it and they answer me back and forth....then I go with it." She is

very aware of whether or not the students are enjoying and engaged with the activity, which she thinks that they are. It is this engagement that she says is the cue that she uses to continue along with her activity.

Pamela uses at least three different sources of information in this discussion of reasoning about a specific instructional practice. Specifically, her idea that children learn by being told information is what precipitated defining the word “envy” but this action was also tied to her enjoyment of the activity and goals as a teacher. This process of pedagogical reasoning results in the enactment of several subsequent instructional moves. After receiving a definition of envy, Pamela goes back to working on the letter of the week by having students come up with their own ‘e’ words. There is no discussion of the meaning of the new words that children generate.

In the next example from a language and literacy activity focused on identifying the first letter of a word, Pamela’s pedagogical reasoning involves at least four strands of information (Episode 6.2). These are related to information about: how children learn, reading development, ongoing pedagogical goals, and feelings. She uses her conception that children learn through memorization,^a information about the process of learning to read,^b and her understanding about the importance of phonics instruction^c all while attending to children’s feelings.^d This pedagogical reasoning results in her instructional focus on getting a child to produce a letter’s sound.

Episode 6.2

Context: Pamela is working on a phonics activity where children are given a word and they must tell her what letter the word started with. There is a picture on the board and every time someone correctly identifies the first letter of the word she erases part of the picture. She has given a child named Kate the word “car”. Kate guesses that it starts with the letter ‘d’. Pamela says, “/k/car not /d/dar. Sing the alphabet in your head.” [I stop the video.] In a discussion of her thinking I asked Pamela why she thinks it is important that children learn what letters words start with.

Pamela: “For phonics, I think that’s how we improve our speech. That’s how we read.^b That’s how we start to memorize words in a book so that we all of a sudden have memorized...^{a,b} Because they recognize sight words. I mean, we do sight words, too. They’ve recognized a sight word; or they can sound out. The only way they can sound out, is—by themselves—is if they know some of the sounds a letter makes.^b So, if you make it a game, or you sing songs with it, then they usually—sometimes they can figure that one out.^d And, so I think phonics are huge, probably more important than anything else I do, is phonics.^c But you just can’t do it all the time. And some will get it, and some won’t. So, I can’t do it all the time. Or, I’d have some children who would be sad.^d”

Pamela’s conception that phonics instruction is the most important thing that she does as a teacher informs her pedagogical reasoning and subsequent practice related to helping Kate learn. Pamela’s information about phonics is mediated by her reports of understanding that phonics instruction may not be the most fun for all children. Thus she must think of ways to implement her understandings about teaching and learning to read while also attending to children’s feelings. Pamela discusses using her conception of learning through “memorization” as a way of reasoning about developing children’s phonics skills. As in the previous episode, she mentions the idea that some children may not get the concept for the activity, further complicating her pedagogical reasoning. In this moment of reasoning about how to respond to Kate who is struggling with the concept of letter sound correspondence, Pamela uses all of this information to inform her decision to continue working with Kate on connecting the letter ‘c’ with the hard /c/ sound.

The result of this process of pedagogical reasoning is seen in Pamela’s next instructional move where she asks Kate to sing the alphabet song. After singing the alphabet in her head, Kate comes up with the letter ‘c’. Pamela then asks her to, “say the word [car]” but Kate continues to say ‘c’. Next, Pamela asks her what sound the letter makes and Kate does not come up with the sound so Pamela starts listing other words that start with the hard ‘c’ sound. Pamela’s focus on

phonics and connecting sounds with letters has led her to continue to prompt Kate to produce the initial sound even after Kate has accurately identified the letter ‘c’.

Pamela uses information about her students’ feelings and her goals in connection with conceptions of learning to reason about her practice. In addition, she uses multiple conceptions of how children learn. In Episode 6.3, she again discusses her conception that children learn through “memorization,”^a however, she also discusses thinking that children are “like sponges, but it can be lost too.” This idea of children as absorbing information that can also be lost informs her decision to revisit concepts in her practice.^b Also present in her pedagogical reasoning is information about goals related to teaching both the letter of the week and vowels^c as well as an understanding about herself as a teacher.^d Pamela also uses information about previous classroom activities,^e information about the curriculum. All of these sources come together in a complex way to help Pamela reason about this particular moment of instruction.

Episode 6.3

Context: Pamela is still working with students to identify the beginning letter of words. She calls on Zach, pauses, smiles and says, “the word is eyes” while pointing to her eye. [I stop the video.]

Pamela: “Oh, well, with Zack when I said eyes, we’ve made a big deal phonically about that a lot of letters never sound like the letter.^e Like, eyes for ‘e’. When we were going through ‘e’ words on Monday, because eyes, there’s nothing about that that sounds like it’s an ‘e’.^{c,e} And they’re not old enough to get the A, E, I, O, U and sometimes Y^c... So I thought he might remember that...^c Otherwise they won’t, they’re like sponges. But it can be lost, too. It just gets washed away.^b I revisited just to see them—it’s like memorization.^a The more you hear a song; if it’s played in the room all day long, every day, in a couple weeks they’re going to be able to sing along to it. It’s the same thing with anything I do. The more I do it, they’re going to memorize it. They’re going to put it in their brain, and at least it will be familiar. And as I tell my parents, what I was always taught is memorization is how we learn^a. We memorize things. And I think kids are good at that, and they don’t realize it yet because they don’t know what that is. So, it’s just my method.^d”

In the explanation of her pedagogical reasoning, Pamela again presents a very complicated view of how children learn. There are multiple theories about children’s learning

informing her pedagogical reasoning, however, they seem to compliment and reinforce each other. Because children can absorb but also lose information she must employ a method of revisiting information so that they can memorize it. This links to how she contextualizes the specific instructional activity of naming the word ‘eye’ within previous instructional moments and her learning goals related to the letter ‘e’ and vowels. Pamela also discusses using information that children are not ready yet to explicitly name the vowels, but she continues to work on these anyway.

At the end of the episode Pamela identifies the use of “memorization” as a key part of her pedagogical practice. She says, “it’s just my method.” She connects this “method” with her formal educational experiences, her past experiences. This understanding that teaching through memorization is her “method” makes her theories about teaching and learning part of her identity as a teacher. This is another example of how Pamela’s own personal ideas are integrated into her reasoning about practice. Returning to Episode 6.1, she also makes a personal connection with the activity discussing her feelings about participating in the activity, not wanting to be “bored” and that she likes to teach children information because it is “fun for her.”

These examples of Pamela’s explanations of her pedagogical reasoning exemplify some of the ways that teachers use information to reason about their practice. Pamela’s episodes of reasoning are complex. She not only includes multiple conceptions of how children learn in her pedagogical reasoning process, she also uses information about her goals, information about her students, and ideas about herself as a teacher. Whereas these examples from Pamela may be more complex than some of the other episodes, all of the participants’ pedagogical reasoning about practice is complicated by other information within their pedagogical reasoning. It is the use of multiple sources of information together in the process of pedagogical reasoning that

ultimately informs teachers' moment-to-moment instruction. This complexity of pedagogical reasoning, how teachers use information about goals, identity, individual students, and conceptions about children's learning, is not visible from external measures of practice or knowledge. The interaction between these sources of information is made visible by understanding Pamela's perceptions of the moments of instruction (second-order data).

The next section examines several of the ways that teachers' theories of learning are informed by other sources of information. Specifically, these sources of information are multiple conceptions of how children learn and information about students and goals, information about the context (site and instructional activity), teachers' ideas of themselves as teachers, and expectations for students' success during instruction.

Conceptions of How Children Learn and Information about Students and Goals

Information about students and goals that teachers have along with multiple conceptions of how children learn often co-occur in teachers' discussions of reasoning about instruction. Teachers' reports of using these various sources of information have multiple implications for their enacted practice. Some examples of this are present in Pamela's discussions of her pedagogical reasoning but there are other ways that teachers discuss using this information in their pedagogical reasoning. The examples below examine how these ideas are connected within pedagogical reasoning to inform teachers' enacted practice.

Multiple Conceptions of How Children Learn

In discussions of their pedagogical reasoning, teachers often use multiple conceptions of how children learn. These conceptualizations represent a variety of theories, explained by teachers using differing types of language. Some theories are similar to Pamela's, like learning through memorization or being told information. Other theories such as learning through

repetition, learning by having “limits,” or understandings of multiple learning styles are also present in teachers’ discussions.

Multiple theories can function together to help teachers make decisions. For example, during circle time Amanda explains her decision to use the tweezers as being related to understanding that children learn in multiple ways^a and that they also learn by being engaged.^b

Episode 6.4

Context: Amanda and the students are counting how many kids are at school today and they are going to put one Velcro gumball up on the gumball circle time chart to represent each child that is present. Amanda says that they are going to use large tweezers to pull the gumballs out of the bag today. The tweezers were the same ones they were using in a previous circle-time activity to transfer puffballs from a full jar to an empty jar in order to represent the number of days in November. Using the tweezers for this activity was not part of the original lesson plan. [I stop the video.]

Amanda: “I mean, it’s their classroom too. It’s just a new learning techniques^b [sic]. Everyone is different, and I think bringing in something that a kid’s interested in will help him focus more on the task.^a So I just had to kind of improvise on that one - make it more fun.^{ab}”

Amanda’s conception that children learn through being engaged, “mak[ing] it more fun,” informs her instructional decision to change her plan and use the tweezers. Her understanding of incorporating “new learning techniques” as a tool for helping children learn is also part of her pedagogical reasoning. She is using multiple conceptions of learning in order to enact her practice. Just as Pamela uses her theory of repetition to compliment her understanding of children “as sponges,” Amanda’s discussion of her use of information about multiple learning styles reinforces her conception of children learning through being engaged. Both of these conceptualizations inform Amanda’s decision to use the tweezers in a different way than intended during her circle time activity. In this instance the stimulated recall procedure has illuminated how teachers can use multiple understandings of how children learn simultaneously in ways that influence their instruction.

Information about Students and Goals

Although teachers have conceptions of how children learn, it does not mean that they will always follow through on those ideas. In some cases, other information is weighed more heavily by teachers during their pedagogical reasoning. For example, in the next episode (Episode 6.5) Amanda discusses using information that children learn through being engaged,^a however, she also discusses her goal of making it through the activity in order to help children identify words that start with the letter ‘f’.^b Both of these ideas are part of her pedagogical reasoning but, ultimately, her goals for the activity are weighted more in informing her instructional decision.

Episode 6.5

Context: Amanda and the children are playing a game where each child has a turn to name a word that starts with the letter ‘f’ (the letter of the week). Each child has also been given a wooden alphabet block. As each child says a word, he or she puts the block on top of the tower. They begin going around the circle. [Amanda stops the video.]

Amanda: “They were already starting to get a little weeble-wobbly... I knew that I needed to speed this up and get going to something else. They’re getting over it I mean they’re not learning anything if they’re over it.^a You know sometimes I guess teachers and stuff you think an activity is going to be, last a lot longer or the kids are going to be really interested in it and then they’re totally not. You have to be flexible and kind of play off of them a little bit. And, there [were] probably cues before I really wanted to get at least through the first round.^b They got through it.”

Here is an example of how a conception of learning is part of Amanda’s pedagogical reasoning, yet, it does not actually influence her practice. Instead, her pedagogical goals overrule her idea that children are “not learning anything if they’re over it,” and inform her decision to continue with the activity. Thus, although she has a theory about learning, it does not contribute to her practice in this instance. Amanda “knows” that children should be engaged in order to learn but this understanding would not be observable from this instance of practice (the first-order data). Eventually, Amanda does stop the activity early and allows the children to knock over the tower.

In that instant, it could be that her reasoning about engaging children did influence her practice, however, it was not discussed during the interview.

Teachers can also use information about specific children to complement their reasoning about how children learn. In the example above, Amanda is observing that her children are “weeble-wobbling” which she uses as a cue in her pedagogical reasoning to know that children are not engaged. In the next example from Catherine’s circle time instruction, she discusses her conception that there are “different learning styles.”^a She identifies information that one individual student is an “oral learner”^b and uses this to think about how to help the child with a misconception. There are other strands of information informing her pedagogical reasoning as well. She explains another conception of learning through “reinforcement”^c that she says is what she is doing by having him orally produce the ‘e’ sound. Catherine is also very explicit in her discussion of using information about her goal for him to produce the letter’s sound.^d

Episode 6.6

Context: Catherine says, “We talked about parts of the body that start with ‘e’” One child calls out “bones.” He keeps saying bones as the teacher points to her ear and one child says “ear” and then she points to her elbow and another child says “elbow.” That one child is still saying “bones”. [I stop the video.]

Catherine: “I couldn’t tell for sure whether he was just joking or he really didn’t know that we were making a different sound with ‘e’. I thought he was just joking, and I think he was. But I wanted him to make the sound so he could figure out himself rather than just me telling him that it wasn’t ‘e’—it didn’t start with ‘e’, it was the ‘b’ the ‘b’ sound.^d So that way I reinforced it, but he also reinforced it himself by making that sound.^c There are all sorts of different learning styles,^a so with him I think he needs that. He’s a very talkative, I believe [an] oral learner.^b So when he forms that shape in his mouth, or he makes that sound, there’s the muscle memory in your body that that’s how you make the sound. So it reinforced it for him I think, I hope.^c”

Catherine’s instructional decision to have the child produce the ‘e’ sound is a result of reasoning with multiple sources of information. She discusses using two conceptions of how children learn combined with information about a specific child, all while considering her goal of having

children recognize ‘e’ words. Her conception of learning through reinforcement helps her implement her conception about “oral learning” and muscle memory just as the two conceptions in Amanda’s thinking about the tweezers assisted her in reasoning about practice. Catherine’s theories about learning are mediated by other sources of information within her process of pedagogical reasoning.

In another example of the use of information about goals, Jacki’s competing goals interact with her conception about children learning by making connections (Episode 6.7). Jacki discusses her concern during a circle time activity that a child will get confused identifying the letter of the week^a because of the work the class has also been doing with initial sounds.^b Embedded in her discussion is the idea that children learn by making connections^c and she reports being concerned that the child will incorrectly make connections between an activity that is driven by her learning goals with an activity that is driven by the Friendship School’s curriculum, the letters of the week.

Episode 6.7

Context: Jacki is introducing the new letter of the week. The letter is ‘f’ one child says “/e/ /e/ /e/ /e/ /e/ /e/ /e/ /f/”. [I stop the video].

Jacki: “Because we do a lot of stuff with the initial sound^b and I didn’t want him thinking in terms of words that started with /e/ like /e/ /e/ /e/ /f/ I wanted him to think about words that start with /f/ /f/. ...^a I wanted him to think in terms of the sound especially since we still have the ‘elephant’ and the ‘egg’ (pointing to pictures on the circle time chart from last week for the letter e visible on the computer screen). I was afraid he would make that connection too.^c Which he might have.”

Jacki’s practice is informed by her conception that children learn by making connections. She is using information about the learning that she does not want to occur, associating /e/ with ‘f’, and this reasoning with information about her goals informs her decision to have the child produce the /f/ sound in order to prevent him from incorrectly making a connection.

Together these examples from teachers' pedagogical reasoning demonstrate that conceptions of how children learn may be complimented or overruled by other sources of information. Specifically, conceptions of learning are mediated by other theories about how children learn as well as teachers' specific goals for the activity. Examining teachers' pedagogical reasoning in this way makes visible how teachers use information about students and goals, information specific to their classroom, in relation to their conceptions of how children learn, more general knowledge. The examples from Catherine and Amanda illuminate how information about children in their classroom interact with conceptions of learning to help teachers enact practices that are specifically for those children.

Jacki's pedagogical reasoning and enacted practice is also influenced by both her conceptions of how children learn and her pedagogical goal for the activity. She is worried that a child will incorrectly learn the letter 'f', a school driven goal because she had be focusing on initial sounds, her personal goal, by incorrectly making connections, her personal theory of learning. Interestingly, in this example from Jacki, the Friendship School's curriculum becomes a variable influencing her reasoning about practice. These sources of information from the broader context also complicate teachers' pedagogical reasoning with their conceptions of how children learn and this is discussed more in the next section.

Broader Context

One of the patterns in the data presented in the previous chapter is that teachers' references to using different types of information vary by school setting and instructional activity. Teachers' pedagogical reasoning is often indirectly informed by constraints or constructs of these two broader contexts. In turn, these interact with their conceptions of learning to inform pedagogical reasoning.

School Setting

The school context, specifically curricular related information seems to contribute to teachers' reasoning about practice. This may be more indirect, for example in the discussions of Amanda who is a teacher at the Friendship School. The director of the Friendship School emphasizes socio-emotional development as her main goal for children. This focus on children's socio-emotional well-being is present in Amanda's discussions of her conceptions about how children learn. In both of the episodes of Amanda's reasoning (Episode 6.4 and Episode 6.5) she discusses her conception that children learn through engagement. In fact, in the five episodes where she discusses her conceptions of how children learn, four of them include the idea that children learn through engagement. Amanda is focused on children's learning through being interested and emotionally engaged in the activity. This may be linked to the center-wide focus on developing children's socio-emotional skills at the Friendship School. This may also be connected in some way to her relatively frequent discussions of her own socio-emotional related goals for students.

The Friendship School does have language and literacy goals for children; however, teachers determine how to achieve these goals. Teachers from the Friendship School report using information about these goals in relation to their practice, such as Jacki's work on the letter 'f', the letter of the week. However, teachers at the Friendship school also discuss their own learning goals for children that are not explicitly part of the curriculum, such as Pamela's assertion that "phonics is the most important thing I do" or Jacki's focus on initial sounds. These goals become enacted in the midst of broader curricular requirements; in both cases related to circle time instruction focusing on the letter of the week. Information about both school-based and personal goals influence teachers' pedagogical reasoning at the Friendship School.

The curricular requirements at the ABC School are more specified and, in the case of language and literacy instruction, scripted for each lesson. Direct references to the curriculum emerge in these teachers' discussions about pedagogical reasoning. In particular, ABC School teachers reference reasoning around curricular content and goals such as learning sight words or implementation of the "language arts" curriculum. In the example below (Episode 6.8), Deanna reports reasoning with her conception that children learn through repetition^a in relation to a specific circle time routine/goal of identifying the written forms of the days of the week on a chart.^b Here Deanna is expressing her feelings of frustration about her students' inability to master the days of the week^c a task she knows that many children in her classroom are unable to do.^d She continues to work on this goal, however, because she knows that "we have to teach it."^e She uses her conception of children learning through repetition to help her pedagogical reasoning about the instructional practices in which to engage.

Episode 6.8

***Context:** There is one child who is doing the calendar activities, the calendar helper. He is looking at a chart with the days of the week listed vertically on the right and a space for Velcro on the left. They have already identified that the day is Tuesday. His task is to put up sentences that say, "Today is," "Yesterday was," and "Tomorrow will be," in front of the appropriate day of the week and then say the name of the day out loud as if reading the sentence. When they get to the "Tomorrow will be" sentence the child is stuck and looks at Deanna. Deanna says, "Tomorrow will be /w//w//w/". [I stop the video.]*

Deanna: "I will tell you this is a little frustrating for me.^c We sing the song and we say, and I didn't say it today, but typically I say, 'If you don't know the day, sing the song.' Sunday, Monday, and put your finger on it. And Cormac just, it's not there yet.... But other kids seem to have that as well.^d Not that they don't want to do it, but it just seems collectively, I mean there's about two of them that can do it no matter what, Jackie and Grey. And the other ones and Audrey can do a pretty good job. But for the most part when it comes to the days of the week, pointing to them or knowing the order of them, it's a hard concept.^{b,d} So I know we have to teach it and I know it's an important thing to do.^e So I thought, well, if most of them are struggling with this, then we'll just keep on repeating it every day.^a And at some point they'll get it.^a They seem to have an easier time with the calendar. So it's just one of those frustrating things for circle time that I have.^a"

Deanna is discussing a concept that she knows is difficult for children and so her solution for helping children to learn the concept is through repetition, every day. This theory in practice is interesting in multiple ways. Deanna understands that the task of visually identifying the days of the week is “a hard concept” and she knows information about which students are able to do it and which are still struggling. She is, however, required to teach the content in some way because learning the days of the week is part of the curriculum at the ABC School. Deanna continues to have children engage in the task stating that, “at some point they’ll get it,” despite the fact that the activity and children’s inability to complete the activity frustrate her. Deanna’s conception of learning is tied to having students do the particular task each day so her pedagogical reasoning is about moment-to-moment instruction as well as across days of instruction. How she chooses to teach that academic goal is driven by her theory that children learn through repetition. She continues to repeat the activity because she thinks it will help children meet the school’s goals.

As in both of the examples from Amanda, the school context also influences Deanna’s reasoning process related to children’s learning. Teachers’ pedagogical reasoning about the school driven curriculum interacts with their conceptions of how children learn in order to inform their practice. School context and its role in pedagogical reasoning is an important variable which is not always visible from external observations of practice.

Instructional Activity

Although school as a context is one variable, the context of the instructional activity also plays a role in teachers’ pedagogical reasoning and interacts with conceptions of learning in ways that influence instruction. In the example above (Episode 6.8), Deanna is repeating a practice within the context of circle time instruction across multiple days in order to help

children learn. Based on observations and interviews, other participants in this study also seem to engage in fairly routinized activities during circle time. They use multiple practices to target a specific content during their circle time instruction. One of the affordances of circle time as an instructional activity may be that it allows for repetition of practices and concepts.

The repetition of practices in circle time is important as many teachers report using conceptions that children learn through repetition as part of their reasoning about practice. Deanna can repeatedly focus on identifying the days of the week because the instructional activity of circle time allows for revisiting this particular concept with this particular activity each day. In the example with Deanna, the repetition is a similar task enacted in each circle time meeting. Repetition within the instructional activity (not across activities) is also discussed by teachers as means for helping children learn. This idea is an important part of reasoning about the moment-to-moment instruction within the activity. For example, Abby talks about repetition^a of the concepts of seasons and months across various circle time tasks^b as a means for helping make connections^c between these concepts which are curricular requirements at the ABC School.

Episode 6.9

Context: The calendar helper was working at a chart identifying the season and several feet to her left is a calendar chart which says “November” but has not been updated with the current date. After she has answered that the season is fall Abby asks the calendar helper “what month it is?” She answers “fall” [I stop the video.]

Abby: “...just to learn. We want to learn all the months, and seasons and the year^b after that she’s going to walk over to the calendar and then she’s going to, I want her to kind of look there and say, ‘oh its November’ and then be able to point to it.^b I mean she’s not going to be able to read that word but she should to be able to recognize maybe the same letters on the calendar.^c So again, that was just kind of the carry on to the next step of going over to the calendar and being able to recognize that it’s November and where that word was on the calendar.^{b,c} Just you know if it’s in her, you can kind of see it when she goes over there its easier for her to make that connection^c and just, when we’re learning all of those months.^b Maybe they can just look at those first few letters and be able to know them. Again that’s just something in our curriculum that we want them to learn^b....And it should be kind of something like I said a lot of this, they say it over

and over again and it's not that we're just memorizing it but its repetition it kind of makes it easier for them to learn.^a”

Like Deanna, Abby's reasoning about practice is informed by the curricular requirements at the ABC school. She repeatedly discusses the learning goals for children, much of which forms the content for circle time instruction. She also talks about using repetition to help reinforce content within the activity. Abby's conception is that repetition makes things easier for children to learn. The repetition is within topics, or discussing the month in relation to the season as well as in relation to the physical calendar. It is meant to make it easier for children to learn the content of the curriculum. Embedded in this idea is the notion of teaching the word in multiple ways or providing a more nuanced learning about the word, not just repeating the word. This is part of Abby's statement about children “making connections.” Wanting children to make connections might also be part of her understanding of learning as she even says that the purpose of the repetition is not memorization, although it is about hearing and seeing the word frequently. In this particular moment of instruction, Abby is having the child make the connection between the month and the season prior to moving to the calendar activities where the month is displayed and they will talk about the days of the week. Here Abby's pedagogical reasoning is informed both by the instructional activity which is set up to revisit a topic in multiple ways as well as the curricular requirements of the setting.

The affordances or the constraints of circle time as an instructional activity extend beyond content delivery to accommodating other setting-based requirements. For example, issues related to scheduling. Although not frequent, information about scheduling does occur in teachers' discussions of their reasoning about practice. However, teachers' only report using information about scheduling issues during circle time. This information about scheduling may conflict with information about children's learning that teachers use to inform their pedagogical

reasoning. In Episode 6.10, Jacki discusses her conception that children learn through visual reinforcement,^a explaining that it is how she targets her pedagogical goal of understanding one-to-one correspondence.^b Yet, her thinking about all of the other things that she needs to accomplish before the class goes to their “Mad Science” special^c overrules her conception about learning to inform her ultimate instructional decision.

Episode 6.10

Context: Jacki says, “...today is October 30th, but first we have to count. You ready?” Kids start to count teacher cuts them off and says, “Wait I have to get there first” She is indicating the calendar that is located on the wall underneath the board. [Jacki stops the video.]

Jacki: “...we're at the point now where they're getting really good with their one-to-one correspondence.^b And so some days—I don't know why I didn't do it today, but some days I'll stop the pointer, so that they'll stop. Because otherwise it's just words.^a I want the visual to go with it.^a So, but I was actually feeling very rushed today because I knew that I had to get this in and snack before they went to Mad Science...”^c”

Here is another example of a secondary source of information, scheduling, overriding teachers' conceptions of learning in ways that influence instruction. Jacki reports understanding that children need the visual pointing when counting to connect the numbers with their names, “otherwise it's just words.” She decides not to stop and point at individual numbers in this moment because her pedagogical reasoning is influenced by her awareness that she has other activities that she needs to accomplish and she is “feeling very rushed.” Thus she must omit a particular practice and quickly finish up her circle time activity in order to move on to something else.

Issues related to scheduling may emerge in teachers' pedagogical reasoning about circle time instruction, perhaps because of the greater flexibility of the instructional activity. It may be that the repeated nature of circle time allows teachers to omit particular practices or content as

they know they will be able to return to it in subsequent days. Both Jacki and Deanna discuss practices that they regularly engage in yet omitted on that particular day.

Information about the school setting and the instructional activity are important components in teachers' pedagogical reasoning about practice. Curricular foci or curricular requirements specific to a school mediate or complicate teachers' use of information about how children learn in ways that influence enacted practices. These school specific variables are key parts of teachers' pedagogical reasoning across instructional activities. The instructional activity itself, however, also influences teachers' reasoning about practice. Affordances and constraints of the circle time as an instructional activity both compliment and complicate teachers' information about how children learn. Contextual variables are sources of information external to a teacher that she uses to inform her reasoning about instruction; however, there are more personal conceptions that also influence teachers' pedagogical reasoning and practice.

Ideas of Oneself as a Teacher

The small number of participants in this study makes it difficult to discuss differences in teachers' pedagogical reasoning based on basic demographic characteristics. However, it is possible to look at how teachers' discuss their own past experiences or understandings of teaching in relation to their pedagogical reasoning about practice. These discussions or understandings, inform the participants' ideas of themselves as teachers. These ideas of themselves as teachers, and what it means to teach, influence their reasoning about practice in multiple ways. In addition, teachers' own experiences can actually shape or result in conceptions of how children learn. Examining how ideas about oneself as a teacher relate to and interact with conceptions of how children learn are important in understanding the complex process of reasoning to inform instruction.

Previous experiences can influence how teachers think about teaching and learning and indirectly influence teachers' reasoning about practice. For example, Catherine discusses her own experiences as a learner^a as the reason for enacting particular practices in her classroom^b.

Episode 6.11

Context: Children are working independently. Catherine gets the iPad and asks the children if they want to listen to the song again while they are working. As she is pulling up the video she says, "Let's listen to our song again. This way you can hear the other lyrics too. Do you know what I mean by lyrics?" [I stop the video.]

Catherine: "...Well, I know, as a student, I was more interested in things when I felt like I really understood what was happening.^a And I understood things better when they were repeated, or we learned more about the same thing as we went on.^a So we were learning more and more about Humpty Dumpty as we went on with the activity.^b I would also get super bored if I was just told, 'Here's the nursery rhyme and color it,' instead of talking about the rhyming words, or talking about putting the pieces together.^a I wanted to make it as engaging as possible rather than just a coloring page, so they would be more interested.^b"

Catherine discusses her desire to make the activity as engaging as possible because of her remembrance of the way she used to learn best. Her experience as a learner, when she was bored or when she was not bored, informed her conceptions about how children learn (by being engaged and through making connections) and this then influences her reasoning about practice. She notes that she learned better when she was able to make connections and was interested in what she was learning. Catherine also mentions that she learned better through repetition. She discusses both of these ideas, being engaged and repeating information, in her pedagogical reasoning about practice. These conceptions, based on her own experiences, inform her decision to replay the video while the children are working.

Teachers' various experiences form parts of their identities and inform their conceptions of learning in multiple ways. Catherine's experiences as a learner are connected to her conceptions of how children learn. Pamela's experiences with formal education influence her conceptions about how children learn. She explains that she learned in her coursework that

children learn through “memorization.” This conception, however, has become more than just a source of information about how children learn, she has integrated the understanding that children learn through memorization into her identity as a teacher. She actually defines using memorization as “my method” (Episode 6.3). Here her image of herself as a teacher is actually linked to her conception of how children learn. It defines her as a teacher. Pamela also talks about her enjoyment of things she likes to do as a teacher. Her emotional investment and enjoyment of the activity, teaching information because it is fun, hold embedded conceptions of learning, which ultimately influence her practice.

Slightly different are conceptions about what it means to teach or the work of teaching. These ideas are also connected to teachers’ conceptions of how children learn. Yet, they also contribute to the participants’ ideas of themselves as teachers and these ideas emerge in teachers’ discussions of their pedagogical reasoning. For example, Linda frequently talks about “what it means to teach.” In fact, she often offers it as the explanation for enacting a particular practice. In Episode 6.12, her reasoning about herself as an educator and what is important to do as an educator^a influences her reasoning about how children learn through peer pressure.^b

Episode 6.12

Context: The group is recounting the procedure they used the previous day to make truffles and Linda is calling on children to identify the various steps they used to make the recipe. They have just finished up talking about how they drizzled chocolate on the truffles. Linda asks, “who is going to eat them?” and the kids get really excited many of them start talking all at once. One child says, “I’m going to eat all of them” and Linda says, “no, we have to share” then she turns and points to another child prompting him to take a turn. [Linda stops the video.]

Linda: “I am very engaging. Because I call on the kids who I know some of them have the answers but I want to engage each and every one of them. To be part of the group discussion to use their voice. Because I think that it’s important. That’s how they learn. They learn from peer pressure^b but they also, it’s a good tool for the other kids who know the answers not only to wait their turn and know that they’re not going to be called on that I’m fair and square and I’ll hit everybody whether their hand is up or not. I think that’s very important as an educator.^a”

Linda's conception of how children learn, through peer pressure, is one explanation that she uses for why she is calling on individual children to speak instead of having all the children call out at once. She states that children learn this way but that is not the only information she uses in her pedagogical reasoning about her instructional move. She also wants children to know that she is fair because she thinks that is important for being an educator. The notion of learning through peer pressure and each other is tied to her idea that as someone who is fair and square she is going to call on all children to speak, even if they are not volunteering to speak. This is linked to her conception that speaking in front of others is another way that children learn. Linda's conception of what it means to be an educator and her vision of herself in the classroom interacts with her understanding of how children learn. In the rest of the circle time activity, she does vary how students orally participate, both calling on children as well going round robin through the group to answer questions.

There are many ways in which issues of identity are related to teachers' reasoning about practice. Previous experiences both as learners and in training can influence conceptions that teachers hold as well as how teachers enact conceptions of children's learning into their practice. These ideas of oneself as a teacher can also become part of how teachers talk about the work that they do and its relation to children's learning. This is demonstrated in the language that both Pamela and Linda use (e.g., "my method" or "I'm a teacher"). Conceptions of how children learn may be more personal to teachers than just the standardized knowledge that they receive in professional learning experiences. These conceptions can be embedded into teachers' reasoning and practice in personal ways. This personal part of pedagogical reasoning about instruction is made visible when examining teachers' perspectives of their teaching. These issues of identity

are important for thinking about professional development as they complicate how teachers respond to and use new information in practice.

Expectations of Success

One interesting pattern in teachers' pedagogical reasoning about instruction is the notion that children may not understand or remember the content being taught but that these are acceptable outcomes. For example, when discussing teaching children information, Pamela says, "They may not always remember it and that's okay." This emerges in several ways with teachers saying, "it's okay if they don't get it," "they may not remember it next year," "they don't have to get it all," or even that they will pick up something "subconsciously and not even know it." Teachers' statements about their expectations for children's limited successes in learning content (or goals of only partially learning of content) emerge in their discussions of pedagogical reasoning in ways that interact with their conceptions of how children learn.

For example, during her discussion of pedagogical reasoning about differentiating between the upper- and lowercase version of the letter of the week during circle time Catherine acknowledges that children may not get the concept.^a

Episode 6.13

Context: Catherine is tracing an uppercase 'E' on a calendar 'E' card and describing how to make the lines. Children are doing the letter in the air. When she is done she asks, "what kind of letter is that?" The kids say "e". [I stop the video.]

Catherine: "Oh, yeah I keep trying to get them to do uppercase versus lowercase but I'm going to keep saying it but if they don't get it right away its fine.^a That's something that will come later."

Here Catherine's instruction is influenced by her conflicting conceptions of learning versus it being okay if children do not learn the difference between upper- and lowercase. The implicitly embedded conception in her pedagogical reasoning is that children learn through repetition, why else would she continue to "keep trying to get them to do uppercase versus lowercase," however,

she qualifies this practice by saying that it is okay if they do not get it. Her resulting instructional move is to tell students that the letter is uppercase. It could be that instead of reframing the question so that it was less open ended (e.g., Is this letter uppercase or lowercase?) she provides the answer because she believes that repeating the activity and the answer is enough to help children eventually learn information about print. Catherine's conception of how children learn, through repetition (and not some other method), is complicating her ability to achieve her goals. This type of pedagogical reasoning may also be tied to a conception that children learn over time as she says, that this is a skill "that will come later." Catherine's expectation that children will eventually learn upper- versus lowercase and her continued repetition of an activity that children are not immediately successful at implies that she believes that children will learn a concept over time. Thus they may not be successful now, but they will be eventually.

There are many reasons why teachers might say that it is okay if children are not retaining information that they are teaching. One reason may be that teachers are justifying their inability to teach children particular concepts. More likely, it could be that children may not be developmentally ready for the activity or skills that teachers are asking them to do, and they think this, as in the example above from Catherine. Teachers expect that children will eventually be successful, although perhaps not in the immediate moment. This pedagogical reasoning may be especially true for teachers at the ABC School where the curriculum is explicitly written for kindergarten children. Deanna alludes to this in Episode 6.6, when she discusses knowing that children have a hard time identifying the days of the week but she is going to continue to do the activity until they "get it" because it is a curricular requirement.

It might also be that teachers are not intending to have children master a particular concept. Rather teachers intend to introduce content they consider to be the foundation for skills

children will need in kindergarten or first grade. In Episode 6.15 below, Pamela discusses this in her pedagogical reasoning about having children write the letter ‘e’. Her conception is that children learn through repetition and reinforcing,^a however, it is qualified by the statement that they may not completely learn how to write the letter^b but she is providing a foundation for information they will need in the early elementary school years.^c

Episode 6.14

Context: *The group is working on the letter ‘e’. Pamela has a marker and there is a small strip of handwriting paper with the grid on the board. First she asks, “If I want to make my letter big, what would I call it?” Once the kids have identified it as uppercase she asks, “How would I make it?” One child says make a line. She asks, “Do I start here?” Pointing to the middle line. [I stop the video.]*

Pamela: “Just to get them interested in writing more, because we do a lot of tracing, and then, later this morning I did the play dough ‘e’. ... Here again, they don’t make it the right way, they don’t start their play dough and do it the right way.^b They just do it. It’s just kind of reinforcing it.^a ‘Oh, its ‘e’.’ ... So, it just—the more things I do with the letter, then I think the more embedded in their brain it is that that’s an ‘e’.^a They may not know how to write it,^b but they’ll remember that it’s an ‘e’. When they do have to write it for a grade, by the time they get to kindergarten or first grade,^c they’ll have a better idea of how to fix what they might be doing wrong. So it’s just fun.”

Pamela’s intention is not to teach writing the letter ‘e’ to mastery, rather she is trying to familiarize children with the letter ‘e’. Her conception of learning through repetition is present in her discussion of her pedagogical reasoning as she is reinforcing a concept she does not expect children to learn completely. Instead, her intention is just to get children ready for something that they will do in kindergarten or first grade so that, “they’ll have a better idea of how to fix what they might be doing wrong.” Her goal for the task is more about laying the foundation for something children will do later, thus it is okay if they do not remember or do it correctly as this is a skill that children need in their academic careers. Because Pamela has this conception of how children learn, she continues to focus on how to form the letter in her circle time activity (as well as other classroom activities such as the play dough ‘e’). This may influence her decision to

continue to teach the letter 'e' in the same way, rather than diversifying children's experiences with the letter 'e'.

Teachers' feelings about children's ability to accomplish a task may also influence their discussions. Again, in Episode 6.8, Deanna discusses feeling frustrated that children do not yet know how to identify the days of the week. She says that only two children can do the task but that she continues to do the activity because eventually they will "get it." This type of pedagogical reasoning leads to a repetition of the same activity instead of diversifying learning opportunities into differing instructional moves within circle time or other activities outside of circle time. Like with Pamela, Deanna relies on the theory that children learn through repetition to continue to engage in a practice that may not be successful in achieving its goal.

Participants in the study seem to think about skill mastery and learning across time in different ways that influence their expectations for children's success. This pattern in teachers' pedagogical reasoning is interesting. Why would teachers teach a concept they do not think children will learn? In the case of Deanna her enactment is linked to a curriculum that she is required to teach. Her theory of learning through repetition helps her rationalize that eventually children will master the concept. This also seems to be the underlying logic in Catherine's reasoning about continuing to try to get children to differentiate between upper- and lowercase. Pamela, however, seems to be thinking more about priming children for future learning opportunities. Teachers may not expect children to learn something because it is only an introduction to a particular concept.

These expectations for students' success and their connections to conceptions of children's learning are also informing teachers' pedagogical reasoning and their enacted practice. This is important as external observations of practice would not provide access to this type of

intention in teachers' instructional moves. In observing one of these activities someone might assume that teachers are simply asking children to do something that they are not yet developmentally ready for. In actuality, the teachers are aware that children are not ready for these tasks but are anticipating what children will be expected to do. Thus they have an understanding of development that is not immediately visible. It is also important to think about how this qualifying of instructional effectiveness might relate to other practices teachers enact or are expected to enact.

Literacy Related Instruction and Pedagogical Reasoning about Learning

In addition to teaching teachers about how children learn, many professional development programs focus on helping teachers understand how children develop skills.³³ It is therefore important to examine how teachers' discuss using their conceptions of learning in relation to their understanding of skill development within pedagogical reasoning. As described in the previous chapter, skill development is not frequently referenced in teachers' discussions of their reasoning about practice.³⁴ The co-occurrence of the use of information about skill development and how children learn is even rarer in teachers' reports of their pedagogical reasoning, with six occurrences for reading development and two for writing development. This is an interesting finding in its own right. Although we invest much effort in teaching teachers about children's learning and skill development, these two sources of information do not appear together frequently in teachers' reasoning about moment-to-moment instruction. As discussed in the previous chapter this may be because it is not relevant to the immediate instructional context.

³³ For example, Breffini, 2011; Downer et al., 2009; Hamre et al., 2012; Heisner & Lederberg, 2011; Neuman & Wright, 2010; and Powell et al., 2010.

³⁴ Overall teachers discuss information related to skill development in 81 episodes of reasoning and they discuss using information about the development of reading skills in 25 episodes out of a total of 537 episodes.

However, it might also be that teachers' do not connect learning skills with how children learn in general. These are two sets of information that they use separately in their pedagogical reasoning about practice.

It is thus interesting to examine episodes where both of these sources of information co-occur in teachers' pedagogical reasoning and see how the use of this information is connected to practice. Beth most commonly discusses using information about both skill development and how children learn in her pedagogical reasoning. In the next episode, these two sources of information influence her language and literacy instruction (Episode 6.15). Beth connects her theory about children learning through making connections^a with developing the skills to read.^b This theory is linked to a discussion about how children use their phonics skills in the process of reading.^c

Episode 6.15

Context: The group is working on coloring in the pictures from the frames activity. Children are supposed to color in pictures of words that start with the letter 's' (the pictures are winter related). Beth is circulating working with Nellie. Across the table Bryce looks up at Beth and says, "Is /f/f/f/fireplace?". [I stop the video.]

Beth: "I thought okay, she's starting to see. You know, /f//f//f/. That's the sound for the word, for 'fireplace'. And then they always exaggerate it. You know, the /f//f//f/ flower. /F//f//f//f/ foot. That's okay because they're hearing it and they're making a connections.^a So, I thought Bryce was funny when she did that. Because it was the reading that's so important.^b She'll be able to see the word 'f' [sic], and she'll know, /f/. She'll be able to see the word, you know, the letter G, /g/...when you read you, you have to recognize the letters but the sound is the most important in learning how to sound them out phonemically."^c

Beth's pedagogical reasoning is informed by information about how children learn as well as how they develop skills and influences how she responds to Bryce in the next moment of her instruction. She says, "/f/ and /s/, do those sound alike?" Beth focuses Bryce on the differences between the sounds in order to help her hear the separate sounds and connect with the letter 'f'

with the sound /f/. She does this because she uses information about the importance of sounds for reading and her understanding that children learn by making connections.

Pamela also discusses using information about children's learning and development of reading skills in her reasoning about practice. In Episode 6.2 (where she is trying to get Kate to identify the letter at the beginning of 'car'), she says that phonics instruction is the most important thing that she does in her classroom. She says this about teaching phonics, "I think that's how we improve our speech. That's how we read. That's how we start to memorize words in a book so that we all of a sudden have memorized." Here she connects her understanding of how children learn to speak and read, by learning phonics, to the process of teaching phonics through memorization. These conceptions emerge in her practice as she focuses on helping children connect letters with their sounds.

Catherine also connects conceptions of learning with discussions of skill development, although unlike Pamela and Beth, she does not use specialized language such as "phonics" or "phonemically." Instead she talks about pre-reading skills^a and connecting sounds.^b She explains that children learn these skills through repetition^c which influence her reasoning about teaching the letter 'e' during circle time.

Episode 6.16

Context: Catherine just had students list 'e' words for the letter of the week. She lists some additional 'e' words. She says, we talked about being excited then asks one student – "what are some of the things you are excited about?" [I stop the video.]

Catherine: "I just wanted them to learn more new words that we'd talked about it, but the more I repeat them each day by the end of the week,^c ... The more that they can learn, it's not so much about remembering the words as it is my knowing that they're paying attention throughout the week and they're actually learning something. I don't care if it's, if they remember exactly the words that we talked about the day before but that they're associating the letter with certain words. And making that sound. Making the sound^b, well again, it has to do with pre-reading^a too. If they don't know the letter they're not going to be able to sound things out. So the more we can

connect them together, the letter with the sound with how it looks the better off we'll be developmentally.^b”

Catherine reports that the important outcome of the task is for her to know that children have learned something across the week, not that they are able to remember specific ‘e’ words but rather that they are able to associate the letter ‘e’ with “certain words.” Although she also discusses repetition as the process through which children will learn, she clarifies that her goal is to help children connect the sound with the letter so that they can sound things out when they read. Catherine expresses an incomplete connection between how children learn and reading development, saying that, “it has to do with pre-reading” but not explicitly identifying how. Interestingly, in her instruction following this moment of reasoning, Catherine does not focus children on the initial sound of the ‘e’ words as they list the words. Here her pedagogical reasoning is not explicitly evident in her immediate practice.

Most teachers in this study do not discuss skill development in their pedagogical reasoning about practice and even fewer connect this thinking to their conceptions of how children learn. Information about skill development is not something that teachers report using in their pedagogical reasoning. There are two patterns in this data that are important for those developing professional learning experiences. The participants do not use information about how children develop skills to inform their moment-to-moment instruction and the teachers rarely make connections between skill development and how children learn. The information that is focused on in many professional development models is not something that teachers in this study put together in order to inform their reasoning about moment-to-moment instruction.

Recapitulation

The purpose of this analysis is to examine how teachers’ use conceptions of children’s learning to inform their instruction as developing teachers’ knowledge is a key component of

professional development for early childhood teachers. The discussions of participants in this study illuminate the complexity of the process of pedagogical reasoning that informs moment-to-moment instruction. Teachers discuss using conceptions of how children learn to inform their pedagogical reasoning; however, these conceptions are mediated by other information in ways that have meaningful impacts on practice. This information can be about students and goals, the instructional context, ideas of self as a teacher, or expectations for students' success. These sources of information function in different ways, sometimes complementing conceptions of how children learn or overriding these theories.

The important finding from this chapter is that these various sources of information work together in complex ways that are often not visible from an outside perspective. Pedagogical reasoning is a process in which teachers assimilate various sources of information to make one instructional decision. Teachers' pedagogical reasoning is connected to many sources of information within the environment but also within themselves. Although researchers strive to improve teachers' understandings of how children learn and develop skills, this information is only part of what teachers in this study report using to inform their pedagogical reasoning during instruction. This information must be considered as part of a process of pedagogical reasoning that uses multiple sources of information connected both to the context of instruction as well as the teachers' personal identity and expectations for students.

Chapter 7 What Does All of This Mean?: Discussion of Findings and Implications for Working with and Studying Early Childhood Teachers

Two main findings emerged from this study of teachers' pedagogical reasoning during whole-group and small-group language and literacy instruction. The first main finding is that in their discussions of reasoning about practice teachers seemed to depend on information from the immediate environment more than the types of information typically linked by early childhood researchers to instruction. The information that the teachers reported using in their pedagogical reasoning was related to their goals and the specific children in their classroom as well as information about variables that were related to the context, such as the curriculum or instructional activity. Teachers less frequently referred directly to using information that was gained through previous teaching experiences or that was research-based in their pedagogical reasoning. The second main finding from this study is that the participants' pedagogical reasoning was a complicated process, in which they used multiple sources of information that both complemented and complicated each other as they worked together to inform teachers' enacted practice.

This chapter discusses these two findings. Specifically, it begins by examining these findings in relation to the literature presented at the beginning of the dissertation about what the field presently knows about both K-12 and early childhood teachers' pedagogical reasoning and their use of information. Next, the implications related to the finding that teachers reported using information more about the immediate context than other sources of information is discussed. Then the implications of the present study for the design of professional learning opportunities

for teachers of young children as well as directions for future scholarship, including methods for researching teachers and their teaching in early childhood education, are considered.

How the Present Findings Confirm and Expand Current Understandings of Early Childhood Teachers' Pedagogical Reasoning

One important finding from this study is the evidence that the early childhood teachers participating in this study engaged in pedagogical reasoning about practice and that this process was complex, frequently involving multiple sources of information. Although pedagogical reasoning has been theorized and investigated in the research of K-12 teachers, it has not been closely examined in early childhood research, either as a framework for thinking about early childhood teachers' instruction or for investigating their work in the classroom. It does seem that early childhood teachers also engage in pedagogical reasoning during instruction.

This study, however, not only confirms that the participants engaged in pedagogical reasoning but it also uncovered many of the sources of information that the early childhood teachers used in their pedagogical reasoning about practice. The information that teachers in this study reported using frequently in their pedagogical reasoning was deeply contextualized and grounded in their immediate environment. Teachers' reports seemed to indicate that they relied more frequently on information that was specific to the instructional context. This included their goals for instruction, information about the children in their classroom, context-specific variables such as the curriculum, and information about the feelings of the participants in the activity. Information that is not specific to the immediate classroom environment, including: past experiences, understandings about children in general, as well as information about skill development appeared less frequently in the teachers' discussions of their pedagogical reasoning.

This type of information, however, is often the focus of early childhood teacher education and professional development.

As early childhood teachers' pedagogical reasoning has not been explored in the literature, it is important to understand how this study extends what we know about the types of information that teachers use to make moment-to-moment decisions about instruction. The next sections examine how this study confirms or complements what we know about early childhood teachers' pedagogical reasoning and use of information as well as what we know about K-12 teachers' use of knowledge. Specifically, I explore how this study aligns with the ways that the literature was used to anticipate possible sources of knowledge informing early childhood teachers' reasoning about practice.

From the Early Childhood Literature

The findings in this study seem to suggest that the information that the participants used to inform their pedagogical reasoning was different from that which might be anticipated by the empirical research literature in early childhood. Teacher characteristics and knowledge typically examined in early childhood education did not appear as frequently in the teachers' discussions of their reasoning about instruction. Specifically, participants depended more on context related information rather than more formal sources of information or information gained through previous teaching or educational experiences.

Although researchers have focused on developing knowledge about instruction, the teachers in this study did not report using formal types of knowledge in their pedagogical reasoning as frequently as they used context-related information. One exception was the use of the subcategory of information about how children learn, but even then this appeared in only 20% of the episodes of reasoning. In addition, this source of information was rarely used in

connection with the subcategories of information about how children develop reading and writing skills. When teachers' did discuss using this type of information in their pedagogical reasoning, they also reported using more context-specific sources of information which influenced teachers' decision-making processes. This finding that teachers less frequently report using research-based information and that when they do they it is complicated by other types of context-related information, may help explain why researchers do not always see changes in practice related to their professional development (e.g., Cunningham et al., 2009) or may not see lasting changes in practice after a professional development study (Lieber et al., 2010; Sanford et al., 2012).

Correlational research in early childhood education indicates that previous experiences both in the classroom (e.g., NICHD, 2000) and with formal training (e.g., Barnett, 1995; Campbell et al., 2002; Reynolds et al., 2002; Schweinhart et al., 1993) may inform teachers' reasoning about practice although, again, these sources of information did not appear frequently in the teachers' discussions of their use of information in pedagogical reasoning. Although we often strive to correlate quantifiable experiences, such as teacher education levels or years of teaching with teaching quality, these experiences did not emerge frequently in the teachers' reports of their reasoning about practice. The finding that teachers do not depend as frequently on information from these types of experiences may also help us understand why these measurable variables are not always linked with teachers' instruction (e.g., educational background was not connected with quality of instruction Fuligni et al., 2009; Phillips et al., 2000; Vu et al., 2008).

K-12 Teacher Education Literature

Similar to K-12 teachers, the early childhood teachers in this study engaged in pedagogical reasoning about their instruction. They reported using many similar sources of information identified within the K-12 literature although there were other sources of information that emerged in their reasoning not anticipated by the K-12 literature. Returning to Shulman's categories on knowledge, teachers in this study did discuss using information such as general knowledge of how children learn and what they know and can do (although it was less common than other sources of information). Participants in this study also reported using information from the immediate context, particularly about the curriculum and their students, frequently in their discussions of their pedagogical reasoning. Moreover, participants in this study did talk quite a bit about their goals or purposes for instruction, another category of knowledge identified by Shulman. In this sense there was much overlap across the information used by participants and Shulman's categories of knowledge, although they are defined and conceptualized differently within this study.

The K-12 teacher education research also seems to suggest that experience influences teachers' reasoning about instruction (e.g., Clandinin & Connelly, 1988; Elbaz, 1983; Hiebert et al., 2002). Previous experience, however, was not frequently discussed as a source of information used during participants' pedagogical reasoning. It is interesting to note, however, that some of these background experiences did manifest themselves in indirect ways in teachers' reasoning about practice. Specifically, they seemed to inform participants' ideas about themselves as teachers. Some of the participants' previous experiences helped shape their perception of their work and this emerged in their discussions of their pedagogical reasoning. For example, Pamela's "method" for teaching was developed from her school experiences but moved

beyond informing her instruction to something that she identified as part of her idea of herself as a teacher. These past experiences from formal training and teaching may contribute to teacher identities and inform pedagogical reasoning in indirect ways, not necessarily visible in the present analysis. It may be that background experiences contribute to other parts of teachers' practice such as planning or reflection (Lampert, 2010), neither of which were examined in the present study.

Whereas there is overlap with K-12 teachers in the types of information participants reported using in their pedagogical reasoning, there were also differences in the types of information used. Information about children's feelings emerged in participants' pedagogical reasoning. Feelings was the third most common category of information that teachers' reported using and children's feelings was a subcategory of this type of information. This is one category of information that is not typically identified in investigations of K-12 teachers' knowledge for teaching.³⁵ The early childhood teachers in this study discussed using information about children's feelings, attending to children's socio-emotional needs or development. For example, Deanna's concern that Cormac, a child with delayed motor skills, would feel bad because he needed more support with his writing than other students in the classroom reflects this focus on children's feelings. Socio-emotional development is widely seen as an important focus of early childhood education (e.g., Kostelnik et al., 2011; NAEYC, 2009) and a key component of young children's development and has been found to contribute to later academic success (e.g., Denham & Brown, 2010; Mashburn et al., 2008). This may explain why the participants in the study used

³⁵ Participants in this study also discussed their own feelings about the activity and this has been investigated by K-12 researchers (e.g., Westerman, 1991) and may also be part of more experience based theories of teachers' knowledge such as personal practical knowledge (Elbaz, 1983).

information about children's feelings or socio-emotional development in their reasoning about practice.

Implications of Teachers' Reliance on Information from the Immediate Context to Inform their Pedagogical Reasoning

One main finding from this study is that the teachers reported relying more on information from the immediate context than information that was outside of or decontextualized from the classroom or school environment. Teachers' discussions of their pedagogical reasoning included using information about specific children, the curriculum, the type of instructional activity, and their goals for that activity. These types of information emerged more frequently in teachers' reports of their pedagogical reasoning than general information about how children learn or develop skills as well as information teachers had gained through previous experiences. There are many possible conclusions that can be drawn from this finding. These are discussed below.

One possible conclusion that can be drawn from the participants' focus on information from the immediate instructional context is that formal educational experiences are not useful to teachers. This stance suggests that teachers' heavy reliance on information from the immediate context is a good thing. However, Shulman (1987) cautions that sound pedagogical reasoning requires an adequate base of facts or adequately grounded premises. Formal educational experiences both in school and through professional development can provide teachers with important content knowledge, identified through rigorous research, with which to reason while also using information from the immediate context. Indeed, there is evidence that early childhood-specific formal training is sometimes positively linked to language and literacy practices (Gerde & Powell, 2009; Pianta et al., 2005) and that professional development can have

positive impacts on children's outcomes (e.g., Buysse, Castro, Peisner-Feinberg, 2010; Justice et al., 2009; Piasta et al., 2012; Powell, Diamond, Burchinal, & Koehler, 2010). It is possible that formal training could be meaningful for teachers in their practice even though this was not frequently the case for participants in this study. It could also be previous experiences, either through teaching or learning, may influence teachers' practice tacitly in ways that they are not aware of or did not articulate in their discussions of their moment-to-moment reasoning.

Another possible conclusion from this finding is that teachers in the study did not have an adequate base of knowledge with which to reason about practice and thus depended on more contextually driven information in order to make decisions. The teachers in this study had a range of educational experiences; however, only one teacher had any early childhood specific training. It may be that for the teachers who did not have formal training, contextual information supplemented their lack of formal knowledge during pedagogical reasoning. Complicating this possible implication about teachers' lack of formal knowledge is the language arts curriculum used at the ABC School. The curriculum was heavily scripted and did not provide opportunities for participants to use formal training as frequently as they might have if given leave to make their own instructional decisions, particularly in language and literacy instruction. Deanna even referred to understanding that there are different ways of teaching the same content but acknowledged that using these strategies was not an option for her. Thus it seems that the ABC School teachers were limited in how they could use formal knowledge. Moreover, some of the ways teachers' discussed critiquing the curriculum could reflect more formalized knowledge that

was not explicitly identified by the teacher.³⁶ Another important consideration is that developmentally appropriate practice and research on language and literacy instruction indicates that teachers' need to attend to individual children and differentiate instruction for those children (e.g., Kostelnik et al., 2010; NAEYC, 2009). The teacher education research also suggests that teachers need to understand or have information about how to use the curriculum to help children learn (e.g., Borko & Putnam, 1995; Turner-Bisset, 1999). To do this involves using information from the immediate context in order to make instructional decisions. A focus on at least some contextual information may be beneficial for pedagogical reasoning and subsequent instruction.

Another possible conclusion of this finding is that teachers need assistance in connecting formal knowledge to information from the immediate context in order to reason about their moment-to-moment instruction. This accommodates for both the use of information about the context as well as knowledge about how children learn and develop skills. In this way teachers can use a variety of information to engage in sound reasoning about practice that is both specific to the children and their localized context but that is also based on formal knowledge. This implication is explored more thoroughly in the next section about professional development.

Implications for Professional Development

Although this was not a study of professional development, the findings from the present examination of teachers' pedagogical reasoning during instruction have multiple implications for the design of professional learning for early childhood teachers. In particular, this work begins to help us answer questions about why some current professional development models are

³⁶ For example, some teachers used language like “blends” or “initial sound” and referred to children’s developmental trajectories. These could be reflective of a more formal understanding of children’s language and literacy learning although teachers may not have explicitly identified using knowledge from formal learning experiences. A more detailed analysis of teachers’ language may help provide insight into if information gained from formal training emerges in different ways (e.g., language) in teachers’ pedagogical reasoning.

successful and additional considerations to make when designing professional development. Findings from this study may also indicate that researchers should consider the role of context in teachers' work and its relation to professional development experiences. These implications are discussed next.

Addressing Questions about Professional Development and Rethinking the Design of Professional Learning

Understanding the process of pedagogical reasoning from the teacher's perspective complements and enhances the work of those studying and designing professional learning opportunities for early childhood teachers. This study may help illuminate why some formats of professional development are more effective at changing practice as well as why professional development focused on skill development and children's learning is not always as successful in changing practice. Identifying the types of information that the participants used during their instruction is important for thinking about the resources that teachers value when making moment-to-moment instructional decisions.

As noted earlier, one finding from this study is that the participants seemed to value information from the immediate context more than knowledge that is from other sources. Regardless of whether or not this focus is beneficial for practice and children's outcomes, participants' focus on the specific information from the classroom is interesting because in traditional professional development models, teachers are often provided with information more broadly about how young children learn and develop and how that links to skills such as reading and writing (e.g., Heisner & Lederberg, 2011; Neuman & Wright, 2010; Powell et al., 2010). Although teachers in this study did refer to information about skill development and how children learn, this information was used less frequently than context-related information.

Moreover, they rarely connected skill development with conceptions of how children learn. Perhaps this is one reason why decontextualized professional development is less successful in improving teachers' practice and children's learning.

Although there is growing consensus that coaching or mentoring and the individualization of professional development is a more effective way of improving instruction than workshops and one-off trainings, researchers still have questions about the components of these types of professional development and how or why these models are successful (Powell & Diamond, 2011; Snyder et al., 2012). The finding that the participants in this study were highly dependent on information from an instructional context when making their decisions about practice may begin to explain why practice driven professional development, such as coaching embedded in individual teacher's classrooms, is more successful in influencing teachers' instruction. These models are able to capitalize on information that teachers depend on more frequently in their reasoning. Practice-based professional learning models connect classroom instruction and information teachers have from the instructional context with formal knowledge in ways that have immediate effects on practice. Professional learning that is embedded within teachers' classrooms may help teachers think more directly about practices, new information, and how these they relate to children in their classrooms.

There are many possible implications for the design of professional development in early childhood education based on this study. Both of the main findings have implications for the design of professional development. It seems that we need to continue to embed professional development in the immediacy of the classroom environment, so that whatever is targeted by the professional development can become integrated into the moment-to-moment pedagogical reasoning of teachers. Practice embedded professional development may help teachers make the

step between connecting more general knowledge with information from the context as part of their pedagogical reasoning.

Another potential implication for the design of professional development might be that during professional development we need to focus on helping early childhood teachers shift their pedagogical reasoning. In other words, we need mechanisms to develop teachers' moment-to-moment pedagogical reasoning in ways that help them use more research-based knowledge in their decision-making processes. That would be one way to get teachers to attend to the ideas or concepts that we as a field have identified as important for teachers to know. This could help improve instruction and practice, particularly if teachers are able to use this more general knowledge to think about the needs of the individual children in their classroom, something that the participants reported doing frequently.

An example of this is Clements and colleagues (2011) professional development aimed at improving math instruction. Specifically, they provided extensive training to teachers about mathematical content knowledge including: concepts, typical learning trajectories for children's development, and instructional activities for teaching those concepts to young children. In addition, teachers were also trained to use individual children's learning trajectories as a formative assessment of development. During the school year, teachers were given support as they used the formative assessments with individual students to assess their development and plan for subsequent instruction. Thus they were able to take generalized knowledge learned during professional development and connect it with information that they had about the specific students in their classroom. This may serve as one example of how professional development can help teachers develop pedagogical reasoning to incorporate more formal, research-based knowledge into the multiple types of information to inform their practice.

Simply understanding what is important to teachers in their practice may also be an effective starting point for initiating professional development. Researchers could build from what teachers' value and use in their reasoning about instruction in order to help them include more research-based information into their pedagogical reasoning. Learning models that are differentiated to each individual teacher's needs could then be created. This might result in differentiated coaching models (e.g., Stover, Kissel, Haag, & Shoniker, 2011) which focus on the individual teachers and target practices and knowledge specific to a particular teacher's needs through engaging a teacher in reflection on practice. This could also incorporate learning about practices that can contribute to changes in children's outcomes but also develops teachers' abilities to reflect on their practice after it occurs, a process that may ultimately influence reasoning about instruction.

Similarly, a stimulated recall procedure in which teachers describe their pedagogical reasoning and discuss their instruction may also be an effective professional development tool or model. With structured protocols, it could be a means for helping teachers reflect on their teaching and their pedagogical reasoning during teaching. This seems feasible given that teachers in the study were already reflecting on their practice and what they observed in the videos. This type of research could also be used to evaluate professional development. Used in conjunction with measures of change in practice and children's outcomes these could be especially powerful. Following the trajectory of teachers' pedagogical reasoning across stimulated recall interviews can help illuminate how teachers' pedagogical reasoning is changing and perhaps what it is about professional development that is or is not effective. Moreover, this could help identify changes in teachers' pedagogical reasoning even when other changes may not be observable in the short term, either in practice or in children's outcomes.

Taking this idea a step further, professional development can be tailored to address teacher-identified learning goals or needs, shifting to a more teacher-centric approach. As the teachers in this study seemed to think quite a bit about their students and their goals, it might be possible to develop teacher-driven models of learning that help teachers address their goals. With this approach, teachers can focus on developing their professional skills in ways that are meaningful and relevant to their work, in particular classrooms with specific children. This would help teachers learn about topics that could inform their pedagogical reasoning during instruction. For example, professional development that is centered around the creation of professional learning communities provides one way for teachers to focus on developing their knowledge and instruction based on their own personal goals (e.g., Ackerman, 2008; Kuh, 2012; Yilmaz & McMullen, 2010).

Although not the focus of the present study, it is important to note that teachers in this study did report using incomplete or incorrect theories about children's learning and skill development (e.g., Beth's statement that its harder to unlearn something than learn it the right way the first time or Catherine's understanding that differentiating between upper and lowercase letters is important but not being able to articulate why). Moreover, there were many instances in which participants discussed teaching topics or skills that they did not expect children to learn or master, for example Pamela's focus on forming the letter 'e' so that children would be familiar with it in kindergarten and first grade. As we seek to provide more contextualized professional development to teachers, these misconceptions and expectations of children's success merit more examination and consideration, particularly when understanding how these theories are connected to enacted practice. Given the complexity of teachers' pedagogical reasoning described in this study, and participants' focus on the immediate context, there is a need for more

nuanced ways to help elaborate and change these understandings about how children learn, more than just identifying that they exist. Moreover, these conceptions may be developed from many different experiences either explicitly or tacitly (Buchman, 1987; Hegarty, 2000) and thus might be more difficult to change, much like teacher beliefs (Breffini, 2011; Pajares, 1992).

An important consideration is how we use various tools or structures to facilitate professional development and changes in practice. For example, the teachers at the ABC School referred to using information about the scripted curriculum during practice. Although there are arguments about de-skilling teachers through the use of scripted curricula (e.g., Apple & Junck, 1990; Shannon, 1987), the teachers in this study thought quite deeply and critically about the curriculum they were implementing. For example, teachers in the study reported using information about how the curriculum was challenging for their students and ways to scaffold learning in their pedagogical reasoning. In addition, the ABC School teachers often integrated their knowledge of the curriculum with the knowledge of their individual students in order to make instructional decisions. Finding tools or structures, such as curriculum, to inform or scaffold teachers' pedagogical reasoning may be beneficial for improving practice.

The curriculum at both schools did complicate teachers' reasoning about practice. Helping teachers integrate their information about specific curricular goals and pedagogical moves with the information about their children in ways that are meaningful for enacted practice could have implications for the efficacy of using well designed tools with teachers. This is not to suggest that we give all teachers scripted curricula to use or that the curriculum implemented by the ABC School is something that should be implemented universally. Rather, that it is interesting to consider how the teachers in this study interacted with the curriculum in their reasoning about practice. This leads to the importance of thinking about or designing for

contextual variables as we develop professional learning opportunities for teachers, discussed in the next section.

Finally, in the development of professional learning opportunities for teachers it is necessary to acknowledge that early childhood teachers engage in the complex process of pedagogical reasoning in order to inform their practice. Recognizing the process of pedagogical reasoning not only identifies teachers as thoughtful rationale individuals but also acknowledges the many things that teachers consider in order to enact their instruction.

Considering the Role of Contextual Variables in the Design of Professional Development

One interesting pattern in this study is that the teachers' pedagogical reasoning seemed to be informed and complicated by broader contextual variables such as instructional activities and the curricular requirements at the participating schools. These different contextual variables influenced teachers' pedagogical reasoning in ways that have not really been explored in early childhood but can have significant implications for the design of professional development.

Teachers used information differently across the two instructional activities. Although this may be somewhat intuitive, as the instructional activities had different pedagogical goals, we do not necessarily accommodate for these differences in pedagogical reasoning in current professional development models. Perhaps this finding means that we need different professional development models for different instructional contexts. Currently there is a range in how this is addressed in professional development. Some professional development models focus on a myriad of practices that can be used across instructional activities (e.g., Downer et al., 2009; Hamre et al., 2012) and other models focus on practices that are specific to one instructional activity (e.g., Domitrovich et al., 2009; Justice et al., 2010). Based on the finding in this study that instructional activity seems to influence pedagogical reasoning, professional development

that is specifically related to a particular instructional activity may be more fruitful than those focused on utilizing strategies that can be used across a range of activities. Or, conversely, teachers may need help implementing general strategies into specific instructional activities.

Another important contextual variable to consider is administrative curricular decisions. Even if teachers have or learn particular information, it may not be relevant in a specific context due to the curriculum.³⁷ For example, teachers at the ABC school may have known other ways that prekindergarten children develop phonological awareness or emergent writing skills; however, they were limited in how they could use that information because of the mandated curriculum. It is important to ensure that the content we provide to teachers in professional learning experiences is relevant to both the curricular decisions made at the administrative level and the needs of specific students in their classrooms. For example, Clements' and colleagues' (2011) math-focused professional development described previously, also included a school-wide implementation of a math curriculum associated with the teacher training. Thus the information that teachers were learning aligned directly with the instruction that they were expected to implement in the classroom.

Acknowledging that these contextual variables influence practice is a first step in redesigning professional development to integrate context. Several K-12 teacher education researchers have discussed the role of context, including administrative and curricular decisions, in influencing practice and even the efficacy of methods for helping improve instruction. Specifically, these researchers discuss the relationship between the teacher, the students, and the content and contextualize these interactions within a broader school setting (e.g., Cohen et al.,

³⁷ This may be especially important as teachers' may or may not have beliefs about teaching that align with the school curriculum.

2003; Hawkins, 1974; Lampert, 2001; Rodgers, 2002). Perhaps the most important point of these researchers' discussions is the fact that they all emphasize the interaction between these contextual elements and how they function together in an environment. Thinking about these interactions to conceptualize professional development could help us reframe this work and design learning opportunities for early childhood teachers that are more meaningful and more applicable to individual classroom environments. New professional development models could take into account that pedagogical reasoning is a process of making decisions using multiple sources of information that are often context driven.

Implications for Future Scholarship

Based on the findings from this study there are several implications for future scholarship. First, researchers should strive to understand more about the role of context and administrative decisions in teachers' decision-making about instruction. Future research should also focus on early childhood teachers' experiences and perceptions of their work while also applying alternative research methods for investigating teachers and their work. These shifting orientations could lead to research that advances the knowledge-base of the field. These possibilities are examined next.

Context and Administrative Level Decisions

In this study, the school setting emerged as an influence on teachers' pedagogical reasoning about practice, something that has been explored in K-12 teacher education research (e.g., Horn, 2005; Lampert, 2001) although not as frequently addressed in early childhood education. The stimulated recall procedure allowed insight into how school-level curricular decisions informed teachers' reasoning about practice. Specifically, the pedagogical reasoning of participants in this study was influenced by curricular choices made at the administrative level.

Teachers from the ABC School had less autonomy in selecting learning goals and deciding how to implement the curriculum and they seemed to think a great deal about the curriculum during their instruction. At the Friendship School, the teachers had more autonomy in making decisions about learning goals and curriculum implementation and they frequently discussed using information about their goals, sometimes attempting to reconcile these personal goals with the broader center-based goals.

Contextualizing teachers' work in a classroom within a larger school setting is important as we strive to understand teachers' practice. Teachers' reasoning about instruction includes multiple types of information and is often dependent on school-level choices. For researchers, considering how information about these variables complement and complicate each other in teachers' pedagogical reasoning could be an important part of thinking about both professional development but also research in early childhood centers.

Investigating policy decisions about mandated learning goals or the endorsement of specific curricula may also be important to consider given the influence of school-based variables on teachers' pedagogical reasoning. Policy decisions made at the district or state level may also influence teachers' pedagogical reasoning in ways that are not yet explored in the literature. This may become increasingly important with the growing focus on language and literacy developmental goals both in early learning standards (e.g., NAEYC, 2009; Michigan State Board of Education, 2013) as well as the Common Core State Standards for K-12 (Common Core Standards Initiative, 2010).

Shifting Orientations to Conceptualizing and Investigating Early Childhood Teachers and Their Work

This section explores the importance of the phenomenological approach and stimulated recall procedure for conceptualizing early childhood teachers' pedagogical reasoning and use of information during instruction. Specifically, the discussion emphasizes the need to continue to focus on the process of pedagogical reasoning and the need to attend to early childhood teachers' perspectives of their work in the classroom.

The research methods employed in this study combined two traditionally separate fields in order to investigate early childhood teachers' pedagogical reasoning during instruction. This provided a different way of examining how early childhood teachers reported reasoning about their practice and the type of information they used to inform their moment-to-moment instruction. This marks a shift in the way that we traditionally study early childhood teachers' knowledge through measures that are separate from teachers' thinking and perceptions of their work. Using the stimulated recall procedure provided access into the process of pedagogical reasoning about teaching and this has several implications for the ways we study early childhood teachers and their practice.

Continuing to focus on the process of pedagogical reasoning. Using a phenomenological approach for conceptualizing this study and examining the connection between teachers' instruction and their reported pedagogical reasoning advances the knowledge-base of the early childhood field in two important ways. First, this approach highlights the process of reasoning about practice and how early childhood teachers perceive their work in the classroom. Second, it provides a more nuanced understanding of the intentionality behind early childhood teachers' instruction by focusing on the teachers' pedagogical reasoning as it

connected to observable actions. This provides a more contextualized means for understanding classroom instruction in ways that may not be visible from observations of instruction.

The phenomenological approach employed in this study to investigate and analyze teachers' pedagogical reasoning during practice illuminated the complexity of reasoning about practice that occurs while implementing language and literacy as well as circle time instruction. The study showed that participants used multiple sources of information in complicated ways to make decisions about instruction. By making this process visible, and understanding it from the teachers' perspectives, we are able to see that teaching young children is a complicated act, informed by many different sources of information. The teachers in this study thought about their practice in nuanced ways, using multiple sources of information that both supported and contradicted each other.

From a theoretical perspective, this focus supports conceptualizations of teachers as intentional actors in the classroom (particularly from the teacher education literature, e.g., Lampert, 1985; Shulman, 1987). Teachers engage in a process of pedagogical reasoning and their subsequent enacted practice is purposeful. Participants in this study frequently discussed their pedagogical reasoning in ways that was not immediately observable from their instruction. Focusing only on teachers' performance on measures of knowledge or practice loses sight of the process of pedagogical reasoning informing those decisions. Continuing to focus on teachers' knowledge in use can help us to understand the complexity of early childhood teachers' work. Even in cases in which the practice seems fairly routinized, such as the circle time routines of the participants in the study, teachers still engaged in very complicated decision-making during these activities.

In order to expand our knowledge of early childhood practice, we need to continue to investigate this process of pedagogical reasoning and strive to understand teachers' perspectives of their work. This is important for understanding the complexity of the work of teaching as well as in conceptualizing the work of teaching. The phenomenological approach used in the present study to investigate teachers' pedagogical reasoning helps us see the types of information that are important to teachers, regardless of the accuracy of this information. It also accentuates the differences between information that is used more frequently by teachers and the information which is typically valued by researchers.

The role of self and beliefs in teachers' pedagogical reasoning about practice. The teachers in this study discussed their feelings and ideas of themselves as teachers in their pedagogical reasoning about practice. These personal connections that informed the participants' reasoning about practice are important to consider in how we conceptualize and study teaching. Moreover, participants in this study also discussed their own feelings and how that informed their instruction. This is something we do not presently account for when we look at practice. Although some researchers have used surveys (e.g., Han & Neuharth-Pritchett, 2010; Hindman & Wasik, 2008) or semi-structured interviews to examine beliefs (Friesen & Butera, 2012) these are separate from practice. Understanding how teachers are making connections to their identities and feelings during instruction may be another way to examine or understand the role that teacher beliefs play in practice. This may help both early childhood and K-12 researchers identify why it can be so difficult to change teachers' beliefs (e.g., Breffini, 2011; Pajares, 1992). Incorporating more practice embedded investigations can expand our understanding of the connection between teachers' beliefs and instruction.

There are other implications for future directions in scholarly work and these are discussed in the next section along with the limitations of the present study.

Limitations and Further Directions for Future Research

There are several limitations to the present study, many of which indicate the need for future research of teachers' pedagogical reasoning. These limitations are discussed in this section.

The first limitation is the criteria used by the researcher for stopping the video during the stimulated recall interview. The benefit of using these criteria ensured that there were multiple time points for discussion during the protocol and that teachers' pedagogical reasoning about instruction that was of interest to early childhood researchers was captured. However, these criteria may have influenced how teachers discussed the use of information in their reasoning about practice. This bias was evident in the number of teachers' references to reasoning about their goals in the researcher-initiated stopping of the video. The moments selected by the researcher were not as inclusive of the range of practices that teachers engage in or even what is deemed important or interesting to teachers. This process could be repeated with differing sampling procedures, perhaps letting the teacher choose all of the moments for discussion or using a time-sampling procedure for when to stop the video.

Second, in this study, teachers' pedagogical reasoning was only examined during two instructional activities. This was an intentional design decision in order to limit the breadth of the data collection and contexts in which to investigate teachers' pedagogical reasoning. These two instructional activities, however, are not representative of the range in activities that children experience in preschool (Early et al., 2010; Fuligni et al., 2012). Nor were they inclusive of teachers' pedagogical reasoning during non-instructional times such as transition between

activities, which can comprise a surprising portion of preschool and early elementary students' days (Dickinson & Tabors, 2001). More research needs to be completed in order to investigate teachers' pedagogical reasoning during other types of classroom activities. The pattern of differences in the teachers' use of information across the two instructional activities also underscores the need for looking at pedagogical reasoning in other contexts. This may be particularly important as we strive to connect teachers' pedagogical reasoning with observed practices.

Next, in this study, information in use was only investigated during moment-to-moment instruction. There are other practices that teachers engage in such as planning for activities, assessing children's work, and reflecting on teaching (Lampert, 2010). Teachers may use differing types of information to think about these practices than the information that they use during instruction. Teachers may depend more on information about skill development or how children learn to inform these differing practices. Understanding the use of information during these other less observed elements of teaching may also provide more insight into the work of teaching, how teachers perceive their work, as well as provide insight into the design of professional development.

Finally, the way the present analysis was conducted makes it difficult to understand how background experiences such as formal education and previous classroom teaching may tacitly inform teachers' pedagogical reasoning. It could be that these types of experiences which occurred prior to the specific instructional moment inform teachers' reasoning about practice in ways that they are not aware of or do not emerge in their discussions of their moment-to-moment thinking. These experiences could inform their frameworks for pedagogical reasoning, such as their focus on individual children. It could be that during their formal training they were taught

to focus on individual children and thus it has become a regular part of practice that they no longer connect with their formal learning experiences. Formal training experiences could also be reflected in the types of research-based language that the teachers used but did not connect to their educational experiences. Other practices that were developed through time in the classroom may be so habitual that teachers no longer think about how they developed them. Previous experiences through teaching and training may also contribute to teachers' identities which seemed to influence teachers' pedagogical reasoning in multiple ways in this study. Other methods for identifying how these experiences connect to teachers' in-the-moment instruction may be needed.

The limitations of the present study indicate additional future directions for this type of research. Specifically, there is a need for continued application of this phenomenological approach with a stimulated recall method to investigate the pedagogical reasoning of teachers. In order to understand how teachers reason about instruction, we need to look at a range of different teachers with different experiences. This will not only help us to find similarities and differences between teachers' use of information in pedagogical reasoning about their instruction but it will also help us consider teachers as autonomous actors in the classroom. It is also necessary to explore multiple instructional contexts and to consider how teachers use information differently depending on the pedagogical purpose of an activity. Finally, we also need to examine how different curricula influence teachers' pedagogical reasoning. It would be interesting to see, for example, whether teachers formally trained in a specific type of curricula, for example Reggio Emilia (Edwards, 1993), use information differently in their pedagogical reasoning about moment-to-moment instruction than teachers with more general training or those implementing a

scripted curriculum. This too might have implications for the design of professional development.

In Closing

The findings from this study complement and expand our growing understanding of early childhood teachers' work in the classroom and their use of information to inform practice. This study has illuminated the complicated process of pedagogical reasoning in which the childhood teachers engaged in as they enacted their moment-to-moment instruction during whole-group and small-group language and literacy instruction. By using the K-12 teacher education research and theoretical literature to inform the theoretical orientation and methodological approach to studying early childhood teachers, this investigation shifted from looking at teachers' depth of knowledge to their knowledge in use.

Using a stimulated recall procedure to access early childhood teachers' pedagogical reasoning during practice and a phenomenological approach for understanding this process allowed for insight into the complex pedagogical reasoning in which teachers engaged in while enacting their instruction. By focusing on teachers' perspectives, we are able to understand teachers' own view of their work in the classroom and what they value during instruction. Not only does this help to address questions about the process of decision-making and the efficacy of professional development, the findings from this study can assist researchers in thinking about their work with teachers of young children.

Continuing these types of investigations that focus on the experiences of teachers and their decision-making through pedagogical reasoning during instruction can provide insight into the complex work of teaching young children. Moreover, understanding this process of pedagogical reasoning can help us develop professional learning opportunities that build from

teachers' current resources and pedagogical reasoning in ways that are meaningful and useful for teachers and that also have long-term effects on children's outcomes.

Appendix A: Semi-Structured Center Director Interview

Questions (asked in a different order at each site with slight changes in phrasing).

1. Can you tell me about the families that attend your school?
2. What are your learning goals for prekindergarten children? How were these developed?
3. What is your curriculum?
4. What are teachers' lesson planning requirements?

Appendix B: Teacher Questionnaire

1. In what year were you born? 19 ____ ____

2. Which best describes your race or ethnicity? (Check one)

- Asian or Pacific Islander
- Hispanic or Latino
- African American
- White
- Multiracial: _____
- Other: _____

3. Is English your first language?

- Yes
- No If no, what is your first language? _____

4. What is your highest educational level? (Check one)

- High School (HS)
- Associates degree (AA)
- Bachelor's degree (BA)
- Master's degree (MA)

5. For each education degree that you hold, please provide the following information:

Degree Level (HS, AA, BA, MA)	Name of Institution Attended	Major/Concentration (i.e. Early Childhood Education)	If this included coursework for a credential/ certification please list the credential.	Year of Graduation

6. About how many years have you worked as a teacher? (Check one)

- 5 or less
- 6-10
- 11-15
- 16-20
- Over 20

Appendix C: Planning and Stimulated Recall Interviews

Planning Interview:

1. What do you have planned for circle time/language and literacy instruction?
2. What is/are your reason/s for doing that?

Stimulated Recall Interview:

1. How did it go? Is there anything you want to say about the lesson?
2. Now we are going to watch the video of you teaching during circle time/language and literacy.
3. Please stop the video when anything interesting/out of the ordinary occurred. I might also stop the video.

If teacher stops the video



Why is this interesting or out of the ordinary?



What was the reason for doing what you did next?/There are lots of things you could focus on, why did you focus on that?/tell me more about why you focused on that” *If necessary provide description about what teacher did next.*



Why do you think that?

If I stop the video



At this moment, what were your thoughts?
/At this moment what were you thinking about?



What was the reason for doing what you did next? /There are lots of things you could focus on, why did you focus on that?/tell me more about why you focused on that” *If necessary provide description about what teacher did next.*



Why do you think that?

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