

UNDERSTANDING ADAPTIVE TEACHING EXPERTISE IN AN ELEMENTARY
CLASSROOM VIEWED AS A COMPLEX ADAPTIVE SYSTEM

BY

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DISSERTATION

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ABSTRACT

This study explored adaptive teaching expertise in an elementary classroom viewed as a complex adaptive system. Adaptive teaching is a concept that has been studied; however, using complexity theory to frame how and why teachers make the decisions they do provides a unique lens to interpret teachers' decision-making in the classroom. The following research questions were examined: (a) What are examples of adaptive teaching expertise in an elementary classroom viewed as a complex adaptive system? (b) What kinds of decisions did the teacher make in response to student needs and the complex environment of the classroom?

This study used a qualitative research design. A case study was conducted to study the adaptive teaching of a second-grade elementary teacher and her students. Data collection methods included participant observations and in-depth follow-up interviews. Data were coded and analyzed using cross-case analysis, situational analysis, and were represented visually in screencasts.

The findings indicated that (a) successful adaptation occurred when the teacher recognized the unpredictability of the classroom situations, and understood that the classroom was comprised of working parts that required responding in ways that adapted to students' social and academic choices, needs, and interests, and (b) there was a the link between proficiency in teaching content with the teacher's confidence level, and (c) the choice with whom to engage, as well as maintaining engagement throughout the situation, was important when facilitating an adaptive situation. Examples of the tensions between what the participant believed was best for her students and how the district would like her to teach are described in detail.

*For my husband Talon, my baby girl Lexi,
and my parents, Mike and Debbie*

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CHAPTER 1

Research in education often describes teaching as complex (Danielson, 2007; Darling-Hammond, 2006; Grossman, Hammerness, & McDonald, 2009; Vogt & Rogalla, 2009). Blanket claims such as teaching is emotionally and physically demanding, teaching necessitates multitasking, and teaching requires constant decision-making are often used to describe the complexity in teaching. Few would argue with these claims; however, these assertions do little to fully illustrate the complexity or help us understand what teachers do to adapt, or not, to this complexity. To provide a more concrete understanding of complexity in the classroom, this research provides a case study of an adaptive teacher.

Purpose of the Study and Research Questions

This qualitative case study sought to investigate the complexity in classrooms viewed as complex adaptive systems (CAS) using the concept of adaptive teaching expertise. Complexity theory, used as a framework for this research, is a highly interdisciplinary framework that seeks to understand the inner workings of living, adaptable, changeable systems. When teachers understand the classroom as a CAS, describing how these teachers teach and clarifying why they make these particular choices will elucidate the concept of *adaptive teaching expertise*, the focus of this research. Adaptive expertise is a broad construct that encompasses a range of cognitive, motivational, and personality-related components (Crawford, Schlager, Toyama, Riel, & Vahey, 2005). There is no specific, agreed-upon definition of adaptive expertise, though there are some similarities across the studies examined in the literature review (see for example, Chapter two, Section one).

For the purposes of this study, the word *teaching* is added to the phrase adaptive teaching, i.e., *adaptive teaching expertise*, in an attempt to narrow the focus to the context at

hand. Pulling from the literature, I created a working definition to establish possible criteria used to identify examples of adaptive teaching: Adaptive teaching expertise requires a person who is proficient in applied content knowledge (Fisher & Peterson, 2001; Vogt & Rogalla, 2009), who uses flexible, adaptive abilities (Verschaffel, Luwel, Torbeyns, & Van Dooren, 2009), and who is able to efficiently and strategically shift actions to meet the needs of his/her learners using sound decision-making skills (Crawford, Schlager, Toyama, Riel, & Vahey, 2005; Darling-Hammond & Bransford, 2005; Soslau, 2012), when faced with unpredictability in the learning environment.

Combining the theoretical frame of complexity with the concept of adaptive teaching expertise provided the basis for my two research questions: **What are examples of adaptive teaching expertise in an elementary classroom viewed as a complex adaptive system?** and, **What kinds of decisions did the teacher make in response to student needs and the complex environment of the classroom?**

Complexity theory originated in the physical sciences and once it made its transition to social sciences, researchers defined complexity principles in their respective contexts. An overview of this transition can be found in Chapter two, Section two. I studied several researchers using complexity theory in the social sciences and found Davis and Sumara's (1997, 2006) work the most applicable to my study because they are both former K-12 teachers. They currently work as teacher educators at the University of Alberta. Their work is appropriate because they are familiar with the context of public education and carefully position their research using complexity theory within this context. They advocate thinking of complexity science as a proper 'educational' discourse, and disagree with simply borrowing and importing the theory for illustrative purposes (Davis & Sumara, 2006).

Davis and Sumara define complexity theory by describing what it is and what it isn't. They do not regard complexity as an explanatory system; rather, "it is a way of thinking and acting" (Davis & Sumara, 2006, p. 18). This viewpoint aligns well with why I chose complexity theory as a theoretical framework for understanding classrooms. The idea behind using this theory is that when teachers understand the classroom as a complex adaptive system, they begin to make sense of the numerous interactive parts, and can make decisions about how best to adapt the classroom environment to facilitate learning in ways that are best suited to individual needs of the students and the classroom.

Significance of the Study

Adaptive expertise as a concept has been grounded more in rhetoric than in convincing research-based evidence (Torbeys, Verschaffel, & Ghesquiere, 2006; Verschaffel, Luwel, Torbeys, & Van Dooren, 2009). Although the literature on adaptive expertise in education is limited and empirical studies of developing adaptive expertise are even fewer, interest in this area is gaining momentum. The research I am conducting on adaptive teaching expertise is occurring at an optimal time; all of the empirical studies I have found on the subject were completed within the last thirteen years. My study will contribute to the growing body of literature.

My research is unique for three reasons. First, the majority of the empirical studies focus on secondary teachers and/or students; my case is an adaptive *elementary* teacher. Second, the empirical studies provide limited description and detail to understand general principles of adaptive teaching; I used a qualitative methodology to demonstrate an adaptive teacher. Third, the use of complexity theory provided a comprehensive lens to view the classroom and the role of the teacher; the empirical studies outlined in chapter two acknowledge that teaching is "highly

complex work” (Vogt & Rogalla, 2009) and that the learning environment is “complex” and “rapidly changing,” (Crawford, Schlager, Toyama, Riel, & Vahey, 2005), but they do not use a framework that captures this complexity. My theoretical framework and methodology make my study distinctive.

Background

The idea to explore the concept of adaptive teaching expertise came after I finished my first qualifying exam, which required me to outline recommendations for teacher education from prominent researchers. I first encountered Hatano and Inagaki’s (1986) term “adaptive expertise” in Darling-Hammond and Bransford’s work. Darling-Hammond and Bransford (2005) recommend assisting prospective teachers in becoming adaptive teachers in order to overcome the ‘just tell me what to do’ attitude. The goal would be to prepare them for the unexpected challenges they will face while teaching. I thought ‘unexpected challenges’ was an appropriate phrase to use when describing the classroom.

Although Darling-Hammond and Bransford only briefly touched on this concept, it prompted me to explore further the concept of adaptive expertise. I discovered that adaptive expertise can be identified in a number of different contexts; however, I wanted to focus specifically on the context of teaching. Using literature from several sources, I developed a tentative definition of adaptive *teaching* expertise. What I learned from this experience culminated in my second qualifying exam.

As I narrowed the focus of my study, I found that Ladson-Billings’ (1995) research on culturally relevant pedagogy provided a solid example of how to conduct observational research when looking at teachers’ specific practices, skills, and behaviors. Her study helped me with the overall organization of my research methods.

Researcher's Stance

This study is grounded in a long-term effort to explain my own teaching philosophy. As a former elementary school teacher for seven years, I was always curious about what qualifies as “good” teaching. What was it about some teachers that made them highly sought after by parents and administrators? Was it the skills they possessed, their demeanor when working with students, their subject matter expertise, or the type of preparation they received? I concluded that it was a combination of these things, and others, but I still struggled to articulate the qualities of a “good” teacher.

Similarly, when I became a cooperating teacher as well as a teacher educator, I had a sense about which teacher candidates would flourish in the profession and who might face difficulties. This sense of a good teacher went beyond the predetermined criteria created by researchers, administrators, and publishing companies. Criteria existed in many forms such as checklists to show whether a skill, behavior, or practice was exhibited during teaching, and also as rubrics that showed vague rating systems like “satisfactory” and “unsatisfactory.” These tools seemed so dichotomous, so definitive, whereas the teachers and situations that were being judged were much more nuanced.

I realized I was not the only one who had a hard time describing a good teacher. Once, when my former principal was placing a student teacher to work with me in my third grade classroom, I asked him about his criteria for selecting mentor teachers. He responded by saying, “I think about who I would like the student teachers to emulate. If I like how you teach, I want the student teachers to teach like you.” I understood what he meant, but his ambiguity fueled my curiosity to further describe “good” teaching.

Providing a comprehensive definition or summary of a good teacher is difficult because the teaching is complex. When I discovered adaptive teaching expertise and identified complexity theory as a theoretical framework, I recognized that this combination got me closer to determining what is good teaching.

Outline of the Chapters

In the next chapter, I provide a review of the literature pertinent to my study. In Section one, I define adaptive teaching expertise and explain how it has been used within the field of education. In Section two, I describe and define complexity theory and its relevant principles, focusing specifically on the literature used in the social sciences. Chapter two ends with a summary of the link between adaptive teaching expertise and complexity theory.

In Chapter three, I provide a rationale for the research methodology and design, describe my methods including qualitative interviews and participant observations, and introduce my participants. I also describe the school and classroom setting, and outline my data collection and data analysis procedures.

In Chapter four, I describe and analyze the four situations that illustrate adaptive teaching expertise. Situation 1 entitled, “The Play,” begins the chapter and is followed by Situation 2, “Ellie,” Situation 3, “The Tornado,” and Situation 4, “Recess Discussion.” Each of the four situations is organized into three sections. The first provides a detailed chart organized to show a transcript of the videotaped segment combined with the follow-up conversation between the participant and me. Principles of complexity and the participant’s beliefs and values are highlighted. Section two of each situation discusses in more detail how the complexity principles found throughout the situations represent the classroom as a complex adaptive system and are represented in screencasts. Section three of each situation discusses what might have

happened if the teacher did not make the adaptive decisions she made in each of the four situations. The chapter ends with a cross-case analysis that describes my findings and includes recurring tensions between how the participant wanted to teach and what was required of her by the district.

In Chapter five, I discuss the relation of the definition of adaptive teaching expertise and the findings from my case study of Mrs. M addressing the specific types of decisions the teacher made. These sections are followed by a discussion. Next, I discuss the potential implications this research might have on the teaching profession and teacher education. Finally, I consider my future plans for this dissertation research.

CHAPTER TWO

The purpose of this study was to identify and describe examples of adaptive teaching expertise in an elementary classroom viewed as a complex adaptive system. In Section one, I provide a comprehensive look at how adaptive expertise is defined, and how it has been used within the field of education. In Section two, I provide a description of complexity theory and its relevant principles, focusing specifically on the literature used in the social sciences. This chapter ends with a summary describing the link between adaptive teaching expertise and complexity theory.

Section One: Adaptive Teaching Expertise

Section one of this chapter begins with a review of the literature on the concept of adaptive teaching expertise, including the origin of the term, a working definition, and the empirical studies of adaptive expertise in education. This section concludes with lessons learned from the empirical studies.

Origin of Adaptive Expertise

The term “adaptive expertise” was originally coined by Giyoo Hatano and Kayoko Inagaki (1986) in their research, “Two Courses of Expertise,” in order to differentiate between the application of procedural (decision-rules or executive strategies) and conceptual knowledge (ability to devise new procedures or make new predictions). They explained the difference between these terms through a Piagetian lens indicating that all human beings have an intrinsic motivation to understand. Therefore, procedural competence is not enough; the conceptual knowledge explains the meaning behind the procedural skill.

Hatano and Inagaki, as cognitive researchers, spoke broadly of adaptive expertise in their study situating the concept in contexts such as agriculture, atmospheric science, culinary arts,

child development, as well as education. Since the 1980s, research on adaptive expertise has emerged in the fields of engineering, medicine, and business. Researchers were interested in the learning process and how adaptive expertise could assist with knowledge transfer in problem-solving situations (Barnett & Koslowski, 2002; Fisher & Peterson, 2001; Pandey, Petrosino, Austin, & Barr, 2004). The purpose of this study was to focus specifically on elucidating the concept of adaptive *teaching* expertise demonstrated by one elementary teacher.

Defining Adaptive Teaching Expertise

Adaptive teaching expertise may be newly articulated and situated within a particular political context, but it is not a new concept. For the purposes of this study, I describe an adaptive teacher using concepts from Aristotle's idea of *phronesis* and Dewey's ideas of *continuity*.

Phronesis, the Greek word translated often as 'practical wisdom' or reasoning, is argued to be an intellectual virtue rather than a moral virtue. It embraces flexibility, attentiveness to details, perceptiveness, and sensitivity within the course of the experience particularly when novel situations arise. Nussbaum (1990) argues, "people of practical wisdom must meet the new with responsiveness and imagination, cultivating the sort of flexibility and perceptiveness that will permit them . . . to 'improvise what is required'" (p. 71).

Dewey (1916) argued that *continuity* is a "continual readaptation of the environment to the needs of the living organism," and experiences fuel these readaptations (p. 6). In a classroom, the teacher must decide when and how to use his/her experiences to adapt the environment in order to meet the needs of students embedded in the social context. Figuring out how to do this is the challenge because "there is no formula that tells the teacher when and how it is time to display one's own thinking" (Higgins, 2011, p. 185).

Adaptive teaching expertise is a broad construct that encompasses a range of cognitive, motivational, and personality-related components (Crawford, Schlager, Toyama, Riel, & Vahey, 2005). It is a combination of habits of mind and distinctive dispositions that teachers use in the classroom in order to balance the needs of a highly complex environment. Fisher and Peterson (2001) define an adaptive expert as “an individual who possesses the content knowledge of an expert, but who in addition displays specific cognitive dispositions that augment and enhance their ability to effectively utilize and extend [his/her] content knowledge” (p. 1). Vogt and Rogalla (2009) regard adaptive expertise as a competency that does not imply a specific fixed method of instruction, rather, the teacher focuses on adjusting his/her teaching to his/her students. Crawford, Schlager, Toyama, Riel, and Vahey (2005) discuss adaptive expertise as a process or practice that *enhances* the construction of knowledge through problem solving rather than simply the application of knowledge.

In order to understand my use of the concept of adaptive teaching expertise further, consider each word of the phrase separately. *Adaptive* refers to the ability to modify one’s procedures in a variable environment. Being adaptive assumes that one is aware enough of one’s environment to assess it and make the necessary changes. Though similar and often used interchangeably, there is a noted difference between adaptability and flexibility. Flexibility is primarily used to refer to switching seamlessly between different strategies, whereas adaptability places more emphasis on selecting the most appropriate strategy (Verschaffel, Luwel, Torbeyns, & Van Dooren, 2009).

Teaching indicates the context or the environment in which this particular type of expertise is demonstrated. “Developing expertise in a content area is not the same as developing adaptive *teaching* expertise” (Soslau, 2012). Using the word *teaching* within the phrase

“adaptive expertise” narrows the focus to the person developing or possessing these characteristic skills, competencies, or orientations, primarily the teacher.

The word *expertise* is quite complex and often difficult to define, particularly because it is domain specific (Ericsson, 1996; Lajoie, 2003). The word, *expertise* comes from the Latin word *expertus* meaning, “to experience.” It is important to note that in order to gain expertise, one must build upon experiences; however, just because one may have experience, does not make one an expert. Building expertise is an on-going process and takes a lifetime to achieve (Darling-Hammond & Bransford, 2005).

Some researchers have focused on particular skills of an adaptive expert, including the ability to be both innovative and efficient (Darling-Hammond & Bransford, 2005; Mercier & Higgins, 2013; Schwartz, Bransford, & Sears, 2005). These skills are best described when contrasting adaptive experts with routine experts. Routine experts and adaptive experts both have a proficient set of skills used repeatedly to develop procedural knowledge efficiently; these experts, however, differ when they attempt to develop conceptual knowledge requiring them to run mental simulations and make predications or explanations about an unfamiliar object or situation that extends beyond their experiences (Hatano & Inagaki, 1986). When an unfamiliar or random event occurs, routine experts struggle with understanding how to adapt the procedural skill to an applied setting, whereas adaptive experts can adjust their core competencies to deal with the unexpected event (Darling-Hammond & Bransford, 2005). Adaptive experts can balance both efficiency and innovation compared to a routine expert who is proficient in efficiency only (Mercier & Higgins, 2013; Schwartz, Bransford, & Sears, 2005).

Contrasting adaptive experts with routine experts is done for explanative purposes only. It would not be correct to say that an individual is *only* routine or *only* adaptive. Often, experts

become adaptive after mastering the routine, though understanding how to do so is difficult. As Lin, Schwartz, and Hatano (2005) noted, one of the greatest challenges for teachers is recognizing that “routine situations often have a number of hidden features that may make it quite different from what they believe, and therefore require adaptation” (p. 246). This is not to say that the process of transition from a routine to an adaptive expert is linear, or that an individual teacher is only, and always, one or the other. Many contextual factors may influence the kind of adaptation s/he chooses to employ.

I pulled from the literature to create my working definition of adaptive teaching: Adaptive teaching expertise requires a person who is proficient in applied content knowledge (Fisher & Peterson, 2001; Vogt & Rogalla, 2009), who uses flexible, adaptive abilities (Verschaffel, Luwel, Torbeyns, & Van Dooren, 2009), and who is able to efficiently and strategically shift actions to meet the needs of his/her learners using sound decision-making skills (Crawford, Schlager, Toyama, Riel, & Vahey, 2005; Darling-Hammond & Bransford, 2005; Soslau, 2012), when faced with unpredictability in the learning environment. This definition will be used to describe adaptive teaching expertise throughout the rest of this dissertation.

Uses of Adaptive Expertise in Education

The literature on adaptive expertise in education is limited and empirical studies of developing adaptive expertise are even fewer. Some of the more recent studies discussed in this paper have been completed in countries other than the United States, including England, Switzerland, the Netherlands, and Belgium. A brief summary of each empirical study is explained below, followed by a discussion of the value of these studies.

Torbeyns, Verschaffel, and Ghesquiere (2006) analyzed the development of adaptive

expertise in children of different mathematical achievement levels in the domain of two-digit addition and subtraction. Sixty-nine Flemish second graders were studied, and each student's mathematical achievement levels were assessed, once in the middle of the year and once at the end, using a standardized test. The assessments asked students to solve some problems using only the "jump"¹ strategy, and other problems by choosing between either the "jump" strategy or the "split" strategy. The students were then divided into one of the following three groups based on their scores: high, above-average, or below-average achievers. After the first assessment, all students received instruction in place value, and adding and subtracting using the carrying and the non-carrying method. One particular strategy (the "jump" strategy) was explicitly taught to all the students before the second assessment. Results showed the high-achieving group adapted their strategy choices quickly and accurately to the characteristics of the addition and subtraction problems whereas the below-average achievers did not adapt their strategy choices in the same manner. In addition, the below average achievers were not able to apply the jump strategy with the same accuracy in the choice problems as the above average and high achievers. The researchers explained these disparities as a difference in children's conceptual understanding, and their disposition toward strategy flexibility.

Torbeyns, Verschaffel, and Ghesquiere's (2006) work, as well as several other researchers' studies (Baroody, 2003; Baroody & Dowker, 2003; Kilpatrick, Swafford, & Findell, 2001; Seo & Ginsburg, 2003) are helpful to understand the mathematical computation expertise of K-12 students. They touch briefly on how teachers can tailor their instruction to enhance students' adaptive expertise in math, but the emphasis of their research is not on the development

¹ The jump strategy adds or subtracts up or down first by the 10s, and then by the units of the second integer from the first unsplit integer (e.g., $49+25=$ __; $49+20=69$, $69+5=74$); The split strategy splits off the 10s and the units in both integers and adds or subtracts them separately (e.g., $49+25=$ __; $40+20=60$, $9+5=14$, $60+14=74$).

of adaptive expertise in the teachers themselves. However, the next three empirical studies focus specifically on the latter.

Crawford, Schlager, Toyama, Riel, and Vahey (2005) designed a study to understand high school biology teachers' adaptive reasoning processes (in contrast to routine, or efficiency-oriented processes) and adaptive response learning to unfamiliar content in the course of problem solving. Twelve participants were asked to analyze student work on a genetics unit to assess what the students had learned so far and identify major student misconceptions using a think-aloud protocol during the task. The task was designed to have patterns of incorrect and correct student answers that indicated student misconceptions. These participants were evaluated for three types of adaptive reasoning processes, including data-oriented forward reasoning, causal reasoning, cognitive flexibility, and were evaluated for occurrences of efficiency in think-aloud protocols (e.g., the prevalence and timing of decision-oriented statements). Results of the think-aloud protocol showed that when adaptive reasoning processes were present, an orientation to novel content occurred. Similarly, in protocols that exhibited efficiency-oriented processes, no learning response to novel content was evident. The researchers explain this finding by suggesting that adaptiveness in reasoning is supported by a set of general habits of mind, dispositions, and epistemic stances that underpin responses to novelty.

Janssen, de Hullu, and Tigelaar's (2008) studied 16 biology student teachers and asked them to reflect on two problematic and two positive teaching experiences. The researchers focused on three outcome areas regarding these experiences, including the content of teachers' resolutions after reflecting because decisions need to be productive, their motivation to act on their decision because teachers need to implement their resolutions, and the emotions they have during the process of reflection because emotions are influential to thinking and learning. They

found that student teachers who reflected on positive experiences made more innovative resolutions, were more highly motivated to implement these resolutions, and had more positive feelings compared to when reflecting on problematic experiences. Janssen et al. argued that their findings could promote the development of adaptive expertise in teacher education.

Vogt and Rogalla (2009) examined the adaptive teaching competencies of Swiss primary and secondary teachers, and the effect adaptive teaching competency had on students' learning. They organized two groups, consisting of 32 teachers and 623 students in the experimental group and 18 teachers and 353 students in the control group. The groups took a pretest where the teachers were asked to respond to a vignette to test their adaptive planning competency and they participated in a video test to assess their adaptive implementation competency. After the pretest, the experimental group participated in a two-day seminar on adaptive teaching competency and nine 3-hour sessions of content-focused coaching where a coach visited the teacher in their classroom. A post-test (in the same form as the pretest) was given to both groups after the intervention. In addition, students were given a pre and post scientific literacy test developed from the international school assessments (TIMSS and PISA) to further test the teachers' adaptive teaching competency before and after the intervention. The teachers in both groups also taught their students eight additional lessons with set learning goals on a given topic.

Results showed an increase in scores in the area of adaptive planning competency for the teachers in the experimental group compared to the teachers in the control group; however, neither groups' adaptive implementation competency changed. The results from the students' scientific literacy tests showed that both groups of students enhanced their science knowledge over the course of nine months; however, the students of the experimental group had a greater achievement gain than students of the control group. The researchers conclude that adaptive

teaching competency could be fostered through content-focused coaching and had positive effects on students' learning.

Soslau (2012) investigated student teacher/supervisor conferences to identify conditions under which opportunities to learn how to develop adaptive expertise flourish. Specifically, she looked at how the supervisors' mentoring process assisted with developing new teachers' adaptive expertise. Three elementary student teacher/supervisor pairs were observed once a week over the course of 16 weeks. The supervision styles were categorized into five groups (telling, active coaching, guiding, inquiry, reflecting) and these styles were used to assist the student teachers with three common issues related to being a novice teacher including reverting back to teaching in ways they were taught when they were pupils, failure to balance learning how to teach with helping pupils learn, and a possessing a superficial understanding that a classroom is a highly complex and dynamic context. Soslau found that when the opportunities to discuss novices' problems arose, supervisors spent the conference time recounting what happened, asking the student teachers to discuss how they felt, helping the teacher build confidence, and giving advice. These activities, though helpful to increase student teacher learning, "do not require student teachers to justify their instructional decisions, discuss how the context of the classroom impacted their decisions, or explain how they balanced their own learning with risk to pupils," which are instrumental attributes of adaptive teaching expertise (p. 777).

Lessons From the Research: A Personal Perspective

The purpose of examining the studies above is to understand how researchers have attempted to translate the conceptual idea of adaptive expertise into an empirical study. Several lessons were drawn from these studies and were used to inform this research.

Three of the sets of authors from the studies above focused on a content area in math or science. The emphasis on STEM education is suitable for measuring adaptive expertise because these areas change rapidly and require regular application and extension of content knowledge (Fisher & Peterson, 2001). I previously knew that I wanted to study teachers' adaptive teaching expertise, and these studies showed me that focusing on one particular content area would provide a more defined starting point.

These studies used a variety of methods that informed my choice of ways to capture adaptive expertise. Each group of researchers used a different combination of qualitative and/or quantitative methods depending on their purpose, including a pre/post tests with an experimental and control group in a quasi-experimental design (Torbeys, Verschaffel, & Ghesquiere, 2006), verbal protocols and follow-up interviews (Crawford, Schlager, Toyama, Riel, & Vahey, 2005), and pre/post-tests, vignette responses, and video responses (Vogt & Rogalla, 2009).

Crawford, Schlager, Toyama, Riel, and Vahey (2005) and Vogt and Rogalla (2009) recruited participants by asking administration or teacher education professionals to nominate adaptive teachers (based on a set of criteria) for the study, and then continued the recruitment via snowball sampling.

Using a combination of methods gathered from these studies helped me to cross-verify my research results and to clarify a previous assumption I had that adaptive teaching or learning expertise existed simply as characteristics and/or dispositions of the teacher or student. For example, Fisher and Peterson (2001) identified and measured distinctive abilities they argued could be observed and measured in students such as self-assessment techniques. Yet Crawford, Schlager, Toyama, Riel, and Vahey (2005) argued against focusing on the individual and argued that adaptive expertise should be viewed as an orientation that is either exhibited or not exhibited

in a given context. I learned from this review that focusing on some traits of adaptive expertise could help narrow my study, however, closing in on a handful of traits might minimize the complexity of adaptive expertise. Situating adaptive teaching expertise within the framework of these studies and complexity theory helped me to look holistically at the components of adaptive teaching and how they interacted.

Section Two: Complexity Theory

Section two begins with a definition and discussion of complexity theory and a rationale for choosing this approach. A review of the literature of six principles relevant to understanding complexity theory in an educational setting follows. Finally, the overlap of complexity theory and adaptive teaching expertise is explained.

Defining Complexity Theory

Complexity theory provides a framework for investigating the emergent properties of large systems. It is frequently applied to physical, biological, social, and economic systems. It is also a viewpoint that opposes reductionism in the sense that emergent properties cannot be found in elementary components of the system (Newell, 2008). Complexity theory describes fundamental properties of nonlinear, self-organizing networks (often called Complex Adaptive Systems or CAS) that consist of many components that interact with each other to achieve a common goal under the guidance of a relatively simple sets of rules. These elementary rules determine the responses of each individual component with little apparent connection to the overall emergent behavior of the system (Stacey, 1996). Complex adaptive systems are characteristically robust in responding to input variations and internal component changes. They have an ability to adapt to a changing environment, while maintaining a stable output response (Cleveland, 1994; Newell, 2008). This is the classroom challenge, where teachers hope to

achieve well-defined educational objectives by creating an environment that focuses attention without inhibiting the independence required for learning.

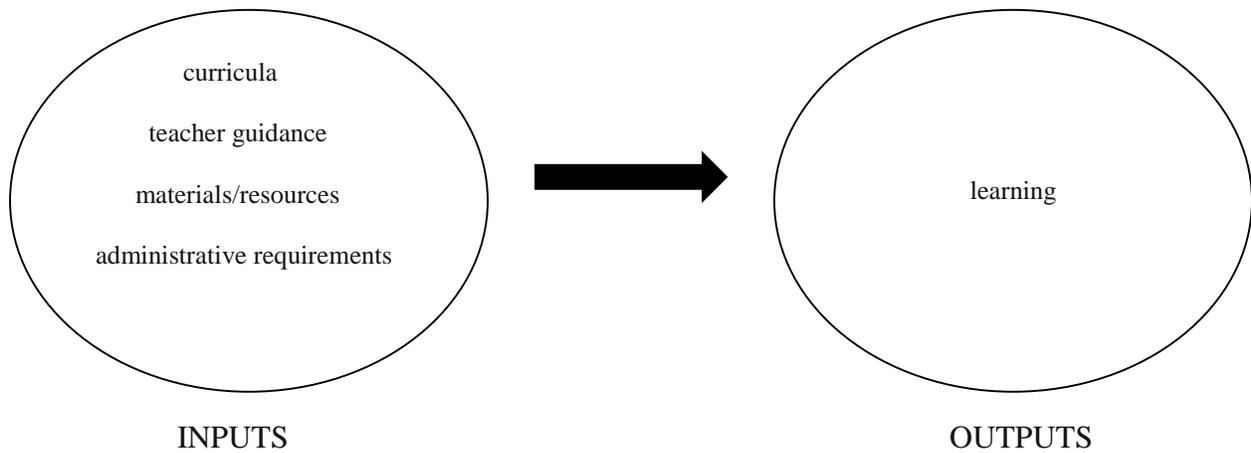
Complexity theorists make a distinction between the terms *complicated* and *complex*. Both involve the interaction of many components cooperating to achieve a common goal. A common example of a complicated system is a clock and an example of a complex system is any living organism (Newell, 2008). Clocks, once assembled, are destined to achieve a fixed objective, i.e., keeping time for as long as the parts remain intact and energy is provided. There are few surprises, except to slow down or speed up. However, a classroom has properties that emerge from the interaction among its components that are difficult to predict. They can change moment by moment and often require interventions to remain on task. Classroom properties emerge from student-student/student-teacher interactions in ways that do not occur with clocks.

Teachers' jobs are often described as complicated, as their tasks include responding individually and collectively to students, managing curriculum and human relationships, and organizing instruction (Davis & Sumara, 1997). However, it is inaccurate to categorize a teacher's role simply as complicated; complexity theorists reject the tendency to use machine-based metaphors to characterize human phenomena. Complex systems, on the other hand, also have parts that work together; a coherent collective arises through the activities of the separate parts that can exceed the possibilities of any individual (Davis & Simmt, 2003). Described as emergent properties, these will be discussed in the section on principles below.

Complex adaptive systems are differentiated from other systems by their capacity for learning (Cleveland, 1994). Classrooms viewed as complex adaptive systems have inputs and generate outputs. Figure 2.1 shows how many teachers recognize the more predictable inputs, such as curricula and students' previous knowledge, and they understand that their role is to help

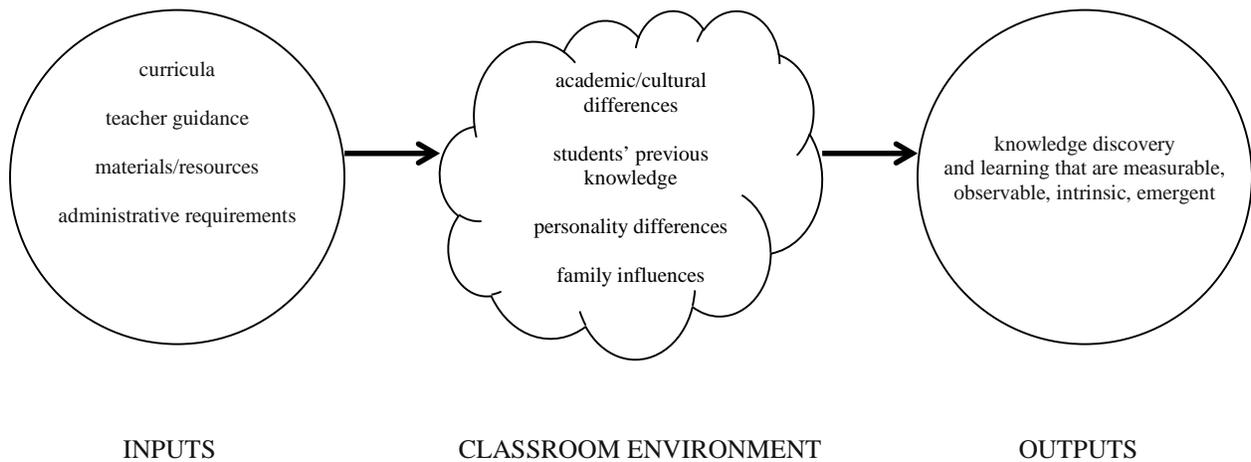
students learn.

Figure 2.1.



As stated in Chapter one, this study aims to apply complexity theory as a framework for understanding classrooms and, ultimately, preparing teachers. When teachers understand the classroom as a CAS, it may enhance their ability to create an environment that facilitates complex interactions of learning. As their understanding of systems thinking evolves, they realize the complexity of that “middle ground” and the endless factors influencing the path between the inputs and outputs, many of which are beyond the teacher’s control (see Figure 2.2).

Figure 2.2.



All of these classroom environment components interact with the inputs to generate

outputs. The adaptive teacher recognizes this and navigates the complexity of the learning environment in order to promote learning for all students.

Origin of the Complexity Theory

The concept of complex systems was originated by Karl Ludwig von Bertalanffy, an Austrian-born biologist, in his 1934 publication of a mathematical model describing an organism's growth. In the 1950s and 60s, complexity theory took root in several areas of Western research, including cybernetics, systems theory, artificial intelligence, chaos theory, and nonlinear dynamics (Byrne, 1998; Davis & Simmt, 2003; Davis & Sumara, 2006; Mitleton-Kelly, 2003). It became a field of study in the mid 1980s, particularly with the publication of M. Michael Waldrop's book, *Complexity: The Emerging of Science on the Edge of Order and Chaos*. Soon after, interpretations of the theory surfaced in a broad range of social areas, such as family research, psychology, economics, politics, and education (Davis & Sumara, 2006). Although complexity theory originated in the physical sciences, the majority of the literature referred to in this paper originates within the social sciences.

While it would be easier to simply apply a theory born in the physical sciences to explain social phenomenon, one has the responsibility to ensure that the chosen characteristics of the hard science theory are relevant and appropriate to the social sciences (Mitleton-Kelly, 2003). Therefore, the principles discussed in the next section were influenced from my reading and carefully selected with the complexity of *human* systems in mind.

Examples of Complex Adaptive Systems

Complex adaptive systems are distinctive because of various principles, which are explained in the next section. To begin to understand complex adaptive systems in terms of its properties, consider a familiar example. Our bodies, which house our immune systems, are

considered a large complex system. Within our bodies there are several adaptive systems. The immune system is an example of one of these highly complex smaller systems. Several components of the immune systems work harmoniously together (connectivity/neighbor interactions) and defend us from millions of bacteria, viruses, parasites, and toxins that surround us, including our skin, white blood cells, lymph nodes, and natural antibodies. These components are unique, meaning they are comprised of different cells for specific purposes (internal diversity), but they share a common goal, to keep the body healthy. When there is an invasion or breakdown of one of these components, another component senses this, and adapts accordingly in an attempt to keep the body healthy (self-regulation and adaptability). There is a structure to the immune system, but it operates differently depending on the needs of the body (non-linearity). For example, bacteria can penetrate the skin if there is a lesion, but the body's mucus membrane, a natural antibody, will sense this and attempt to stop the bacteria from infiltrating further.

Another example includes attendance at a major sporting event. Fans may look and act different from one another as they demonstrate their loyalty to their teams i.e., wearing team colors, painting their faces, participating in chants and cheers, but they have gathered for a specific goal in mind--to support their favorite team. There is a simple set of rules to follow when attending a game, such as sitting where the ticket dictates and standing in lines for concessions, though several actions of spectators are often spontaneous yet appropriate for the situation. This might include doing the "wave" or standing up with arms raised and yelling when the favored team scores a point. If anyone's behavior becomes disruptive, there are procedures that are followed to maintain the safety of everyone involved.

These examples are analogous with the classroom. The classroom is a complex adaptive

system that consists of many other complex adaptive systems including the students and the teacher. The teacher and students interact in the classroom with one another, as well as with the classroom environment consisting of tangible components such as curricula and teaching materials and nontangible components such as ideas and interests.

The goal of the classroom is learning, and in order to achieve this, the teacher must facilitate a dynamic interplay among the components. Because the classroom is unpredictable, challenges often arise in the classroom that hinder learning, such as personality conflicts, a disconnect between student interests/abilities and the curriculum, or behavior issues. An adaptive teacher navigates these challenges by encouraging and modeling positive interactions using human and physical resources to facilitate changes in the environment. When this is done successfully, students learn to respond in more productive and responsible ways toward their own learning.

Principles of Complex Adaptive Systems

Researchers have identified several principles necessary to categorize a phenomenon as a complex adaptive system. Six of these are identified below as critical for understanding the classroom as a complex learning environment. These include, but are not limited to: (a) decentralized control, (b) neighbor interactions and connectivity, (c) self-organization, (d) internal diversity, (e) nonlinearity, and (f) adaptability. Each principle will be discussed in terms of its relation to the classroom as a learning environment orchestrated by the teacher.

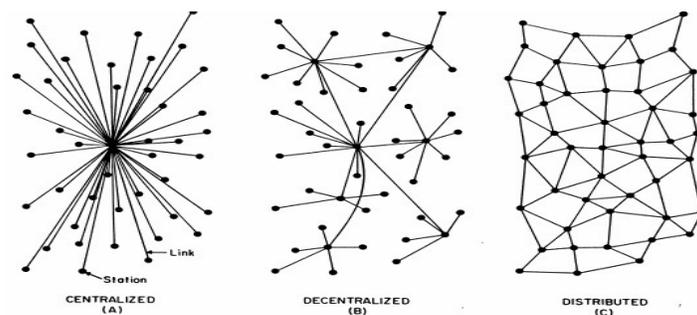
It is important to note that each of these principles do not exist dichotomously (i.e., centralized or decentralized; linear or nonlinear). It is better to think about these principles as existing on a continuously shifting spectrum. Systems exist in highly contextualized environments comprised of various factors that are constantly maintaining and challenging the

system. The addition of human factors, unpredictable second graders in this case, requires the constant fluctuation between both ends of the spectrum within all of the principles. In order to keep the classroom in a dynamic learning state, the teacher's decision-making skills are used to determine how to keep these principles interactive and focused toward learning. The difficulty lies in how to maintain productive relations between them during each moment of the day.

Decentralized control. What makes a complex *adaptive* system unique is the ability of the interacting agents within the systems to monitor when the control needs to be more or less centralized. In this classroom system, this responsibility falls on the teacher.

In a traditional classroom, the teacher often ranges more towards centralized control. S/he dictates the arrangement of the class, how and what the students will learn, and when they will learn it. Figure 2.3 illustrates this type of system, where the node in the center indicates the teacher, the nodes on the ends of the lines indicate the students, and the lines indicate their interactions. A centralized system has highly efficient information flow because there is only one pathway to transmit and receive information (Davis & Sumara, 2006; Newell, 2008). However, this type of system is at risk for failure if the central control ceases to function. For example, the student is not willing to accept the information, or the learning of students is stifled if the teacher is out sick for the day.

Figure 2.3. Illustrated examples of systems. Adapted from Baran (1964).



In a centralized classroom, teachers are faced with the impossible situation of being responsible for delivering all knowledge to the students. It is unlikely that all students will respond positively to this one approach, which is required when there is a one-directional flow of information. Nor is it realistic to imagine a classroom as a “free-for-all” distributed system (Newell, 2008), as illustrated in Figure 2.3(C). Another option is that the classroom can be organized as a decentralized system as illustrated in Figure 2.3(B). In this type of system there are multiple interactions, and any node can represent the teacher, students, parents, or even the curriculum. The advantages include multi-source movement of information between nodes (multiple perspectives to learning) and the ability to withstand failure of any one nodal connection (adaptive responses to variable inputs) (Davis & Sumara, 2006). In a decentralized classroom, the teacher acts more as a facilitator who is responsible for recognizing the needs of individual students and creating learning environments, rather than the controller of interactions. This mutual interactivity is characteristic of a complex system.

Again, it is important to note that classrooms cannot be decentralized one hundred percent of the time. There are moments that require centralization, particularly when dealing with children. For example, when 23 second-graders enter the classroom from recess and are rowdy from playing outside, the teacher must temporarily undertake a more centralized role in order to get their attention and transition to the next activity.

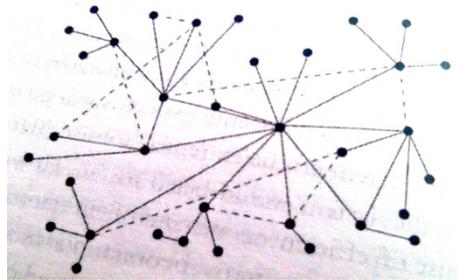
Neighbor interactions and connectivity. Most of the information exchanged in a complex system is exchanged locally. Interactions among close neighbors can be very influential as experienced teachers recognize and make adjustments. Interactions are affected by connectivity, or the “inter-relatedness of individuals *within* a system” (Mitleton-Kelly, 2003, p. 5). For the students, most of their local connections will be the teacher, family, students with

prior affiliations, and those of similar interests and personality. Another challenge is that “connectivity between individuals or groups is not a constant or uniform relationship, but varies over time, and with the diversity, density, intensity, and quality of interactions between human agents” (Mitleton-Kelly, 2003, p. 6). Teachers must recognize and adjust to the distinctive social, behavioral, cultural, and economic conditions in students’ lives and how these may influence the interactions in the classroom. This is of particular importance when working with young, less mature students who respond quite emotionally and physically. Recognizing natural student affinities and aversions as connections for communicating information is crucial for teachers wishing to understand the classroom as a CAS.

Neighbors in the classroom organized as a CAS are not limited to physical bodies. They can also be ideas, hunches, and queries--anything that can affect another’s activities (Davis & Simmt, 2003), including curricula. Maintaining high quality interactions among neighbors is a constant challenge for the teacher, particularly when curriculum is involved. Again, students display varied levels of connectivity to curricula; therefore, schools that adopt a prescribed, mandatory curriculum can potentially threaten the exchange of information if the teacher is not well prepared to use it, or if students are not responsive to it.

Self-organization. Taking this concept of interactions a bit further, consider Figure 2.4. This illustrates a decentralized system with dotted lines that symbolize “shadow” interactions, or spontaneous and informal interactions established by individuals among themselves while interacting in the decentralized system (Stacey, 1996). This process is indicative of the self-organizing principle of complex adaptive systems.

Figure 2.4. Illustrated example of a decentralized system with interactions. Adapted from Davis & Sumara (2006).



Self-organization is a process that occurs spontaneously, in which the system components organize themselves to produce a new connection pattern that influences properties without central control (Stacey, 1996). Self-organized groups that emerge cannot be explained solely by understanding individual students; something new happens often in the form of student excitement, curiosity, and learning (Stacey, 1996). In the classroom, this may occur if students are stimulated by what the teacher or another student says, by what another student does, by something they have read, or something that stimulates a memory they want to share. This new input may prompt a new way of thinking or the student(s) may react with a fresh idea or understanding.

The spontaneous emergence of self-organization of the student social structures is in direct contrast to organization by design emanating from forces outside the classroom system. In all cases of self-organization, one can observe large numbers of elements that are richly connected and various forms of rapid feedback and iterations occur between the parts of the system (Cleveland, 1994). These connected elements, or *emergent properties*, transcend their parts and present collective possibilities that are not represented in any of the individual agents (Davis & Simmt, 2003). Thus, the whole is greater than the sum of its parts.

Remembering that all principles of complexity should be viewed on a spectrum, it is neither realistic nor desirable to have absolute spontaneity in regards to self-organization. It is

important that the adaptive teacher gently guides this self-organization into meaningful learning discovery, particularly when working with young children, as young children have less experience in productively doing this on their own.

Imagine Figure 2.4 as a representation of small group work in a classroom, organized and facilitated by the teacher. The collections of nodes (students) connected by solid lines show the interactions occurring among students, the teacher, and the curriculum. The dotted lines illustrate the spontaneous interactions that occur in this social setting. Davies (2004) explained these interactions are not simply random, but they occur because people have an innate sense to satisfy mutual needs without anyone consciously planning it. Teachers witness these types of interactions all the time. Students wander from their groups to obtain materials, to share something with a friend, to ask the teacher a question, or to goof off. The role of the teacher in this case is to recognize when these interactions occur, eliminate unnecessary distractions, and identify and cultivate the quality interactions that lead to learning. The teacher must understand that it is not her job to prompt the randomness, but to utilize the randomness that is rooted in individual interpretation within the collective space of the classroom (Davis & Simmt, 2003).

Internal diversity. Classrooms are unique, multidimensional environments comprised of students who come from different backgrounds and experiences, are exposed to various media and outside information sources to different degrees, and have varied innate abilities and initial skill sets. It is assumed that diversity is present and unavoidable, no matter how homogeneously the classroom is arranged (Davis & Sumara, 1997). Complexity thinking embraces diversity because it is closely linked with a system's creativity or intelligence. Examples in the biological sciences of organisms as CAS can explain their amazing strength to withstand environmental challenges while remaining in relative equilibrium. Similarly, a self-organized classroom

operating with healthy emergent properties can sustain environmental challenges resulting from life outside the classroom. As students interact on the playground, with parents at home, or watch a TV show, they confront and interpret information differently, contributing to the collective intelligence of the classroom (Newell, 2008). From a systems point of view, the classroom environment should be a “safe” area for discussing diverse opinions and beliefs; students should feel as long as they have ideas, they should have a safe place to express them. These diverse thoughts, influenced by things outside and inside the classroom, add welcome diversity to what can be shared and known in the classroom.

Non-linearity. In a linear system, one and only one response is permitted for any given input stimulus, output responses are always proportional to input stimuli, and the components act independently, or at least locally, and are unaffected by other parts of the system (Stacey, 1996). Classrooms, however, are highly non-linear by nature. In non-linear systems, small changes in causal elements over time can produce changes in other particular aspects of the system, or in the system as a whole (Byrne, 1998). For example, a teacher may be expecting a particular response to a question; however, students process information differently than one another and often produce different answers to a question. These varied reactions have the potential to lead to diverse and unanticipated learning, thus giving rise to new patterns of activities and new rules of behavior (Cleveland, 1994; Davis & Sumara, 2006). To understand student responses, one must appreciate that “knowledge” of something is interpretive in the sense that the brain introduces information through the senses and processes the information for storage through very complex, nonlinear means that neuroscience is just now beginning to understand. Hence, there is no reason to expect that any group of humans subjected to the same input information will all learn the same things in the same ways.

Adaptability. Adaptability, as explained in Section one, refers to the ability of a system to dynamically modify its procedures in the presence of variable information in order to maintain a high likelihood of achieving a common goal. An adaptive classroom, for example, is one where the teacher modifies the curriculum and instruction based on individual and group responses in order to achieve learning objectives, which will include the emotional, social, and psychological aspects of life in the classroom. Adaptive systems adhere to the spirit of the rules or behaviors adopted collectively by the group by adjusting specific methods in response to diverse intermediate reactions (Davis & Simmt, 2003; Stacey, 1996).

Adaptability differs from reactivity because those who react tend to respond to a stimulus without taking into consideration the surrounding circumstances or environment. Reactors often fall back on routines to solve problems. Adaptors are able to evolve methods to fit a situation and create new order and coherence (Mitleton-Kelly, 2003).

Adaptability is natural to classrooms that operate with decentralized control, encouraging social interactions, and accepting internal diversity. For example, consider two teachers delivering a lesson on long division. After some time practicing, both teachers ask their students to come up to the board and solve problems. Teacher A comments individually on the accuracy of each solution, as well as whether the students who solved the problems used the strategies provided by the teacher. This teacher demonstrates centralized control, limits contributions from the students, and does not accept that different strategies might occur to different students.

Teacher B constructs a learning environment in which she facilitates dialogue among the students about problem approaches, embracing diverse input from the students. The goal is to encourage diverse approaches to solutions by transferring the responsibility for success from just individuals to groups and even the classroom. That is, Teacher B gives the impression that

students and teacher are on the same team trying their best to solve challenging problems by whatever means are available. A benefit to the experience is that students are encouraged to seek innovative ways to problem solving. When the class approaches a problem that was solved using a strategy not presented by the teacher, the class analyzes and discusses the strengths and weaknesses of the approach, finding that the best new strategies are not just effective at solving the problem, but that innovative thinking is rewarded. Teacher B created a learning environment that senses the needs of individuals and challenged the group to use its combined resources to achieve goals.

This same approach can be used when thinking about other content areas, such as history. In a traditional, less adaptive classroom the focus might be on memorizing facts and dates, i.e., directing students to learn by rote, with little engagement or development of ideas. A more adaptive classroom would encourage productive argumentation and contextual learning of factual information to promote a deepening of understanding of the larger concepts and contexts in history.

Chapter Summary

In Section one of this chapter, the concept adaptive teaching expertise was defined using the literature, and several empirical examples of adaptive expertise conducted in the field of education were described. In Section two, complexity theory, a conceptual framework more frequently used in the biological sciences, was defined and explained within the context of the social sciences. Six principles of complexity theory including decentralized control, neighbor interactions and connectivity, self-organization, internal diversity, non-linearity, and adaptability were described. Specific examples of these principles, and how they can be seen in the classroom, were also outlined in Section two.

In this research, positioning the concept of adaptive teaching expertise within the larger frame of complexity theory was intentional. Crawford, Schlager, Toyama, Riel, and Vahey (2005) assert “a theory of teacher learning that addresses adaptive expertise is necessary because tools, practices, domain content, and the characteristics of learners are no longer static over the course of a teaching professional’s career” (p. 6). Complexity theory provides the necessary framework for designing adaptive teaching expertise in a classroom environment because it acknowledges the dynamism of teaching.

Many aspects of adaptive teaching expertise overlap with the principles of complexity theory that are found in the research in many fields including education. By acknowledging that the classroom is a complex system, teachers can admit there is significant variability among student abilities, and that central control, as described in earlier sections, is weak in classroom environments where adaptability to student needs is evident. It is the teacher’s responsibility to create this adaptive environment, in part, by using the entire classroom to promote the emergent properties that meet student needs.

CHAPTER THREE

In the first chapter, I introduced my research questions and described the rationale and significance of my study. In the second, I discussed the empirical research on adaptive expertise and described the principles of complexity theory related to my research. In this chapter, I provide a rationale for the research methodology and design, describe my methods including qualitative interviews and participant observations, introduce my participants and describe the school and classroom setting, and outline my data collection and data analysis procedures.

Rationale

A qualitative methodology was used for this research. A qualitative approach is suitable for this study because it is a situated activity that locates the observer in the world (Denzin & Lincoln, 2000). Positioning one's self, as a researcher, in the unique world of the studied phenomena allows for a distinctive view that could not otherwise be seen without being immersed within the particular context. The word qualitative emphasizes processes and meanings that are not experimentally examined or measured in terms of quantity, amount, intensity, or frequency for the purpose of generalizing the findings (Denzin & Lincoln, 2000). Instead, the focus is on a smaller and more focused sample or phenomena.

Qualitative research is typically enacted in naturalistic settings, focuses on context, is emergent and evolving, and draws on multiple methods that respect the humanity of the participants in the study (Marshall & Rossman, 2011). A qualitative study fits well with this research because I attempted to explicate the concept of adaptive expertise by observing and talking with an elementary teacher in the context of her classroom. Data were collected through qualitative methods, including interviews and participant observations, in order to understand the knowledge, practices, skills, and behaviors demonstrated by an adaptive teacher.

Research Design

I chose a case study design, or “the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances” because it fit well with my research purpose--to understand the concept of adaptive teaching expertise (Stake, 1995, p. 1). Case study design is relevant when research questions require an extensive and ‘in-depth’ description of some social phenomenon, particularly when contextual conditions are significant (Yin, 2014).

More specifically, this case study is descriptive (Yin, 2003) and instrumental (Stake, 1995). A *descriptive* case study is most appropriate for this research, as opposed to an explanatory or exploratory case study (Yin, 2003). Theories are important for descriptive case studies. In this study, complexity theory “covers the scope and depth of the object (case) being described” (Yin, 2003, p. 23). In other words, viewing the classroom as a complex adaptive system provides a unique lens for understanding the concept of adaptive teaching expertise.

This research can also be described as an instrumental case study. Instrumental case studies are used to accomplish “something other than understanding this particular teacher” (p. 3). In this research, I observed and interviewed my teacher participant for the purpose of understanding a concept, complex adaptive decision-making, which goes beyond her individual classroom.

There is a common misconception about case-study research that one cannot generalize from a single case (Flyvbjerg, 2006). Some generalizations can be made because particular problems or activities often repeat themselves in a single case or across cases. These are not necessarily the same as generalizations that may apply to say, large-scale surveys; “they require a different description, such as ‘petite generalizations’ because they occur regularly along the

way in case study” (Stake, 1995, p. 7).

Often, case study researchers are not necessarily interested in making sweeping generalizations. However, researchers can learn much that is general from a single case and, because of the familiarity with the single case, apply what is learned to other cases (Stake, 1995). Or, the researcher can make analytic generalizations by linking his/her findings from a particular case to a theory (Yin, 2003). Both of these are evident in how I approached this research.

Methods

The purpose of this study was twofold. First, I examined the concept of adaptive teaching expertise in a classroom viewed as a complex adaptive system. I also studied the adaptive teacher’s decision-making processes in order to better understand how she responded to students’ needs within the complex environment of the classroom. Qualitative interviews and participant observations were used as the primary methods for this research. A description of these two methods is included in the sections below.

Qualitative Interviews

Interviewing is a method commonly used in qualitative studies. It is assumed that “the perspective of others is meaningful, knowable, and able to be made explicit” (Patton, 2002, p. 341). An initial interview in this research occurred first at the beginning of the study for the purposes of getting to know the participant, to learn about her teaching history and philosophy, and to build rapport. After selected classroom observations, I conducted follow-up interviews to provide my participant with an opportunity to reflect on the lessons she just taught, and to engage in one-on-one dialogue about her planning, implementation, and reflection after the lesson. Using interviews in this study is appropriate because it is a method that allows for viewing participants’ interior experiences; we can learn what people perceive and how they

interpret their perceptions (Weiss, 1994). I conducted seven interviews over a period of four months.

Participant Observations

Participant observations involves a process in which an investigator establishes and sustains a many-sided and situationally appropriate relationship in a natural setting for the purposes of developing a social scientific understanding of that association (Lofland, Snow, Anderson & Lofland, 2006). Generally, participant observations engage the researcher in understanding what life is like for an ‘insider’ while remaining an ‘outsider’ (Mack, Woodson, MacQueen, Gues, & Namey, 2005). In this case study, I was both an insider and outsider. I situated myself as an insider because of my previous experience working as a third and fifth grade teacher for seven years. I understand the culture of an elementary classroom and the developmental and academic needs of young children. At the same time, I maintained a stance of an outsider because I was interested in observing the teacher and how she interacted with her students; I seldom participated directly in the situation myself. Also, I consider myself an outsider because I am not part of this teacher’s particular school culture and classroom.

There are several types of participant observations ranging from non-participatory to complete participation. The middle level, moderate participation, occurs when the researcher is present at the scene of the action, but does not actively participate or only occasionally interacts with people in it (DeWalt & DeWalt, 2011). Moderate participant observations in this research occurred after the initial interview and consisted of the researcher observing the teacher participant in her elementary classroom. The purpose of these observations was to gain a close familiarity with these teachers’ knowledge, skills, behaviors, and practices in an attempt to elucidate the concept of adaptive teaching expertise.

Videotaping was an essential tool during the teacher observations. It provided an opportunity to view the activities of the teacher and students in their natural learning environment. With the videotape, I had the ability to repeatedly analyze the practices of the teacher and see, in fine detail, the interactions she had with her students (Heath, 2011). Not only was I able to hear the teacher, I was also able to see her mannerisms and gestures, which provided further clues to understanding adaptive teaching. Videotaping also gave the teacher and me the opportunity to look at segments of the videotape and we could reflect together on what occurred. These discussions gave me insights into her goals, purposes, and thoughts that could not be ascertained by just looking.

Participants

Originally I wanted to recruit 3-4 local elementary school teachers for this study in order to look across several classrooms. As I began the recruitment process in January of 2014, it became clear that the particular type of teacher I was looking for was often heavily committed and sought after. I received several responses from potential participants stating that they were interested in taking part, however, they were already committed to other obligations for the semester (e.g., mentoring a student teacher, participating in another research project, involved in administrative work). I found my participant for this study just before my preliminary defense. After an initial interview and a few observations in the classroom, I decided to do a single case study in order to look deeply into this one classroom.

The participant was identified using a snowball method. I asked for recommendations from people who regularly work with local teachers, including university faculty and staff, and local school administrators. After receiving the recommendation from a university staff member for my participant, Mrs. M, this staff member contacted her via email to see if she would be

interested in participating. She responded positively and gave permission for me to contact her. She was sent a copy of the consent form, was informed that participation in the study was voluntary, and that she could elect to withdraw at any time. Mrs. M was also informed that her status with the school, university, or researcher would not be affected if she chose to withdraw from the study. Upon my first visit to the school to conduct an initial interview, Mrs. M signed the consent form and agreed to be audio and videotaped.

Teacher Participant Description

Mrs. M is a White female who has taught for 19 years in public schools, and in her current placement for over ten years. She is married and has one son in high school. She has a bachelor's degree in Early Childhood education, and is currently working towards her Master's degree in Education at a local university. Before entering the public school system, she was a director of a daycare center in a neighboring town. Her professional experience has been entirely in Early Childhood, specifically pre-K, first, and second grade. Mrs. M is ambitious and hard working, and occasionally "gets an itch to do something different" (II, 2/10/14, p. 2),² which propels her to seek out additional professional development opportunities beyond the elementary classroom.

Literacy is one of Mrs. M's strongest academic areas in teaching. She previously worked as a Reading Recovery specialist and was released from the classroom part-time. The content area she has focused on most recently is writing. This was because writing, as she stated, "was an area I was less confident in teaching" because "I am less confident in myself as a writer" (II, 2/10/14, p. 2). In 2010, she first participated in a local writing project during the summer, and has been back ever since. She is now involved with the administration of the writing project

² II stands for "Initial Interview."

program. She is also the representative from her school and meets with a local university faculty member a few times a year to help build a stronger university-school partnership.

In addition to being strong in literacy, Mrs. M showed remarkable skill with developing children's social-emotional learning, an area that is crucial during the early elementary years. Social-emotional learning involves the processes through which people "acquire and effectively apply the knowledge, attitudes and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions" (Weissberg & Cascarino, 2013, p. 9). Her strengths in this area were apparent in all of the situations presented in this study, and will be described in further detail in Chapters four and five.

Observing Mrs. M over the course of the spring 2014 semester, several traits became apparent. She is experienced, patient, structured, honest, genuine, progressive, is candid about her students and the teaching profession, and has a good sense of humor. In many ways, she is a perfectionist and because of this she was, at times, very hard on herself when I talked with her during the follow-up interviews. She is highly reflective, and constantly thinks about how her choices and decisions affect the students. When asked to describe her overarching goals for her students, she stated,

I want my kids to learn to think. I want my kids to be responsible for themselves as learners, for other people as human beings. I want my kids to make growth. I want them to make gains, and I want them to recognize those gains. I want them to be able to be aware of their strengths as well as what they need to work on. I want them to get along.

(FUI, 5/28/14, p. 1)³

³ FUI stands for "Follow-up Interview."

Throughout the course of my time observing in the classroom, it was clear that Mrs. M worked to achieve these goals. Several other values became apparent as well, including how she honored student choice, fostered student independence, and recognized and embraced differences. Mrs. M's goals and values were fundamental to understanding the concept of adaptive expertise as exhibited in her classroom, and examples are described in Chapters four and five.

Mrs. M took the time to really listen to her students. She used what the students said to make improvements within classroom, to maintain positive relationships among students, and to improve her teaching. She was always willing to learn and did not insist that she had all of the right answers all of the time. As early as our initial interview, it was clear that her thoughts and values about teaching aligned with the principles of complexity theory, which made her a good choice as a participant for this study. These are described in the next section.

Initial Interview

We met on February 10, 2014 after school in Mrs. M's classroom for the initial interview. I had prepared general questions to ask such as, "When do you feel the most creative when teaching?" "How do you organize your classroom to facilitate learning?" and "What factors of the students and the classroom do you take into consideration when planning a lesson?"⁴ However, the interview was purposefully semi-structured to allow an opportunity for us to build rapport and discuss anything else that would help me understand Mrs. M as an educator. I also prepared a set of criteria based on principles derived from my theoretical framework. Using the definitions of the principles central to complexity theory, including decentralization, neighbor interactions, connectivity, non-linearity, internal diversity, self-organization, and adaptability, I

⁴ A full list of interview questions is available in Appendix A.

analyzed the interview in order to determine whether there was evidence that she viewed the classroom as a complex adaptive system. Several of these principles were evident in the interview. For example, when asked about how she recognizes good teaching, Mrs. M responded, “The environment is set up, but there doesn’t always have to be that hands on and interactive piece coming from the teacher . . . that it’s happening within, so the community is felt” (II, 2/10/14, p. 4-5). This response is indicative of decentralized control; the teacher knows that good teaching does not always occur as a result of the teacher being in charge.

Another example that Mrs. M views the classroom through a lens of complexity is when I asked, “When do you facilitate your classroom rather than direct it?” she responded, “When we get together on the carpet and we talk about ways that are going to make our classroom work, and we establish our expectations together, we co-create those kinds of things and build on them” (II, 2/10/14, p. 10). This comment signifies the principle of neighbor interaction. Mrs. M recognizes that interactions among her students enable the exchange of information and she encouraged students to work with one another to create fundamental components of the classroom, such as the rules of the classroom.

The principle of non-linearity, or the idea that small changes in casual elements over time can produce bigger changes in parts of the system, or the system as a whole, was represented in our dialogue when I asked Mrs. M if there was ever a time that the outcome of a lesson did not go according to plan. She responded,

I know what we're going to be working with, but I don't know always where it's going to go until we get there. Sometimes the plan isn't . . . doesn't have that finality of this is where we're going. I don't want to say that I don't have outcomes. It's depending on that student feedback--where they're taking me, and where they're taking the class. (II,

2/10/14, p. 13)

Mrs. M's teaching style was fluid as opposed to rigid; she valued student knowledge and interest, and often encouraged them to establish shared or individual paths for learning.

Finally, it was apparent throughout the initial interview that Mrs. M was a teacher that can adapt fairly easily. When talking about working with students in groups, Mrs. M recalled an incident that occurred with one of her students when they were reading biographies: "One of the kids in the group asked, 'Do you think we could try this out [biographies] in writing?' I thought, 'Why not?' [I like] taking their lead sometimes, and building on that" (p. 11).

Though she was not using the terminology of complexity theory, it was clear that Mrs. M responses aligned with complexity principles. I left the initial interview with her feeling confident that I had found a viable participant for my study.

Recurring Tensions

As early as our initial interview, it was clear that there were tensions between how Mrs. M would like to lead the classroom and how the administration would like classrooms directed. Specifically, what Mrs. M believed was good for her students did not always match what the district required her to teach. She explained her reasoning:

I feel constrained internally by my own demons inside me . . . I don't get to teach the way I want to. I do feel that pressure of the mandates. I'm a rule follower. I want to do what's expected of me even if I don't believe in it, you know? (II, 2/10/14, p. 5)

Examples of these tensions are present in many of the situations and add yet another layer of complexity to the situations. These are identified and explained in further detail in Chapters 4 and 5.

Student Participants

The participating second grade classroom was comprised of 23 diverse students, including 14 girls, and 9 boys. Based on paperwork completed by the students' parents at the beginning of the year, the demographic breakdown was as follows: 39% of the class identified as Caucasian, 30% as African-American, 17% as multiracial (two or more races), 9% as Asian, and 4% as Hispanic. The demographics represented in this classroom closely resembled the demographics of the school, with the exception of a lower Caucasian population (30% vs. a school average of 56%). Approximately fourteen students (61%) came from two parent households, seven students (30%) came from single parent homes, and two students (9%) lived with family other than parents. Ten students (43%) took part in the free and reduced lunch program, which was comparable to the school average.

The class was not only diverse racially and socioeconomically, but academically as well. When describing the students' academic abilities Mrs. M stated,

Like any classroom does, [I have] really, really bright kiddos that are reading and doing math up here and I've got my kids that are struggling to be successful. I've got two groups of kids that read below grade level. We're talking about 11 or 12 kids out of 23 that are reading at grade level. (II, 2/10/14, p. 15)

There were no English Language Learners identified in her classroom. One student was identified as autistic, two were identified with ADHD, three attended speech pullout services, and five students attended daily pullout enrichment class.

In terms of behavior, Mrs. M's opinion of the group differed depending on when she was asked. In our initial interview, Mrs. M commented, "They are a really good group of kiddos. They seem to get along with each other for the most part," though they can get "highly distracted

by things going on in the classroom” (II, 2/10/14, p. 15). Later on in the semester during an informal conversation we had over lunch, Mrs. M admitted that this group of students was the most difficult she had had in all of her years teaching. I witnessed many behavior issues while conducting observations, ranging from the mild to the extreme. At least two students were suspended during the time that I was in the classroom. One girl was suspended for making physical threats, and another boy was suspended for bringing a lighter into the classroom and lighting it in the closet. Mrs. M also admitted that she “struggles with the consistency piece” (FUI, 5/16/14, p. 12) meaning that she didn’t always follow through with things in consistent ways. Between February and June, I observed at least four different behavior management systems put in place, which included behavior charts, behavior pledges, punch cards, and recording names. None of these seemed to work well for all of the students, but Mrs. M never stopped trying to make adaptations in order to manage the students in effective ways.

Research Site

Gaining access to this particular research site was relatively simple. After receiving verbal consent to participate in the study from my participant, the principal quickly agreed to allow for research to be conducted in his school, following my obtaining a background check. Below are descriptions of both the school and classroom in which my research was conducted, as well as class schedule and curriculum descriptions.

School Description

Sunnyside Elementary School⁵ was located in a Midwestern college town, approximately 140 miles south of a large metropolitan city. It was located in a district that honored “School Choice,” which allowed for open enrollment laws. The school was one of the

⁵ All names are pseudonyms.

largest elementary schools in the district, served grades K-5, and had a diverse population of students. Sunnyside receives Title I funds and had a bilingual education program.

Approximately 35 full-time teachers were currently on staff, and there was a change in administration within the last couple years.

Standardized test scores in the areas of reading and math for grades 3-5 showed a downward trend from 2009 to 2012. In third grade, reading scores dropped from 75% (those who met or exceeded standards) in 2009 to 62% in 2012. In math, 88% of third graders were proficient or advanced in 2009 compared to 80% in 2012. Fourth graders' reading scores dropped from 77% in 2009 to 67% in 2012, math scores dropped from 87% in 2009 to 81% in 2012, and science scores dropped from 81% in 2009 to 67% in 2012. Fifth graders' reading scores dropped from 80% in 2009 to 72% in 2012, and math scores dropped from 86% in 2009 to 78% in 2012. In 2013, Sunnyside Elementary School performed better than 43% of elementary schools within the state, and ranked seventh among 11 ranked elementary schools in the district.

Classroom Description

Mrs. M's classroom was located at the end of a large hall, past the cafeteria and bathrooms, next to another second grade classroom. It was rectangular in shape, with the east and west walls stretching longer than the north and south walls, and was larger than many of the other rooms by a few square feet. Mrs. M was saddened to know that she would have to leave this classroom when the school underwent renovations. The fifth grade classrooms were to be moved into this hallway the next academic year.

Upon walking in the door, the wall across (on the west side) contained large windows that let in natural light, as well as a large heating/AC unit that was quite noisy when turned on.

Further down on the same wall, a large SmartBoard and cabinets with shelves above filled the remainder of the space. The teacher's desk and a bookshelf were located in the middle, divided the two areas. A big carpet was placed on the floor for the whole class to sit on in front of the SmartBoard.

Figure 3.1. Photographs of Mrs. M's classroom



The east wall contained two large closets in which the students stored their coats, backpacks, and lunch boxes. The closets had accordion-style doors that were almost always askew because of students constantly needing to get to their belongings. A small sink with a drinking fountain was tucked in the northeast corner of the room.

The students' desks were arranged in groups of five or six. These grouping changed every month, or whenever it was clear that the students needed a break from sitting next to the same individuals. Occasionally, I would see a lone desk pushed next to the chalkboard, or by the teacher's desk, which was usually indicative of a child's misbehavior, or that a student needed a break from his/her group mates.

The classroom was clearly set up to support literate practices. Bulletin boards exhibited high-frequency sight words; posters described procedures for Daily Five (described in the section, "Curriculum"). Evidence of integrated unit projects, like the students' biography posters and dioramas, were displayed around the room. Each child had a green book box with their

reading and writing folders and a wide selection of books, either self-chosen or selected by the teacher. These book boxes were carried around by the students to different areas of the classroom for most of the day so that they could write stories with one another, read independently or in small groups, or participate in vocabulary and word work activities. A wooden display boasted books of all interests and reading-ability levels, and was prominently placed in the front of the room, next to the windows. A large kidney-shaped table used for small, guided reading groups facilitated by the teacher was located on the north wall. Next to the table, a small carpeted area with a child-sized table, surrounded by shelves with notebook paper and other classroom supplies, was set up for students to work independently or in pairs.

Schedule

Students attend Sunnyside Elementary Monday through Friday from 7:50am to 2:05pm. Every morning, Mrs. M had the daily schedule posted in a pocket chart next to the SmartBoard. She often referred to the schedule during Morning Meeting, to help the students get ready for the day. The labels for the day's activities were fairly generic (e.g., math, Daily Five, science) and remained in the same time slots with little variation. The one exception was the specials class; the students rotated through PE, music, and art throughout the week. I learned that the science and social studies units alternated with each other; the students would work on a science unit or project for three weeks and then switch to social studies. The average day seemed very structured. First thing in the morning, except Fridays when the students went to Library, there was an activity (usually literacy-based) to do in the morning for about 20 minutes. This was followed with Morning Meeting, which also lasted about 20 minutes. The next hour (8:30-9:30) was dedicated to Daily Five, where Mrs. M met with two small reading groups for 30 minutes apiece back at the kidney-shaped table. She met with the struggling readers (Group 1) for the

first half hour, every day, and the slightly below grade level readers (Group 2) directly afterwards. Around 9:35, all of the students went to their specials class. When they returned at 10:20, Mrs. M led a brief vocabulary lesson, and then facilitated one more reading group. Group 3 was comprised of the on-level readers and met with Mrs. M at least three times a week, whereas Group 4 read above grade level and usually only saw Mrs. M one or two times a week. At 11:00, the students went to lunch and recess, and came back to the classroom 40 minutes later. A short whole group reading lesson was next, and noon marked the beginning of the math lesson. Generally, math lasted about 45 minutes. The half hour following, from 12:45-1:15, was designated for the second grade to participate in a school-mandated intervention time. For half of the week, students remained in the classroom and were given laptops to participate in an individualized math intervention, called ST math. The other half of the week, those students identified as “gifted” via standardized testing, left the room to work with the enrichment teacher on various projects and activities. The remaining students used the laptops to participate in literacy-based activities and games. When enrichment was over, all of the students went to recess for 15 minutes, until 1:30. The end of the day was reserved for either social studies or science (as the units alternated), which lasted about 30 minutes before dismissal.

Curriculum

Understanding the curriculum used at Sunnyside Elementary was challenging for several reasons. The recent addition of the new Common Core standards, changes in administration at the district level, and an overabundance of curriculum and resources used in previous years contributed to the confusion. The district was transitioning from using the Houghton-Mifflin literacy curriculum, *Journeys*, to the McGraw-Hill literacy curriculum, *Wonders*, for the 2015-2016 academic year, and many of the classrooms were trying out the new texts and workbooks

this year. However, not every aspect of the new *Wonders* curriculum would be adopted; there was a decision made at the district level that each classroom would continue using Jan Richardson's model for guided reading (a program that was adopted a few years ago) because the guided reading books that were included with the *Wonders* program were not leveled appropriately, nor were there enough levels offered.

Also adding to the confusion was the district's mixed messages. When a new textbook adoption was made, there was an assumption that teachers were supposed to use it. However, when asked about the curriculum requirements for each subject, Mrs. M stated, "It's really loose since some administrators came through last year touting that 'It's not about the stuff,'" referring to the curriculum (FUI, 5/16/14, p. 3). Furthermore, teachers who have taught in the district for a number of years have gone through several curriculum changes and, according to Mrs. M, have divided into two different reactions:

Annie: So would it be fair to say that right now you're in a limbo-like sort of stage [with the reading curriculum], and the district is pretty much okay with that because they know the transition is really going to happen next year?

Mrs. M: Right. I would definitely say that. But I'm also certain that they are unclear about what it is going to look like because they don't want to give up... not everybody making decisions in that capacity is willing to give up some of the strengths that the other programs have brought forth, and realizes that *Wonders* is going to have some holes.

And then you got your other camp that says, 'If we are going to implement it with integrity, we need to all be doing the same thing!' So there is a lot of friction going on not only at the leadership level, but also at a colleague level. Because you've got teachers that have pushed themselves to grow and they have more of an open mind about teachers

being [the change agents], not the curriculum ‘box.’ There is some conflict. (FUI, 5/16/14, p. 3-4)

This year, the teachers were told they could pilot whichever features of the *Wonders* program they wanted to try. Mrs. M used *Wonders* for vocabulary development and whole class reading. The bulk of her literacy block was devoted to Daily Five, a curricula framework developed by two sisters, Gail Boushey and Joan Moser, that supports structured literacy time for reading and writing, as well as working independently and with partners. As Mrs. M facilitated a small reading group of five to eight students, the rest of the class was immersed in one of five activities including, ‘Read to Self,’ ‘Read to Someone,’ ‘Listen to Reading,’ ‘Word Work,’ or ‘Work on Writing.’ Daily Five was one of the many literacy curricula that were adopted by the district years ago and is still used by Mrs. M because she believes it is best for her students. This choice was not surprising, as the traits associated with Daily Five, such as fostering independence, aligns well with Mrs. M’s overall goals for her students, outlined above in the section, “Participants.”

The adopted curriculum for Math was *Everyday Math* by McGraw-Hill. According to their website, *Everyday Math* uses a spiraling concept to “ensure students master key math concepts by continually revisiting content in a variety of contexts while also connecting abstract concepts to the world outside the classroom” (<http://www.everydaymath.com/program-overview>). During my time observing Mrs. M’s class, I rarely saw her group her students for math in the ways she does for reading. When asked about this, she stated that though she has “read up on grouping” for math, the math curriculum does not “present itself with compact mini-lessons” so that she can “get through that whole group instruction briefly and move on.” Another reason she gave was “the fact that we only have an hour for math. If I’m going to have

to pull groups, and I'm not sure I know how to make it all happen" (FUI, 5/16/14, p. 3).

Science and social studies units alternated in Mrs. M's classroom; for a few weeks the students would study a topic or complete a project related to science, and then switch over to social studies. Mrs. M mentioned in a follow-up interview that the district wrote the curricula for these two subjects.

Data Collection

After identifying my participant, I conducted a semi-structured initial interview on February 10, 2014 for 60 minutes. This interview was audio-recorded, transcribed, and sent to my participant to check for accuracy. At the end of this interview, Mrs. M and I set up times for me to begin observing her teaching. These observations began the following week; however, the first two were neither audio nor video recorded, as I was waiting for the students' families to have enough time to return the parent permission letters for my study.

I observed Mrs. M and her students approximately one to three times per week for up to 10 hours a week from February through the beginning of June of 2014. Days and times were selected based on Mrs. M's and my coinciding schedules, keeping in mind school and district requirements such as no school days, early dismissals, professional development releases, assemblies, and my university assistantship schedule. I tried to arrange the observations so that I would see a variety of content areas taught, so I came on different days and times. By the end of the elementary school year, I had observed just under 100 hours in the classroom.

I took field notes in my researcher's journal during each observation to describe what the teacher was doing. I looked specifically for instances of teacher adaptive decision-making and identified moments I wanted to review with Mrs. M during a follow-up interview. I also recorded questions that I wanted to ask Mrs. M, as well as my personal interpretations of

classroom interactions.

As I conducted the observations, I reviewed the video recordings each week for the purpose of selecting noteworthy clips to revisit with Mrs. M. During breaks in the day, I spoke with Mrs. M about scheduling follow-up interviews to discuss her instruction and her decision-making processes that occurred during the videotaped lesson. Six follow-up interviews were conducted periodically throughout the semester, occurring either after school or during Mrs. M’s planning time. During each of these, I showed Mrs. M a pre-selected video recording of her teaching, ranging between six to fifteen minutes. I prepared some specific questions to ask her about each recording; the interviews were semi-structured to allow for Mrs. M to reflect or guide the conversation in ways that would best capture her decision-making processes. Table 3.1 shows a breakdown of the observations and follow-up interviews conducted throughout the semester:

Table 3.1. Observation and follow-up interview chart.

Initial Interview	February 10, 2014 from 2:30-3:30
Observation #1	February 21, 2014 from 8:00-11:00 (no technology used)
Observation #2	February 24, 2014 from 9:30-11:00 (mic only)
Observation #3	February 26, 2014 from 9:30-11:00
Observation #4	March 5, 2014 from 11:00-2:00
Follow-up Interview #1	March 5, 2014 from 2:30-3:15; discussed situation “The Play” from February 24, 2014
Observation #5	March 7, 2014 from 9:00-11:00
Observation #6	March 11, 2014 from 9:15-12:30
Observation #7	March 13, 2014 from 11:30-2:00
Observation #8	March 14, 2014 from 9:15-11:00
Observation #9	March 17, 2014 from 9:15-11:00
Observation #10	April 1, 2014 from 7:50-11:00
Observation #11	April 2, 2014 from 7:40-11:00
Observation #12	April 3, 2014 from 7:50-11:00
Follow-up Interview #2	April 3, 2014 from 9:00-9:30; discussed situation “Math” from March 13, 2014

Table 3.1. continued

Observation #13	April 10, 2014 from 9:15-11:00
Observation #14	April 11, 2014 from 7:50-9:30
Follow-up Interview #3	April 11, 2014 from 8:45-9:30; discussed situation “Ellie” from April 2, 2014
Observation #15	April 16, 2014 from 11:00-2:00
Observation #16	April 17, 2014 from 11:15-1:30
Observation #17	April 23, 2014 from 11:15-2:15
Follow-up Interview #4	April 23, 2014 from 2:30-3:30; discussed situation “Tornado” from April 3, 2014
Observation #18	April 24, 2014 from 7:45-11:00
Observation #19	April 25, 2014 from 7:14-11:00
Observation #20	April 29, 2014 from 9:30-11:30
Observation #21	April 30, 2014 from 9:15-11:00
Observation #22	May 5, 2014 from 11:00-2:00
Observation #23	May 6, 2014 from 7:50-11:00
Observation #24	May 8, 2014 from 7:50-11:00
Observation #25	May 9, 2014 from 9:00-11:00
Observation #26	May 12, 2014 from 11:00-2:00
Observation #27	May 13, 2014 from 11:30-12:45
Observation #28	May 16, 2014 from 9:15-2:15
Follow-up Interview #5	May 16, 2014 from 2:30-3:45; discussed situation “Recess Discussion” from April 16, 2014
Observation #29	May 21, 2014 from 9:15-1:15
Observation #30	May 22, 2014 from 11:15-2:00
Observation #31	May 23, 2014 from 9:20-12:45
Observation #32	May 28, 2014 from 8:00-2:00
Follow-up Interview #6	May 28 th from 2:30-3:30; discussed situation “I’m stuck” on May 23, 2014
Informal, non-recorded observations	Beginning of June, 2014

Data Analysis

In this section, I will outline the data analysis procedures I used to select and analyze the data collected from the videotaped observations and follow-up interviews. Coding and situational analysis were the primary procedures used. I created screencasts to visually showcase the complexity in the classroom.

Selecting Situations

I selected all of the adaptive situations. They were identified during the observations, on the day they occurred. As the situations were unfolding, I made a notation in my researcher's journal to revisit the identified videotaped segments after the observation. There were particular aspects about these identified situations that caused me to make this notation. These aspects are outlined the next section.

Identifying adaptive situations. I knew that I needed to focus on specific moments of particular situations in order to be able to describe adaptive expertise, but I also did not want to lose the complexity of the situation by using strict criteria. Therefore, when I was observing, I relied on the more generalized definitions of adaptive expertise in the literature to help me with initially identifying these potential situations. Crawford, Schlager, Toyama, Riel, and Vahey (2005) described adaptive expertise as a broad construct that encompasses a range of cognitive, motivational, and personality-related components. I focused specifically on the adaptive expertise of the teacher; therefore, I used these three broad categories to assess what the teacher was doing during the identified situations. These cognitive, motivational, and personality-related components were often influenced by the students, since the teacher was working directly with them.

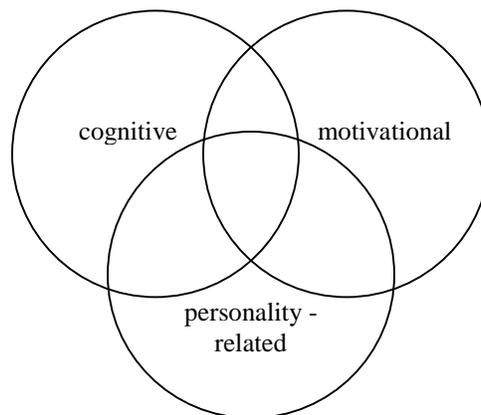
Cognitive components refer to the teacher's intellectual activity, which can include (but is not limited to) thinking, reasoning, remembering, attention, language use, memory, problem-solving, creativity and perception. When working with students in the classroom, the teacher's cognition often takes the form of such things as recognizing and assessing student academic skills, monitoring the activities, selecting the appropriate way to explain concepts to students, anticipating and resolving problems before they negatively affect the class.

Motivational components refer to the teacher's act or process of giving someone a reason for doing something. In the classroom, the teacher is motivated to keep the students engaged. Engagement often leads to focus and progress. She thinks about student interests when planning and implementing lessons to encourage engagement. Student and teacher motivation often run parallel; when the students are motivated to learn, the teacher is motivated to teach.

Personality-related components refer to the teacher's social traits and ways of behaving. The personality of the teacher filters through the classroom in many ways, including how she structures activities, how she responds to student comments and questions, her classroom management style, what she values, etc.

My criteria for identifying the following four situations used in my analysis required that each situation encompassed a *combination* of these three components. Some situations have more of one component than another, though all are present to some extent. This is best represented using the following visual:

Figure 3.2.



After identifying an adaptive situation, I thought about what occurred as a result of the adaptability I observed. I thought about the broad goals that all teachers want for their students. This may include academic or social success in some capacity and/or a willingness to learn or progress. I also thought about the more specific goals Mrs. M outlined during our follow up

interview on May 28, 2014. These included wanting students to learn to think, wanting students to be responsible for themselves/others, having students make growth and recognize gains, and learning how to get along with one another. If, by the end of the observed situation, there was forward movement towards one or more of these broad goals by the teacher and her students, this helped me categorize the situation as ‘adaptive.’

Analysis

I experimented with many alternative ways of displaying the data after they were analyzed. I made final decisions to present the data in the following ways. First, I shortened and embedded the transcription of selected adaptive videotaped situations within the follow-up interview. To decipher between the two, I italicized the original videotaped situation and left the follow-up interview in regular font. These were then placed in chart format (see Chapter four).

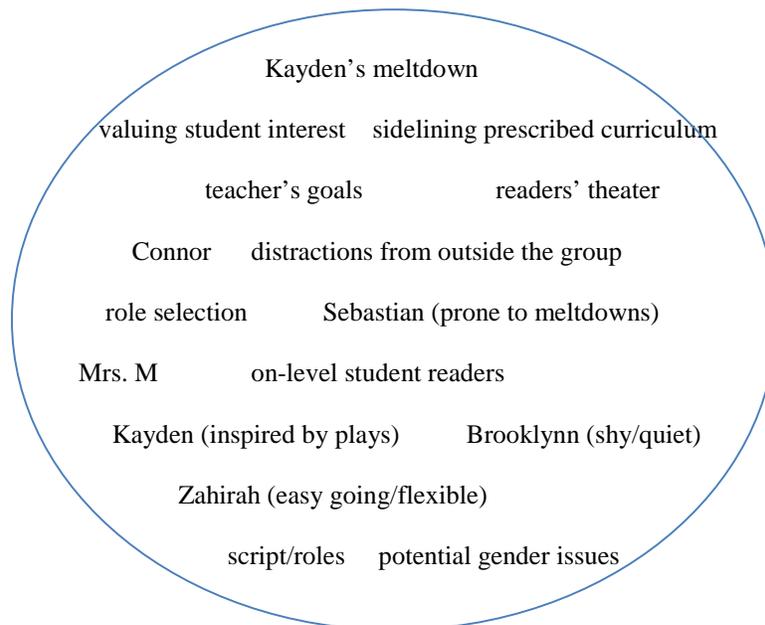
Next, each situation was thematically coded, i.e., given labels that “assign[ed] symbolic meaning to the descriptive or inferential information compiled during a study” (Miles, Huberman, & Saldena, 2013, p. 71). I coded for complexity principles and placed specific quotes in a table for each situation. Then, I revised the table to combine all of the quotes for each principle in order to be able to look across the situations. Examples of these tables can be found in Appendix B. I repeated this procedure when I looked for instances of the teacher’s beliefs and values.

Situational analysis. I used coding procedures to analyze the videotaped observations and follow-up interviews; however, I needed an approach to make sense of the complexity occurring the classroom. Clarke’s (2005) post-modern approach to grounded theory called ‘situational analysis,’ which recognizes the socially constructive nature of reality, was helpful at the beginning of my analysis. This approach focuses on a situation of inquiry, which is

empirically constructed through a series of maps intended to capture and discuss the messy complexities of the situation in their dense relations and permutations (Clarke, 2005). Clarke (2005) outlined three main types of maps and analyses: (a) situational maps as strategies for articulating the elements in the situation and examining relations among them, (b) social worlds/arenas maps as cartographies of collective commitments, relations, and sites of actions, and (c) positional maps as simplification strategies for plotting positions articulated and not articulated in discourse. These maps “open up the ‘knowledge space’ because they capture multiplicity, heterogeneity and ‘messiness,’ which can then be transported to other situations to depict different compositions (den Outer, Handley, & Price, 2012, p. 4).

The first stage of situational analysis recommends looking at a situation and recording the influential component. I used this recommendation and produced the first “messy” version of a situational map for my first situation, “The Play:”

Figure 3.3.



I repeated this process for the rest of the situations. These “messy” version maps helped me think about the human and non-human factors present in each situation, and how they were related to one another. It also helped me to think about factors that were present that I couldn’t necessarily see or hear, like the students’ psychological and motivational traits. However, I did not find the next two steps (creating social worlds/arena maps and positional maps) helpful in thinking about my data, and I chose to go in a different direction with my analysis, which is described in the next section.

Situational analysis was a good option for me because it respected the complexity of the classroom environment and helped generate different insights regarding the concept of adaptive teaching expertise. It did not focus too narrowly on any one component or element, yet compiled complex details within the situation. In situational analysis, the “situation of inquiry itself broadly conceived is the key unit of analysis” (Clarke, 2005, p. xxxv).

Situational analysis was helpful for an initial framing of my data and alleviated what Clarke (2005) calls ‘analytic paralysis’ or the danger of collecting data and not knowing how to begin the analysis. It also provided a method of looking closely at my observational data to help me make sense of the complexity and it allowed me to look at my data contextually. However, my analysis eventually moved away from Clarke’s method, as I felt it would be helpful to have a different kind of visual representation of each situation to show the complexity.

Screencasts. When thinking about how to illustrate the complexity of my four situations, I used a method similar to concept mapping, a graphic tool used to organize and structure knowledge (Novak & Canas, 2006). I first constructed a series of comic strip-like drawings that showed the state of each moment during an adaptive situation. When I presented these drawings to my advisor, I described for her what was happening from drawing to drawing. I realized that I

needed a method to capture both the illustrations and narration together, so I constructed each situation into a screencast, where I could annotate each moment and record the narration.

Chapter Summary

In this chapter, I have provided a rationale for the research methodology and design, described my methods and introduced my participant, Mrs. M, and her second grade students, and described the research site. This section included a description of my initial interview with Mrs. M, which showed examples of how Mrs. M viewed the classroom as a complex adaptive system. The research site description also included a detailed look at the classroom schedule and the curriculum. Finally, I outlined my data collection and data analysis procedures

CHAPTER FOUR

In this chapter, I describe and analyze the four situations that illustrate adaptive teaching expertise. The situations are organized in chronological order. Situation 1 entitled, “The Play,” begins the chapter and is followed by Situation 2, “Ellie,” Situation 3, “The Tornado,” and Situation 4, “Recess Discussion.”

Each of the four situations is organized into three sections. The first section begins with a detailed chart organized to show a transcript of the videotaped segment (in italics) combined with the follow-up conversation (indented, regular font) between the researcher and the participant as we watched the video together, the yellow highlighted sections during the videotape/follow-up interview that demonstrate principles of complexity, and the green highlighted sections demonstrate the participant’s values and beliefs. I organized the situations in this way to provide a concise representation of what occurred during the lesson, the reflections from the participant, and an interpretation of how complexity is evident throughout the adaptive situations.

Section two of each case discusses in more detail how the complexity principles (i.e., decentralization, neighbor interactions and connectivity, internal diversity, self-organization, adaptability) were found throughout the situations representing the classroom as a complex adaptive system. The principles are labeled within the chart in Section one and the annotated PowerPoint movie, or screencast, further illustrates the principles. Each screencast can be accessed by clicking the YouTube links provided in each Section two. These show the viewers how adaptive teaching can be considered through the lens of complexity theory. A summary concludes each screencast.

Section three of each situation discusses what may have happened if the teacher did not make the adaptive decisions she made in each of the four situations. Each situation is then re-examined using these alternate descriptions. The chapter ends with a cross-case analysis in which the three primary findings are described. The participant's recurring tensions between how she would like to teach and the district's prescribed curriculum requirements are explained.

Situation 1 - Section One: Chart

The chart below is the first of four situations that demonstrate adaptive teaching. Situation 1, entitled “The Play,” features a small group of five students and the teacher, engaged in a readers’ theater lesson. The teacher decides that the students will choose which part they would like to read. As they begin, one student (Brooklynn) inadvertently chooses another student’s (Kayden) preferred role, and Kayden becomes upset. The teacher is faced with the dilemma of how fix the problem before it escalates so that all students can continue learning.

*Original Videotaped Transcript &
Follow-up Interview with Participant*

Complexity
Principles

Teacher
Beliefs & Values

Mrs. M: Take one minute and look through . . . You might pick a first choice and you might pick a second choice in case somebody else takes that first choice.

Mrs. M: Can you pause it for a moment? Did you get what led us to the play to begin with?

A: Yes, the Magic Treehouse?

Mrs. M: Yes the research guide, um, they got really excited about that and Kayden, I believe it was, wanted to break it down and do a readers’ theater with it. And I just . . . if I was a really good teacher I would find a way to do that but I decided we would just take the research guide which is as a genre and it of itself that they had not really explored yet--that nonfiction piece that was also matching the fiction that we were reading together in social studies. But just keep that filed away that he wanted to do some readers’ theater. That’s what led to this play.

connectivity

honors student
interest

decentralization

Mrs. M: You’ve been so quiet over here [talking to Brooklynn], would you mind going first?

Brooklynn: The sun. As soon as Brooklynn makes this choice, Kayden’s face crumples and he lowers his head into his hands. Mrs. M observes this, but continues talking.

Mrs. M: Okay, Brooklynn would like to be the sun . . . Highlight ‘sun’ so you know where to come in, and look through and highlight your character’s name throughout the

script where you need to do the talking. She turns to the rest of the group. What do you think you want to be? Kayden, did Brooklynn take yours? You had your mind set on the sun didn't you? What was your second choice? Oh, you didn't have a second choice.

Mrs. M: I was very aware, and I could tell . . . his verbal effects told me that he was really disappointed with that decision, so I thought I'd better get in there and see what that second choice is before somebody else takes it, otherwise he's going to be crushed. But he didn't have a second choice, so I was giving him that opportunity to pick something, right?

Mrs. M: Think about it. Maybe you'll decide a little differently here in a minute. Let's see what do we have left? We have Narrator one and Narrator two, and a woman.

Hmmmm, I wonder who . . . Who would like to be the woman? Zahirah raises her hand.

Mrs. M: We had one girl left in the script right? And I knew I had to fill that woman spot, and though this group would probably be flexible enough to take on that woman role and not let it be a big deal whereas if I was working with Group 2, say, and I had Kahlin and Matthew and some others, who if someone was to be stuck with that role, it would have totally flopped because they would have been made fun of. But um, I was just throwing it out there that if someone would fit that role, well that they could take that role, and as a matter of fact, Zahirah was willing to do that.

Mrs. M: Zahirah, you would be willing to play the woman for us? Well that makes perfect sense doesn't it? Okay take a highlighter and did you watch what we did to Brooklynn's script? Every time it says 'woman' . . . Kayden, did you make a decision? Okay I'll come back to you then. Sebastian what are your thoughts?

Sebastian: Narrator two . . . I don't know. Narrator one or two? I think I want one.

Mrs. M: Okay Narrator one for you.

Mrs. M: And that is another tricky situation where Sebastian, if he doesn't get his way, can really melt down. So I was monitoring that, but it didn't seem like it was going to happen this time so I was trusting that we were okay with not having him pick those. I chose Brooklynn first because she really was sitting over here being the most respectful and the most in control so I wanted to honor that. But I wanted to get to Sebastian pretty quickly too. He would have originally been my second choice if I hadn't seen Kayden meltdown. I wanted to try and avoid having Sebastian tantrum. It's working out so far!

adaptability

values structure and
order

Mrs. M: *How about you Connor?*

Connor: *The man.*

Kayden: *Yay!*

Mrs. M: *You want to be the man so that leaves Narrator two for you, would that be okay?* Kayden nods. *They begin to read the play.*

A: Are there any other factors besides motivation that you took into consideration during this particular situation?

Mrs. M: I don't know. It certainly wasn't planned. You know, like I didn't sit down with a list of how we were going to assign them. I didn't make up sticks of the characters and have them randomly pick. I wanted them to work through this process so that if there were more plays available to them they would have a system of how to take it to that level without support, right? And in fact, Kayden took the play idea into writing and wrote . . . he had some other people working with him writing the play. 'The first puppy' I think is what he decided. He and Zahirah were writing on it.

decentralization

non-linearity

neighbor

interactions

self-organization

A: So your decision-making is surrounded by choices the kids make.

Mrs. M: Um-hmm.

A: Is it fair to say that you place value on that?

Mrs. M: Yeah. And it all started by placing value on Kayden's decision for wanting to read some play. And why not? If that's what he's interested in, why can't we share that experience with him and give him something that he likes?

Tell him that we value that he wants to read some plays. That is worthy of his time and we should all take some time to do that. Sure I could follow the manual and we could do what the book tells us to do but I think you've got to value their process and show them that they have some agency in what's going on.

A: Do you feel like that's empowering for kids?

Mrs. M: I do, yeah.

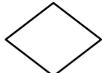
Situation 1 - Section Two: Illustrating Complexity

One of the most challenging aspects of viewing the classroom through a lens of complexity is maintaining the integrity of the complexity without making it overly complicated.

In this research, the classroom is observed as a system, or a set of interconnected components that work together to perform a function. In this case, the function would be learning. To represent how the classroom can be seen as a complex adaptive system using Situation 1 as context, I have provided a screencast that highlights the complexity principles.

Click on the following link (<https://www.youtube.com/watch?v=dJDW65MO-ZI>) to view this screencast, entitled “Situation 1 – The Play.” The following chart provides graphics and their accompanying meanings that will help with understanding the screencast:

Table 4.1 Screencast graphics.

GRAPHIC	EXAMPLE	MEANING	NOTES
Circle		Represents the teacher and students	
Triangle		Represents the curriculum or topic of conversation	
Diamond		Represents the internal diversity of individual students	
Bolded figures		Represents a strong engagement or connectivity with another component	
Straight, solid lines		Represents the major progressive interactions between components	* Progressive, meaning moving forward
Straight, dashed lines		Represents divergent, disruptive interactions between components	* Divergent, meaning off-topic
Line grey scale		Represents the intensity of the interactions	* Black = more intensity; Grey = less intensity
Use of color	Red, yellow, orange	Represents the emergent properties that arise from other complexity principles	* A combination of the red group and yellow arrow creates a new grouping, or emergent property, represented with orange
Positionality of components	Components arranged in a circle vs. more linearly	Can represent either decentralization or self-organizing behavior	* These are often described verbally in the narration

Summarizing the Situation

This screencast shows how the complexity principles worked as a system in Situation 1. Because the teacher took a decentralized role and encouraged the students to choose their own roles, they engaged with the curriculum and began to interact with one another. When another student chose Kayden's role, and Kayden begins to fall apart, the teacher was required to adapt to minimize the intensity of the problem. Once she did this, the students re-engaged with the curriculum and the students continued down a path of learning.

Situation 1 - Section Three: Alternatives to the Teacher's Decision-Making

One can see how the situation might have turned out differently if the teacher took a less adaptive approach. For example, if she took a more centralized position from the start and simply assigned a leveled reader for the students to read during the group time, instead of "letting go" of the curriculum and introducing a play, Kayden might never have been inspired to continue learning by writing his own play.

Similarly, if she simply shut down Kayden's negative behavior and assigned everyone's role, the aftermath in which Kayden and Zahirah continued learning on their own might never have happened. Simply reading a text may have been interesting for the students or not; however, the play seemed to increase their level of participation and engagement and provided a way for the students to connect with their interests.

Situation 2 – "Ellie"

The next section presents Situation 2, "Ellie." In section I chart the original transcript, follow-up interview, complexity principles, and teacher beliefs/values. Section two provides a detailed screencast of the situation, highlighting the principles of complexity. Section three discusses possible alternatives to the teacher's decision-making.

Situation 2 - Section One: Chart

The chart below is the second of four situations that demonstrate adaptive teaching. Situation 2, entitled “Ellie,” involves the entire class transitioning from a morning project to their regularly scheduled Morning Meeting. One particular student, Ellie, becomes upset with the project and begins throwing a tantrum. Coincidentally, she happens to be the next one on the list to lead Morning Meeting. The teacher is faced with the decision of how to proceed with Morning Meeting.

*Original Videotaped Transcript &
Follow-up Interview with Participant*

Complexity
Principles

Teacher
Beliefs & Values

Annie: What do you know about Ellie that’s important to your teaching?

Mrs. M: Ok, Ellie has been diagnosed with ADHD. It’s only important because it’s impacting her education greatly. We have been having conversations all year long about the medication she is on and the doctor only has her on a patch because she refuses to take medication orally. The family is very involved and very concerned but is also very worried about what labeling might do. To me, she’s already labeling herself when she stands in a room and spins around, or when she has some of the behaviors she has. The other kids are bright--they know that there are some differences there, and so we have worked with the family and they have finally agreed to test and get that case evaluation going.

Annie: Are there things that you suspect, that you can talk a little bit about if you’re comfortable, that you think maybe going on with Ellie either socially, medically, academically...

Mrs. M: Yeah so, I was pretty convinced early on that she was on the spectrum. Her inability to socialize and communicate, her strong knowledge in content, and those different characteristics that I don’t know enough about but that certainly send up red flags. How much of it was her ADHD, how much of it was the other stuff is still blurred.

internal diversity

The students are working on a project to make a three-dimensional paper robin to hang

from the ceiling. This project was earned by one particular student as a reward for good behavior, in which the entire class got to participate. The class is seen on the videotape working individually on their robins. Ellie is seen working on her bird, but she is getting increasingly upset. Her body language signifies frustration with intermittent bouts of goofing off. Mrs. M notices Ellie's erratic behavior, but chooses to ignore it for the most part. Around the time Mrs. M asks the students to clean up, Ellie's behavior begins to escalate. She is seen throwing her paper robin on the floor and furiously stomping on it.

Mrs. M: I'm choosing to ignore her at this point. Needing to get started with the day. The choice to do the robin project--that was a whole different decision to let go of the curriculum for a while. To honor that reward that the other child got [as a] class project for everyone.

decentralized control

Ellie's voice is still frantic and incomprehensible. She is crying and occasionally yells out, "Noooo!" and "I need a new one!!" Mrs. M ignores her mostly and continues with Morning Meeting. The rest of the students have mostly ignored or not noticed Ellie up until this point. Mrs. M says, "And today would be Amina's day [to lead Morning Meeting] if she was here, but she's not here this morning, so Ellie it would be your day. But I'm not sure. Are you ready?" and she, along with the class, looked over at her.

adaptability

Mrs. M: So how perfect was that, right? Ahhhhhh! That somebody was going to throw that into the mix and give her an opportunity to focus on something else. What I really wanted to say was, "obviously you're not ready to come..." [begins laughing]. But instead I pulled myself together and asked her if she was ready to take on this responsibility for the day.

Annie: How did you make that decision to not just shut it down?

Mrs. M: I looked at it as an opportunity to get her on task with everybody else. I was hoping that she would be excited to take on that role and move on. Just move on and not persevere with that situation. But that certainly wasn't planned [laughs].

Ellie, still upset, says, "I'm trying to fix mine." Mrs. M says, "Okay, so are you saying you're not ready to be helper today?" "I want to be helper, but I wanted to fix mine," Ellie responds, her voice still upset. "Okay if you're going to be helper you got to come over." Mrs. M pauses and asked Sebastian and Kayden to clean up their things. In the meantime, Ellie walks over to Mrs. M with the bird in her hand and states again, "I'm trying to fix mine!" and continues crying. Mrs. M says, "Ellie right now it's time for

Morning Meeting. We'll have to work on that later." Ellie walks back to her desk and puts the bird on top. Mrs. M continues, "You've got friends that are ready to get started with their day." Ellie walks to the carpet towards the front of the room where the calendar is located. Her face is red and her shoulders are slumped. She stands in front of the classroom with her arms crossed. Mrs. M sits down and addresses Ellie. "Why don't you, while were waiting for the rest of them, go and get a tissue and dry your tears. I think that will help."

adaptability

Mrs. M: So how huge it was for her to be able to set that aside because she was so frustrated, right? I was not expecting her to be able to take that on. I was expecting this to escalate. She wanted to also be helper, but I wasn't sure she was going to be able to do it because she was so upset. So sending her to get a tissue brought her a little bit more time to pull herself together. That was the decision on that.

Ellie walks to the tissue box with her arms still crossed. The rest of the students are very quiet and they watch Ellie as she walks to get her tissue. Mrs. M says, "I can tell that project frustrated you, Ellie. I appreciate that you're willing to set it aside for now and we'll work and fix it later, okay? Are you sure that you're up to being helper today?" Ellie responds immediately and says yes. M says, "Great. We can use your leadership." As they wait for Ellie to dry her tears, Deosha asks Mrs. M to tie her shoe while they wait. Ellie walks back to the front of the classroom right next to Mrs. M.

Mrs. M: I'm hoping that that whole thing that just happened also fueled a little bit more compassion within the kids too. Them witnessing my ability to give her some time and an opportunity to do what it was she truly wanted to do--she wanted to come help. She was just struggling. I'm hoping that example--that they can walk away with that too. Regarding the situation where Deosha wants me to tie her shoes, like 'Fix your shoes Deosha!' is what I wanted to say but I'm always walking on eggshells around her, right? I don't want to set her off. So [I tied her shoe. I wanted to do] anything I could do to move this along peacefully...

"Before we begin, thank you, Deosha, for earning that project for all of us. I think most of us are enjoying it and it's going to be great to have our room looking like spring instead of winter now, isn't it?" said Mrs. M. Sebastian comments, "My robin has crooked wings." "Your robin is just flying a little differently, isn't it? Birds will do that

indicative of Mrs. M's goals for her students--being responsible for oneself and others as other human beings

sometimes. They'll fly around differently," responds Mrs. M.

Mrs. M: Did you see it? He cut his slit a different way and he had noticed that and was concerned about that. **How was I going to phrase that so that he could just accept his beautiful robin for what it was, right?** [she sighs] And not end up with another crinkled robin on the floor and another fit because it wasn't looking like the model.

accepting of student differences

Mrs. M: *We need to go ahead and get started with our day. So Ellie, could you tell us about the date?*

Mrs. M: We had just started April, so I was hoping that she was going to find some success with this. I was already thinking about that knowing that if we were further along in the month that I would need to be over there [directly next to the calendar] and guiding her right away, **but I wanted to see what she was going to do** since we had just started the new month.

valuing fostering student independence

Annie: So reading the calendar has previously been a struggle for her?

Mrs. M: Yes. Even though she sits through this every day, she still hasn't caught on to that chain of what happens here.

Ellie turns around and looks at the calendar for a few seconds. Then she turns around and looks at Mrs. M again, clutching her hands. Mrs. M states, "Yesterday was the first. Where's today?" Ellie doesn't respond, so Mrs. M says, "Okay can you point to it?" Ever so slightly, Ellie shrugs her shoulders and mouths the word "no." Mrs. M says, "Okay, let's start with yesterday. Can you point to yesterday, the first?" Immediately, Ellie's voice rises and, without looking at the calendar, says "No!" "Oh. Why not?" Mrs. M asks. Ellie responds, "I don't know which one it is." Mrs. M says, "Oh, well let's look. First means which number?" Ellie looks at the calendar and says, "I don't know." Mrs. M prompts her and says, "First...means number one. Do you see the number one?"

Mrs. M: I was counting on her to know 'first' and she wasn't even ready to know 'first.' I don't know how much of that is her being stuck in her mood and her frustration and not being able to think beyond that. Or is it that she really didn't know 'first?' That is a day thing. Some days she'll have it, and some days she won't.

Ellie stares at the calendar.

Mrs. M: **Would you like a friend to come and help you?" Several hands go up in the**

connectivity &

air. Okay, why don't you pick someone who's being respectfully to come and help you?

Looking for yesterday...

Mrs. M: So I'm surprised at this point with this group, as cruel as they can be, that they weren't laughing at her and setting her off into another fit. I'm very grateful that we are now able to draw on some peers who are willing to help her through. Yeah, that was nice.

Annie: Maybe your modeling really had a lot to do with that. Perhaps it set the tone for them.

Mrs. M: Maybe. Hopefully they are getting it too. Hopefully it's internal and it's something they would do each and every time. I don't know. Some would, right? I mean, even Deosha's hand is up to help.

Ellie points over to a classmate, but does not use her name. Another child is heard saying, "Jasmine? Oh, Brooklynn." Brooklynn stands up and walks over to the calendar with Ellie. She points to the number one on the calendar and says, "Right here," and then looks at Mrs. M. Mrs. M continues. "Okay, there is yesterday, the first." Brooklynn sits down. "So if that's yesterday, Ellie, what would today be? Can you point to it?" Ellie points to the second, and hesitantly says, "Here?" Mrs. M: [smiling] "Absolutely!"

Mrs. M: That was good. That she was able to... I was hoping she would at least find where the next day was.

Mrs. M walks over to the calendar to point to the words. "So we start off with the words, 'Today is'." And she points to the word 'Wednesday' encouraging Ellie to read the phrase. Ellie does so, softly, "Today is Wednesday..." Then Mrs. M points to April, while Ellie tries to read it. She struggles to read the words, so Mrs. M begins to read the beginning of the words "Aaaaaapprrii—" Ellie finishes by saying "April" while Mrs. M flashes two fingers in front of her. Ellie says, "April 2."

Meanwhile the class is sitting quietly from the carpet, watching this interaction occur.

Mrs. M says, "Wednesday, April 2. Or sometimes we say call that two "second" in a date." Another student repeats the date. "Wednesday, April 2. Happy Wednesday, April 2nd to you." She reaches over and put an arm around Ellie and rubbing her shoulder. "I'm confident your day is going to get better." Ellie says, "Mmmhmm," softly.

neighbor
interaction

Situation 2 - Section Two: Illustrating Complexity

To illustrate how the complexity principles are woven throughout this situation, I have provided a screencast. Click on the following link (<https://www.youtube.com/watch?v=9u08pQ9xzPY>) to view this screencast, entitled “Situation 2 – Ellie.”

Summarizing the Situation

This screencast shows how the complexity principles work as a system in this particular situation. Just like the first situation, this begins with an adaptive choice by the teacher to “let go” of the curriculum. Ellie becomes frustrated with her project and reacts in a way that is quite different than her peers. By coincidence, it happens to be her day to lead Morning Meeting. The teacher invited her to come up in front of the class, even though Ellie was still melting down. As Ellie led the meeting, she was hesitant and standoffish, but the teacher urged her to keep going by encouraging neighbor support. After this situation is over, Ellie engaged in a self-organized group with another student, leading to the emergent property of reading with one another, which was unusual social behavior for her.

Situation 2 - Section Three: Alternatives to the Teacher’s Decision-Making

If a less adaptive approach had taken in this situation, it is likely that the outcomes would have looked much different. For example, if Mrs. M had taken a more centralized approach and decided for Ellie that she was not ready to lead Morning Meeting, instead of giving her the choice, Ellie would have potentially carried on with her tantrum or disengaged from the conversation entirely. This outcome would not have led to any kind of learning on Ellie’s part, during the Morning Meeting time, and she likely would not have engaged in a self-organized group with Cela afterwards.

Similarly, if Mrs. M had not encouraged Ellie to call on her neighbors for assistance, Ellie might have become dependent on Mrs. M whenever she needed help. This choice modeled for Ellie that the classroom is a community with many people available for support when she gets frustrated. At the same time, the rest of the class was able to see that others react differently to this situation and seen how patience and persistence can go a long way.

Situation 3 – “The Tornado”

The next section will discuss Situation 3, “The Tornado.” Section one charts the original transcript, follow-up interview, complexity principles, and teacher beliefs/values. Section two provides a detailed screencast of the situation, highlighting the principles of complexity. Section three discusses alternatives to the teacher’s decision-making.

Situation 3 - Section One: Chart

The chart below is the third of four situations that demonstrate adaptive teaching. In Situation 3, entitled “The Tornado,” the entire class was preparing for a literacy lesson on the carpet. The teacher wanted to introduce a book for read aloud, but the students become distracted by the weather, which was storming the night before and a tornado watch had been issued that morning. A few students in particular were instigating the distraction, including Jacob and Connor. The teacher was faced with the dilemma of progressing with the lesson or addressing their concerns about the weather.

*Original Videotaped Transcript &
Follow-up Interview with Participant*

Complexity
Principles

Teacher
Beliefs & Values

The students begin to make their way over to the carpet for Morning Meeting. There is one voice, Jacob, that is clearly heard saying, “We’re all gonna die!” About a minute later, as most of the kids are on the carpet and Zahirah is ready to get started, Jacob continues to act goofy. Then he states, “You can’t be calling my name when a tornado comes.” A student shushes him. Connor, sitting behind Jacob, can be heard softly saying, “No, it has to be warm for a tornado to come.” Jacob looks directly at the camera and says, fairly loud, “We’re all gonna die!” Mrs. M hears this, as does the rest of the class, and almost everyone ignores him.

neighbor interaction

Mrs. M says, “You’re a very patient lady [to Zahirah]. How many friends are you waiting on?” Zahirah says something that is inaudible. Mrs. M continues, “You’re not waiting on anybody now? Everybody is here and ready? They’re sitting down, crisscross? Their eyes are on you, mouths closed?” Zahirah nods. “Well then we can begin, can’t we?” Zahirah begins with the normal Morning Meeting procedures, including stating the date, how many days the students, have been in school, and selecting a student to tell her what roman numeral coincides with the number of days.

When Zahirah takes out the marker to write the number, she accidentally knocks into a white board, which makes a loud sound. Jacob is heard saying, “You can’t be doing that when a tornado comes, Zahirah.” Several students now begin talking about the

neighbor interaction
& self-organization

tornado, and a few are heard saying, slightly exasperated, "There isn't a tornado!"

Mrs. M: So I'm still trying--I must be feeling very generous with my patience.

I'm still trying to ignore, hoping that it'll go away, and it's starting to escalate.

I'm trying to focus on those that are still engaged and give that the energy.

Then Connor is heard saying, "It's got to be warm!" Mrs. M still chooses to ignore this behavior and focuses on Zahirah who hesitates while writing the roman numeral.

"Check with her," she says, referring to the student Zahirah called on to get the answer. Mrs. M continues to coach Zahirah through the process, while the following interaction occurs simultaneously:

Jacob is heard saying, "It's going to tornado." Sebastian is heard saying, "STOP!"

Jacob continues to provoke by saying, "Right through that SmartBoard!" Connor, again, is heard saying, "Jacob stop! It's got to be warm for a tornado." Jacob turns around and looks at Connor and says, matter-of-factly, "We're all going to die."

Sebastian says, "No we aren't." Mrs. M finishes with Zahirah and thanks her. Then she says, "So it seems like there is some concern about the weather this morning."

Matthew begins to blurt out. Connor is seen raising his hand. Mrs. M. calls on Conner and says, "Thanks for your signal." "I'm trying to tell Jacob there's not going to be a tornado..." Connor says. Several voices are heard talking. Mrs. M stops Connor and

says, "I'm sorry, I can't hear you. I'm so distracted by the other talking that's going on. She waits for the class to be quiet. "Can you try that again?" Connor says, "Jacob thinks that there is going to be a tornado and I keep telling him it needs to be warm."

"Oh, I see," comments Mrs. M. "And he's not listening," said Connor. "So he keeps saying that," Mrs. M says. "Yeah," said Connor. Mrs. M responds, "I can see that it's starting to bother other people. Are you worried about the weather today, Jacob?"

Jacob nods. She continues, "Sometimes people worry about the weather and though I heard there is a chance for some severe storms this afternoon—" Matthew suddenly interrupts her and says, "And that's a tornado!" "Excuse you! Matthew! It's my turn. Though I heard there is a chance for some severe storms this afternoon, we're not going to be a Wemberly Worrier [and pauses to smile] because we know we've got lots of people to help keep us safe."

Mrs. M: So we spent a lot of time with Wemberly earlier on by Kevin Henkes because it was part of our author study. We spent some time worrying about different things earlier on in the year, so I was trying to connect them back to

internal diversity &
neighbor interaction

adaptability

centralization

connectivity

that and our discussions earlier on in the beginning of the year about how we can worry about some things, that we can't worry about some things that probably aren't ever going to happen. That's where that came from.

Annie: Connor seems very in tune to what you are saying and absorbing it all. It's an interesting dynamic . . . between Connor and Jacob.

Mrs. M: I think things are definitely escalating for Jacob the past three weeks or so, not just with Connor but with lots of other people. Wesley, in particular, you may have noticed today. I think he was equally worried about the weather probably, just reacts to it differently so I was trying to give him an outlet for that. At the same time, I had a lesson to do, right?

internal diversity & adaptability

Mrs. M says, "We've got people watching the weather, we've got our sirens outside for when bad weather comes. We'll know if we hear them, we'll have to take cover. Mrs. P in the office always takes care of those extra sirens to let us know if severe weather is near and we need to take cover. Until then, we're going to go about our day like usual and not let that get in the way of our learning as much as we can, ok?" She looks at Connor and he nods. Sebastian is seen raising his hand. Mrs. M calls on him.

"Sebastian? Thanks for being patient with your signal." He says, "Matthew is doing the same as Jacob is, and I'm doing the same as Connor." Matthew suddenly blurts out, "I quit!" Mrs. M says, "I'm not understanding what you mean." Sebastian begins to explain, "Matthew is worrying about the tornado and I keep telling him there is going to be... well, maybe this afternoon." Mrs. M responds, "Well, yeah, you never know, but like we just talked about, we've got people watching out, okay? Matthew might be worried about the weather just like Jacob is. Is that what you were saying earlier?" Sebastian nods and says, "Um-hmm." Mrs. M continues, "Matthew, are you worried about the weather too?" "No, I only don't like thunder and lightning," he says. Mrs. M says, "Raise your hand if you don't like thunder." Several hands go up.

neighbor interaction

Mrs. M: So obviously this discussion was not something I had planned. I felt that that topic was going to cause more conversation with everybody that could have prolonged everything, so I thought that if I asked them to acknowledge that fear as a group, we could get through it faster.

adaptability

Annie: So integrating the whole group into the conversation would hopefully alleviate more fears and be less distracting.

Mrs. M: Um-hmm.

“Oh my, look around. You are not alone, Matthew. Look around the room. Lots of friends do not like thunder. Put your hands down. Raise your hand if you don’t like lightning.” Lots of hands go up. There is some crosstalk about student worries about lightning. “It can be pretty frightening stuff. We’ve got to stay safe in a lightning storm.” Sebastian says, “Lightning is five times hotter than the sun.” Mrs. M says, “Yeah. Where’s a safe place during a lightning storm? We’ve talked about this before. Ashten, do you remember?” Ashten responds, “A basement.” “Well, of course. A basement would be a safe place. Where else? Kashia?” Several students begin talking. “When it’s quiet, will you share your thought about where a safe place is to be in a lightning storm?” Kashia pauses, then says, “In a bathroom.” “In a bathroom. Of course. A bathroom is a safe place. Matthew?” says Mrs. M.

connectivity

Mrs. M: I knew we had just covered this with the Red Cross when they came in for a visit, but as you can tell maybe not everybody got that lesson. I was willing to take up some time while we were on it to get it covered because I knew there were going to be storms and they should know not to stay outside and play. That was a decision to brush up on some safety.

connectivity

Matthew states, “The gym!” “The gym would be a safe place. Do you know where all those places are?” Matthew asks, “Where?” Mrs. M says, “Inside. See, you don’t have to be in a basement, or the bathroom, or the gym in a lightning storm. You just need to be inside away from the lightning’s distant—out of the lightning’s way to be safe. It’s unsafe to be outside during a lightning storm. So like if you’re outside playing at the park and you hear thunder, it’s time to go home and get inside because the safest place to be---“ She is interrupted by students talking. Jacob begins to say something. “I’m waiting Jacob because someone else started to talk. The safest place to be during a lightning storm is inside. You only need to go to the basement, or your bathroom or your safe spot in your house if there’s a threat for a tornado. Okay? And there’s no threat for a tornado right now. So on with our writing.”

Mrs. M: So guess what my biggest fear is? [Laughter] I have a huge fear of storms. I’m wondering at this point if this is a reason why I am perseverating on this a little bit. It is certainly longer than I would have liked. I could have stopped right after I said that we’re not to worry about it anymore. I’m wondering why I did it. Then Matthew brought up that he was scared of thunder, so I wanted to address that fear as well. I feel if I didn’t give him the attention that that was going to affect our day.

Annie: Do you have any final thoughts about the situation? Or situations like this when they come up? For example, what stops you from teaching or warrants that diversion?

Mrs. M: For me I think it's what the kids are focused on. I think that if they are engaged in that worry or that fear, then we have to work through that before we can move on. If they are engaged in that activity for that excitement or whatever, who knows what it is, right? We've got to spend sometime with it in order to recognize their interests and what's on their mind and give them some agency before we move on to what I have on my agenda. It's an issue of whose agenda here? Their agenda or my agenda? I still try to balance that constantly.

Annie: Right there seems to always be a tension between the two.

Mrs. M: Right, because you have outcomes, or there are certain things that you want the kids to learn for the day. On that day, in my plan book, talking about tornado safety or fears was not on there.

Annie: Is it just a feeling that you have? Do you get that sense that this is worth talking about now? Is it just the number of kids that are commenting?

Mrs. M: I don't know if it's the number of kids. Perhaps it's the amount of intensity?

Annie: Would that be the intensity of their reactions or the topic or both?

Mrs. M: Both probably. A lot of it probably has to do with what is going to distract us from moving forward with what the intended outcomes were going to be too. Some of it has to do with the players involved, right? If my highflyers that are involved in that conversation, well, I better address it because they're going to be off which is going to set many others off too. Whereas on another day someone might come talk to me about something that they are worried about her something that is happening, We can talk about that and a side conversation and not turning into the whole group thing, because they are able to have a different kind of control over it. I don't want to put it in any kind of hierarchical order—not a better kind of control, just a different kind of control. Just as Connor had a different kind of control over his fears as opposed to what Jacob and Matthew and Sebastian were doing.

values and
prioritizes student
interest

internal diversity

Situation 3 - Section Two: Illustrating Complexity

To illustrate how the complexity principles are woven throughout the situation, I have provided a detailed visual with narration. Click on the following link (<https://www.youtube.com/watch?v=4oOisoJM2fw>) to view this screencast, entitled “Situation 3 – The Tornado.”

Summarizing the Situation

This screencast shows how the complexity principles work as a system in this particular situation. In the beginning, neighbor interactions between Jacob and Connor are frequent because of how differently they are reacting to the possibility of a tornado, which is indicative of their internal diversity. The intensity of these interactions escalated, which required the teacher to adapt the planned curriculum to address the concerns of the group. To alleviate these concerns, the teacher connected the conversation to previous learning.

Situation 3 - Section Three: Alternatives to the Teacher’s Decision-Making

If Mrs. M had chosen to ignore the escalating interactions between Jacob and Connor and proceeded with her planned lesson, the outcome of this situation may have looked much different. For example, Jacob and Connor’s concerns would have gone unaddressed and their behavior may have disrupted the class to the point of chaos. Simply disciplining the boys for interrupting the lesson would have done nothing to dispel their fears. They might have carried their concerns throughout the day, which would easily have distracted them from learning.

Situation 4 – “Recess Discussion”

The next section will discuss Situation 4, “Recess Discussion.” Section one charts the original transcript, follow-up interview, complexity principles, and teacher beliefs/values. Section two provides a detailed screencast of the situation, highlighting the principles of complexity. Section three discusses alternatives to the teacher’s decision-making.

Situation 4 - Section One: Chart

The chart below is the fourth situation that demonstrates adaptive teaching. Situation 4, entitled “Recess Discussion,” involves a group of students (all boys) that Mrs. M called to the carpet to discuss discipline problems that occurred earlier in the day. The teacher invites the students over to talk about their behavior, but is surprised when the students bring up aspects of her own behavior that they believe she needs to work on as well.

Original Videotaped Transcript

Follow-up Interview Conversation
From Participant’s Perspective

Complexity
Principles

Teacher
Beliefs & Values

Mrs. M states, “I need to see the following people on the carpet. Sebastian, George, Matthew, Kahlin, Jacob, and Kayden.”

Mrs. M: So I obviously have a list of kiddos that I am keeping track of. And I don’t know if it had to do with the time when I was tallying the number of redirections? And I was giving them a limit--like, I will redirect you only so many times but if I have to redirect you more than this, then you’re going to owe me some recess time.

The boys willingly come to the carpet and sit down. Mrs. M also joins them and sits on the carpet. Mrs. M asks, “What do you notice about our group here?” One of the boys notices that there are only boys sitting on the carpet and comments, “There are only boys here.” Mrs. M says, “I noticed that, too.” Then Matthew explains, “Because boys are bad?!” decentralization

Mrs. M: So the question was what you notice about the group here. They had, in the past, been very verbal about noticing some of the discrepancies in the groupings that were going on. You only call on... like, Deosha [an African-American, female student] would say, ‘You only call on the white kids.’

Annie: Really?

Mrs. M: Or, um, Kahlin would say, ‘You are only calling on the girls,’ right? So they were noticing and pointing out those kinds of things.

Annie: Was the intent behind your question for them to notice that it was all

boys, or that their behavior was off?

Mrs. M: My intent right there was to notice that it is all boys here with me right now, and we need to talk about why that is.

“Is that it?” Mrs. M asks, referring to Matthew’s comment. Sebastian reiterates, “Boys are bad?” Several boys look at him, including Kahlin, and comment, “No!” Mrs. M asks, “What you think about that?” Sebastian responds, “That means all the boys don’t get recess and all the girls get recess.” Kayden looks at him and says, “Oh don’t go that far, Conner’s not here.” Another boy chimes in, “or Ashten,” and another, “or Wesley.” “It’s not all the boys but it’s most boys.” Matthew says, “Okay it’s these boys,” to which Mrs. M responds, “Matthew I would even like to argue that. None of you are bad.”

neighbor interaction
& self-organization

Mrs. M: Did you hear what Matthew was saying? Because that’s where he goes, you know? He goes to that dark place of, ‘I’m being bad.’ And I know that he gets that from older brothers who have acted that same way in my other classes. So it’s a good learned behavior. I was hoping this conversation... I wanted them to notice it was all boys with me. I wanted them to see it wasn’t all boys, but I also wanted to have that conversation of why it’s only boys now.

Kahlin: Sometimes we are.

Mrs. M: I disagree with that. I disagree with that.

Sebastian: I’ve done my very best.

Mrs. M: Thanks for that, Sebastian. But I disagree with that Kahlin, and here’s...

Kahlin begins to speak.

Mrs. M: Can I just give you my explanation and then you can add?

decentralization

Kahlin agrees.

Mrs. M: You are not bad, she says addressing the whole group. But you’re not. Just sometimes, you forget about making good choices. It’s about good choices and maybe not so good choices, right? It’s not about being bad, she reemphasizes. You are good kids but sometimes you forget to... she pauses.

George finishes her sentence: Make good choices.

Mrs. M: Make good choices, exactly.

Kahlin begins to speak.

Mrs. M: Okay I’m listening. And she sits back.

Kahlin: We are not bad, but see that there are more of us?

Mrs. M: That's bothering me a little bit.

Matthew: We have more girls in the class than boys.

Mrs. M: We do have more girls in the class than boys.

Kahlin: See, you treat girls more politely than boys in the class, he says using his hand to gesture.

Mrs. M: Let's talk about this. What you guys think about that?

Kahlin: When you do helper of the day, all girls call on this girl, that girl, this girl, that girl, and it's not fair.

Sebastian: And they only call, like one boy.

Mrs. M: Wow.

Jacob: Maybe you should start calling on all the boys. Several boys chime in and agree.

Mrs. M: Let's go back to the first... since this really isn't about helper of the day problems, let's go back to your first issue [touching Kahlin's leg] about I am more kind... she pauses. How did you put that? I'm more polite to the girls. Let's talk about that. Why do you think you feel that way?

centralized to
decentralized control

Kahlin: Because girls get trouble you don't put them in too much trouble. When they're in trouble, you just tell them to be quiet. Then they keep talking, keep talking, keep talking, and then you don't do anything. And then when the boys talk, you say 'be quiet,' and the boys are quiet for a minute, and then a boy talks and you say, 'GO TO THE TABLE!' [referring to the next step in discipline Mrs. M takes when students are not listening] and then they're in trouble.

In the meantime, the rest of the boys are listening to Kahlin and are watching the interaction occur.

Mrs. M looks around at the other boys and says, "Do I do that?" Kayden responds, "Yes."

Mrs. M: Yeah? I'm so glad we're having this conversation, you know what? I don't like that I do that.

Sebastian says something, but it is inaudible.

Mrs. M nods and says, "You know what I'm going to do? I'm in work on that part," putting her hand to her chest, "of being more fair. Because I hear you say that that is not fair."

adaptability

Matthew: Maybe you should call on boys now. And get the girls in trouble.

Kahlin: No! No!

Mrs. M: That doesn't sound fair, right? What I was wondering is... Sebastian sits up on his knees and starts wiggling his arms back and forth talking off topic, while Matthew darts out of the group and grab a block from a nearby student who was playing with it.

*Mrs. M: Sebastian... **See, it's behavior like this that makes me have to call you out, Matthew!***

centralized control

Matthew: Because I want to have fun and not be bored, he says in a whiny voice.

Mrs. M: You know what, I want you to have fun too, but to have fun you have to listen to directions and follow the expectations.

Kahlin: But Sebastian, didn't I tell them to stop stealing your Jiji [referring to a penguin necklace he received from a fundraiser]?

Mrs. M: This sounds like something new, she says stopping him from speaking further. So back to what you were saying about me being more polite... I'm going to work on that. But I was wondering if I call boys out more because they aren't listening as much as the girls are.

George: What about both girls and boys listening better?

Mrs. M: I'll try to point that out a little bit more. That might help.

Annie: Do the girls say the same thing? Because you have a group of girls that can get in trouble, right? Do they say the same thing? Like, 'you only get the girls in trouble?'

Mrs. M: No. I've never had that conversation. I think they are very aware of the whole picture. I mean, Deosha would definitely call me out on only picking on her, right? I only called her out. I do get that conversation with her sometimes, but as a whole I am not hearing or haven't heard that.

Annie: Do you think they are more sensitive for reason? You have this whole conversation about only picking on the boys, but you hear it sprinkled through conversations here and there. Do you have an idea why they feel like they are being excluded as boys?

Mrs. M: I think that their behaviors are called out more. I mean obviously, you know, Kayden and Sebastian probably, in a different setting, would not be having that conversation with me because I hadn't called them out as much. But I think I do call them out more. To me, this isn't an equity issue. [laughs] I

call you out when I reached my limit regardless if you are a boy or a girl. But that whole attempt, when we were doing that... of course I wasn't prepared for Kahlin to call me out on it, right? But I wanted to show--I wanted to build relationships by showing that I am willing to work on this and that I will do what I can.

Annie: What would be the best sort of outcome that could happen after having a discussion about it like this with the boys?

Mrs. M: I think that just listening to each other and knowing that we are listening and hearing each other, like they knew I was listening to them, that hopefully that would pay off further down the line. Also knowing that even teachers aren't perfect and make mistakes themselves--I needed them to know that too. If we, as adults, can show that we can make mistakes and work to fix them just like they could.

Kahlin: My problem is that, we are doing something totally different and do you call a girl... you know that right?

Mrs. M: No, I need you to tell me more.

Kahlin: Like when you call a girl, and we're doing something different in the class, and you say [to the girl] 'you can choose someone' and they choose their friend instead of other people that aren't their friend. Like C'Maria will call on Deosha, and Deosha will call on Kashia, Kashia will call on Aloni, Aloni will call on Jasmine.

Mrs. M: Now he's bringing in the gender issue, beyond me, and opening up again to when we call on our friends. And you know what? Think about some of those recent changes that have happened... I mean as far as calling on friends, when Deosha earned her lunch with a friend, we would've all expected her to pick C'Maria, right? But she ended up with Brooklynn. And she told Brooklynn, 'I'm picking you because you are always being respectful and making good choices.' So, even though it was a girl, I'm hoping that they saw that was pushing her, right? Outside of her comfort level, from what she really probably wanted to do. I mean I know she really wanted to have lunch with Brooklynn, but I mean not picking a best friend--that takes a lot of courage. And C'Maria was probably very disappointed, but did not show it. She's very fine with it, and no behaviors have escalated because of it. I'm sure they've had that conversation privately amongst themselves. They were aware that these

values student growth beyond academics

recognizes the importance of developing connections with students

boys are having this issue about how you always pick your friends, so it's stretched us to think, even if just a little bit.

Annie: Yes, you even address it here about how we pick our friends over and over again because they are our friends.

Mrs. M: But I noticed that when you go... She is interrupted by Sebastian. Excuse me. I'm going to finish with Kahlin here. When you go to work on Daily Five, you are always seeking out George to do Daily Five with.

Kahlin nods.

Mrs. M: You want to stand by him and you want to eat with him at lunch. You want to play with him at recess, right?

Kahlin nods with a slight smile on his face.

Mrs. M: Because you guys are friends. That's what friends do.

Kahlin: If you have a friend in second grade, you would want to call on him all the time?

Mrs. M: You know I hope that I wouldn't, but I'm afraid that I might. My friend from second grade was name was Lucy. And Lucy and I did things together all of the time. I feel like I would've called on her a lot. And that might not have seemed fair.

connectivity

Matthew: When Kashia was in the corner, and they were reading their book and they didn't have to come over.

Mrs. M: So we can stay here and continue to talk about this, but I'm afraid if we do you won't have any recess time. I would rather you get some of your recess time.

Matthew: But wait one more thing. When you call Haley to come over [because she was misbehaving], she didn't listen. She just stayed there, remember?

Mrs. M: I don't remember. That's a problem I forgot about that. That wouldn't have been fair. It's so hard to keep track of everybody, especially when they're not doing what they're supposed to do. Do your parts, right?

Kahlin: Yes, Mrs. M. The group is dismissed.

Annie: So that was actually accurate.

Mrs. M: Yeah, I'm sure it was.

Annie: How do you balance all of that?

Mrs. M: Sometimes I let it go because when I do it, they end up resetting and we are able to go on with our lesson, and everybody is able to do what they need to do. But then, it's that consistency piece that fails sometimes because

then the next time the same thing happens and it escalates beyond that or whatever. I struggle with that.

Annie: I've noticed that you value what the students have to say, their interests, you always put them first. And you really want them to do it for the sake of learning. You want them to behave because you want them to learn. There is such a desire in you for them to do the right thing for their own sake. Is that accurate?

Mrs. M: Yeah. I do hate it though because I'm such a... I want consistency, right? I desire that. My 48-year-old mind doesn't always support that. So if I get lost in the lesson again after I've called somebody back, I just depend on them to follow the directions and do what I told him to do. And then they don't, well then they are getting away with it and I don't like that. And that's why... no doubt that happened.

Annie: Well this segment is pretty much over. I know it was a long time ago, but is there anything that you saw afterwards?

Mrs. M: There have been some shifts in our community. We've had more days when everybody is able to put themselves and their peers first. When they're able to stay on task and can do what they're supposed to do and be respectful of each other. We are having more of those days, now that summer is here, of course. Not always, obviously, we've had some real doozy other days, but those doozies happened all of the time at the beginning of the year.

Annie: I noticed some differences as well. With Jacob and with Sebastian in particular.

Mrs. M: Yeah and I've been more explicit when somebody was setting him off. [Saying], 'You need to look at what your behavior just did' and talking about how we are going to prevent it next time. And they have definitely been, um, had more empathy toward him been trying to help him through that. You don't hear anymore, 'Ew, Ellie is gross!' like we used to hear, right? I think they're more accepting of her as a person and important person in our community, even though she is definitely very different from the rest. **That's what I am expecting, that we are going to treat each other like human beings.**

one of the goals Mrs. M articulated earlier

Situation 4 - Section Two: Illustrating Complexity

To illustrate how the complexity principles are woven throughout the situation, I have provided a screencast. Click on the following link (<https://www.youtube.com/watch?v=miaSJS8mCuU>) to view this screencast, entitled “Situation 4 – Recess Discussion.”

Summarizing the Situation

This screencast shows how the complexity principles work as a system in this particular situation. The teacher invited the students to the carpet to discuss their behavior in a decentralized manner. She encouraged neighbor interactions by asking open-ended questions and connecting personal stories to the topic of discussion to bolster her rationale. She balanced centralized and decentralized control by reprimanding disrespectful behavior and gently guiding the conversation back when the students get off topic. Finally, she demonstrated her adaptability throughout the situation by carefully navigating the discussion and agreeing to work on some of the issues the students brought up.

Situation 4 - Section Three: Alternatives to the Teacher’s Decision-Making

If a less adaptive approach was used during this situation, several things about this scenario might have been different. This discussion might never have happened. Mrs. M chose to facilitate a discussion of the boys’ behavior in a decentralized manner, whereas another decision would have been to simply hand out consequences for negative behavior instead of talking it out. Similarly, by encouraging the discussion to be an open forum, the boys were able to reach their own conclusion that “boys are not bad” because they realized that not all of the boys in the class had been called to the carpet. Finally, a less adaptive teacher would likely not have taken the boys’ critiques to heart and promised to work on his/her shortcomings.

Cross-Case Analysis

Looking across all situations, as well as at each situation individually, three findings related to this research will be discussed. The first section reviews the first finding: Successful adaptation occurs when the teacher (a) recognizes the unpredictability of the classroom situations, and (b) understands that the classroom is comprised of working parts and that she must respond in ways that adapt to students' social and academic choices, needs, and interests. The second finding reflects the link between proficiency in teaching content and the teacher's confidence level. The third finding is that the choice of whom to engage, as well as maintaining engagement throughout the situation, is important when facilitating an adaptive situation. Examples of the tensions between what Mrs. M believed was best for her students and how the district would like her to teach are also discussed.

Section One: Successful Adaptation

The first finding can be summarized as follows: successful adaptation occurs when the teacher (a) recognizes the unpredictability of situations, and (b) understands that the classroom is comprised of working parts to which she must respond in ways that will be adaptive to students' social and academic choices, needs, and interests. In all four situations, there was a moment that occurred beforehand, in which the teacher recognized that the situation required adaptation. Take, for example, Situation 1. In this scenario, the teacher needed to adapt because Kayden's behavior was threatening to derail the progress of the reading group. In our follow-up interview on March 5, 2014, Mrs. M commented on her attentiveness to what was happening:

I was very aware, and I could tell . . . his verbal effects told me that he was really disappointed with that decision, so I thought I'd better get in there and see what that second choice is before somebody else takes it, otherwise he's going to be crushed. (p. 3)

Another child may have simply chosen another role if his/hers was taken, but Kayden's response was potentially threatening to the interactions he would have with his peers and with the curriculum.

To make the situation more complex, Mrs. M was also aware of other individual personalities in the group and attempted to alleviate other potential problems before they arose. After Zahirah agreed to play the role of the woman, she quickly asked Sebastian which role he would like knowing that "if he doesn't get his way can really melt down. He would have originally been my second choice [after Brooklynn] if I hadn't seen Kayden melt down. I wanted to try and avoid having a Sebastian tantrum" (p. 4). Mrs. M assessed all of these working parts, and successfully adapted the situation so that an environment conducive to learning could be maintained.

In Situation 2, Mrs. M displayed an acute awareness of Ellie's disruptive behavior, evidenced by her consistent check-ins with Ellie during the robin-making project, though she chose to mostly ignore it at first. But when Ellie was coincidentally listed next to lead Morning Meeting, Mrs. M viewed the situation as "an opportunity to get her on task with everybody else" (FUI, 4/11/14, p. 5). This only solved part of the problem, however. It soon became clear that Ellie was struggling with locating and reading the date, which was a surprise to Mrs. M: "I was counting on her to know 'first' and she wasn't even ready to [identify] 'first'" (p. 6). To remedy this, Mrs. M encouraged peer support--a decision that not only benefitted the situation at hand, but also prompted new social interaction with this peer later on in the day.

In Situation 3 when Jacob and Connor exhibited their strong and diverse reactions to the weather, Mrs. M chose to ignore it at first, which was similar to Situation 2 with Ellie. But then, "I felt that the topic was going to cause more conversation with everybody that could have

prolonged everything, so I thought that if I asked them to acknowledge that fear as a group, we could get through it faster” (FUI, 4/3/14, p. 4). This decision demonstrates the complexity evident in Mrs. M’s thinking. When asked how she sensed that this was an important enough topic to discuss with the entire class, Mrs. M responded, “Some [of the decision] has to do with the players involved. If my highflyers are involved in the conversation, well I better address it because they’re going to be off, which is going to set many others off, too” (p. 6). She recognized the influence that some students had over others and addressed the issue head-on, before the students got out of control. She used her prior, complex knowledge of the students to make a quick decision, but one that evidenced consideration of complex personalities and a history of many previous decisions in a rapidly changing environment.

In Situation 4, the initial choice to call the boys to the carpet showed that Mrs. M recognized that the boys’ behavior was having a negative impact on their learning and on the rest of the class. She constantly shifted between a centralized and decentralized position as she attempted to facilitate a delicate discussion about their behavior, while at the same time, disciplining Matthew for not paying attention and being disrespectful.

The examples listed above illustrate how Mrs. M recognized that unpredictable occurrences in the classroom require adaptation and that she carefully considered how to be responsive to the students’ needs in order to reach her goals.

Section Two: Proficiency and Confidence Link

The second finding from this study is that proficiency is closely tied to confidence. In our initial interview, Mrs. M stated that formerly she was less confident in literacy and then she worked hard to develop these skills through various professional development avenues (i.e.,

Reading Recovery, The Writing Project). Her commitment to her own growth in these areas built her proficiency in using these skills and knowledge with her students.

In Situation 1, Mrs. M facilitated a small, leveled *reading* group--a content area in which she verbally expressed pedagogical confidence, supported by her education and background experience. Her proficiency in this content area was made more apparent when she easily chose to move away from prescribed curriculum and selected a play for the students to read, because she had a large repertoire of resources from which to choose.

The decision to facilitate a small group reading lesson around a play chosen by Kayden did not come easy for Mrs. M however:

That's a constant struggle for me, how much am I going to let them do what they want to do, and what they want to learn? How much of that curriculum timeline, phasing guide, or Common Core book am I going to follow and when I'm going to let some of it go? (II, 2/10/14, p. 5).

This choice is indicative of the tension she felt between honoring student interest and teaching what the district required of her.

In Situations 2-4, the applied content knowledge was less subject matter based and more centered on proficiency in social-emotional learning which, according to Weissberg and Cascarino (2013), is the acquirement and application of knowledge and skills necessary to understand and manage emotions, set and achieve goals, feel and show empathy for others, maintain relationships, and make responsible decisions. During our frequent conversations, social-emotional learning was of utmost importance to Mrs. M:

To me, if I cannot send out decent human beings who care about each other and themselves, I could care less if they could read or write. Because, if they don't

know how to be successful in the world, about getting along with each other and respecting themselves, the none of it matters to me. And you have no doubt seen that, I mean, it is the heart of what I spend time with. You were going to find... no doubt, that the social emotional issues trump every other decision that I make, you know? (FUI, 5/16/14, p. 5)

State standards require teachers to work toward developing students' social and emotional skills. Mrs. M's expertise in addressing social-emotional learning was exceptional, evidenced in her persistent, yet gentle interactions with Ellie, the honest conversations she had with the boys during the recess discussion, and her diverse responses to Jacob and Connor regarding the tornado. In these situations, Mrs. M knew that learning could not proceed if the students did not feel comfortable, or were distracted, and she chose to address these nonacademic issues first.

These situations also demonstrate Mrs. M's recurring tension between what she believed was best for students and what was required by the district; these tensions were evident throughout her teaching decision-making. These tensions demonstrate the complex balance that Mrs. M felt in her attempt to teach the whole child and to negotiate the required curriculum that often didn't meet the needs or match the interests of her students.

Section Three: Engagement

The third finding was related to Mrs. M's ability, as an adaptive teacher, to strategically engage with students. Situations 1 and 3 involved strategic choices of who to engage with, whereas 2 and 4 involved choices to consistently re-engage students throughout the situation. Note that in Situation 1, Mrs. M chose to engage Zahirah in a particular way in order to alleviate the impact of Kayden's meltdown. If she chose to address Kayden at this moment, she probably

would have either brought more attention to his frustrations, and/or prolonged his melt down. Her choices allowed for everyone to proceed with the lesson with minimal interruption. In Situation 3, although the conflict was between Jacob and Connor, Mrs. M chose to engage with the whole class in order to show the boys that their concerns were valid and shared by many of the other students.

In Situations 2 and 4, the issues were less about who to engage with and more about maintaining engagement throughout the lesson. In Situation 2, Mrs. M used several techniques to keep Ellie moving forward, including using clues, prompting, and providing help from her neighbor peers. Maintaining engagement with Ellie throughout the situation accomplished two things: Ellie was able state the date and Mrs. M provided an example for the rest of the class of how to persevere through an uncomfortable situation.

Similarly, in Situation 4, Mrs. M provided an open forum so the boys would be comfortable speaking their minds. In order to resolve one of the main issues, Mrs. M needed to continuously redirect the conversation by using statements/questions such as, “*What do you guys think about that?*” “*Let’s go back to the first issue*” “*So back to what you were saying . . .*” These were gentle reminders for the students to get back on track, and they responded accordingly. In the end, everyone felt like they were heard and agreed to continue working on their behavior. Mrs. M agreed to do the same.

In each of the four situations, Mrs. M’s strategic choices regarding who to engage with and how to maintain the engagement, ultimately led to successful interactions between the teacher and students (and between students) and progress towards her learning goals. Her expertise in social-emotional learning was particularly helpful in these engagements as well.

CHAPTER FIVE

For this research project, I used the literature on adaptive expertise and complexity theory to construct a working definition of an adaptive teacher who is able to view the classroom as a complex adaptive system. In this chapter, I consider the relation of this definition to the findings from my case study of Mrs. M and address the specific types of decisions that are made by this teacher. I also discuss the potential implications this research may have on the teaching profession and teacher education. Finally, I discuss future plans for this research.

Defining an Adaptive Teaching Expert Using Empirical Evidence

My first research question was, “What are examples of adaptive teaching expertise in an elementary classroom viewed as a complex adaptive system?” To begin answering this question using analysis from the four situations, it is necessary to revisit my definition of an adaptive teacher drawn from the literature: Adaptive teaching expertise requires a person who is proficient in applied content knowledge (Fisher & Peterson, 2001; Vogt & Rogalla, 2009), who uses flexible, adaptive abilities (Verschaffel, Luwel, Torbeyns, & Van Dooren, 2009), and who is able to efficiently and strategically shift actions to meet the needs of his/her learners using sound decision-making skills (Crawford, Schlager, Toyama, Riel, & Vahey, 2005; Darling-Hammond & Bransford, 2005; Sosla, 2012), when faced with unpredictability in the learning environment. Breaking this definition into parts allows me to show how Situations 1-4 can be classified as adaptive.

Proficiency in applied content knowledge. Consider the first part: “A person proficient in applied content knowledge.” Mrs. M’s proficiency in teaching literacy is clear, based on her experience, education, and ease of adapting the curriculum. However, this idea can also be examined by looking further into a non-literacy example. During the follow-up interview on

April 23, 2014, Mrs. M commented, “As someone who doesn’t have a math focus--[who] has a literacy focus--I depend on the math curriculum a little bit more than I rely on my own” (p. 6). This contrasts with what occurred during many of the adaptive cases where Mrs. M made a conscious decision to move away from the curriculum. Mrs. M admitted that *if* she received “more math professional development, that would help me guide my thinking around these decisions” and “I [would] be further along in my confidence of my abilities” (p. 6). This suggests that teacher professional learning and development lead to increased skill and confidence, and by assumption, more adaptability in teaching. In further support of this potential relation, I did not see the same kinds of adaptive examples while Mrs. M was teaching math. Math instruction was more teacher-directed with fewer instances of moving away from the textbook and fewer adaptations to student differences and behaviors.

Adaptive decision-making. The next two parts of the definition, “uses flexible, adaptive abilities” and the ability to “efficiently and strategically shift her actions to meet the needs of his/her learners using sound decision-making skills” will be discussed together, situation by situation, below. These parts of the definition speak to my second research question, “What kinds of decisions did the teacher make in response to student needs and the complex environment of the classroom?” The documentation on Mrs. M’s teaching decision-making shows that the decision-making rationale and strategies were influenced by a combination of cognitive, motivational, and personality-related components.

Situation 1. Mrs. M “uses of flexible, adaptive abilities” when she chose to move away from the prescribed curriculum and select a play for the reading group. Remember that Mrs. M follows a set routine each day during her literacy block that loosely follows a curriculum format called “Daily Five.” While the majority of the class is engaged in various reading, writing, or

listening activities by themselves or with a partner, the teacher leads an ability-leveled guided reading group. Ordinarily, the teacher selects the books the students read in their reading group. During this particular situation, she chose to “let go” of the curriculum a bit and selected a play for the students to read. This decision was deliberate because of a previous interaction the teacher had with one of the students in the group:

Mrs. M: Did you get what led us to the play to begin with?

Annie: Yes, the Magic Treehouse?”

Mrs. M: Yes the research guide, um, they got really excited about that and Kayden, I believe it was, wanted to break it down and do some readers’ theater with it. And I just . . . if I was a really good teacher I would find a way to do that, but I decided we would just take the research guide, which is a genre itself, that they had not really explored yet--that nonfiction piece that matched the fiction we were reading together in social studies. But just keep that filed away that he wanted to do some readers’ theater. That’s what led to this play. (FUI, 3/5/14, p. 2)

This dialogue shows how the teacher thought about capturing the students’ attention and motivating them to learn, and she integrated this into her teaching. Her decision not only uses her knowledge about the students to set up an environment that promotes student interest, but also creates an interdisciplinary opportunity to link the current reading/discussion to students’ previous learning.

In our initial interview, Mr. M raises another tension about how stifling the curriculum could be for both her and the students. When asked, “When do you feel most creative when teaching?” she responded by saying that when she relied on curriculum from textbook programs, “the creativity is just sucked out of you” and “I’m most creative when I let the curriculum go”

(II, 2/10/14, p. 7-8). The tension is further illustrated when she admitted that “that message ‘trust the curriculum, trust the curriculum’ still grinds in my head” (II, 2/10/14, p. 7-8). By choosing to read the play instead of a program-issued reading text, one could argue that Mrs. M demonstrated a creative choice, which in turn, contributed to increased motivations for her students. This then led to a related independent activity for Kayden and Zahirah.

Another time she demonstrated her adaptive abilities was when she encouraged the students to choose their own roles. After the decision was made to read the play, she offered the opportunity for the students to choose their roles: “*Take one minute and look through . . . You might pick a first choice and you might pick a second choice in case somebody else takes that first choice*” (FUI, 3/5/14, p. 2). This decision showed that she wanted the students to take ownership of their learning. She recognized the unique personalities of the students in the group and commented that they “are very patient” and “work well together” and she thought they would be able to handle choosing their roles (p. 2). Despite the risk of conflict of two students choosing the same role, and knowing that if Sebastian “doesn’t get his way he can really melt down,” Mrs. M pursued the decided to give the students choices (p. 2).

The decision to give students a choice of roles tested the teacher’s adaptability. Once the students decided, Mrs. M was strategic in deciding whom to call on, and when. In the follow-up interview, Mrs. M comments that she called on Brooklynn to choose her role first because she was sitting “the most respectful” and was “the most in control” (FUI, 3/5/14, p. 4), which makes sense as Mrs. M values structure and order. This decision set off a chain of events that called for the teacher’s continued adaptability.

Once it became clear that there was an issue with Kayden not getting the role that he wanted, and that he would potentially fall apart, she made several strategic decisions to get the

students back on the track. She first glanced over the roles and assessed which ones were left after Brooklynn chose the part of the sun. They included Narrator one, Narrator two, the man, and the woman. In the follow-up interview, Mrs. M reflected,

I knew I had to fill that woman spot, and though this group would probably be flexible enough to take on that woman role and not let it be a big deal whereas if I was working with Group 2, say, and I had Kahlin and Matthew and some others, who if someone was to be stuck with that role, it would have totally flopped because they would have been made fun of. (p. 4)

The series of decisions Mrs. M makes in sequence are all based on considerations related to the students' individual personalities, histories, and social abilities. She later noted that gender issues could have been raised discussion how actors play roles of all kinds, including those of a different gender, but realized "it wasn't a battle I wanted to choose" at the moment. She was interested in getting the students started with the play.

Situation 2. In Situation 2, there were three instances of decision-making by Mrs. M that shows her flexibility and adaptability. The first includes the teacher's decision to invite Ellie to be helper of the day, despite her distracting behavioral issues. Mrs. M chose to ignore most of Ellie's upset behavior while, at the same time, keep a watchful eye on her. When the moment came that the scheduled helper of the day was absent, and Ellie was next on the list to help, several components came together to turn a potentially negative situation into a positive one. First, Mrs. M makes a conscious decision to give Ellie a chance to lead the group. She stated, "*And today would be Amina's day if she was here, but she's not here this morning, so Ellie it would be your day, but I'm not sure--are you ready?*" (FUI, 4/11/14, p. 4). During the follow-up interview, Mrs. M admitted, "What I really wanted to say was 'Obviously you're not ready,' but

instead I pulled myself together and asked her if she was ready to take on this responsibility for the day” (FUI, 4/11/14, p. 4). Mrs. M was motivated by her own goals of wanting all of her students to succeed, and was flexible enough to take on the potential extra challenge of having Ellie lead the Morning Meeting.

The second decision the teacher made was recommending that Ellie compose herself before leading the class in Morning Meeting. Though Mrs. M was surprised that Ellie wanted to be the leader--“I was not expecting her to be able to take that on. I was expecting this to escalate”--she followed through (FUI, 4/11/14, p. 5). She suggested that Ellie “*go and get a tissue and dry your tears. I think that will help.*” This was a strategic move. Mrs. M was successfully able to get Ellie to calm down, and modeled for the class what it takes to pull oneself together after having a meltdown.

The last decision includes the teacher’s decision to continuously re-engage with Ellie while Ellie was leading the group. Even though Ellie volunteered to be helper of the day, it was clear that she was uncomfortable once she began leading the meeting. Mrs. M asked Ellie to “*tell us about the date.*” However, Ellie was unclear about what to say based on her glances back and forth from Mrs. M to the calendar, the wringing of her hands, and her non-response. Mrs. M continued to prompt without giving the answer away--“*Yesterday was the first. Where’s today?*” “*Can you point to it?*” When Ellie responded with an emphatic, “*No!*” Mrs. M used another technique: “*Would you like a friend to come and help you?*” When several hands go up in the air, she continued the encouragement. “*Okay, why don’t you pick someone who’s being respectful to come and help you?*” This technique, with prompting, was ultimately successful as Ellie provided the correct answer: *Ellie points to April second, and hesitantly says, “Here?”* Mrs. M gave her a giant smile, and enthusiastically stated, “*Absolutely!*”

After Ellie successfully read the date aloud, Mrs. M made a point putting her arm around Ellie's shoulders in front of the class and saying, "*I'm confident your day is going to get better.*" And Ellie agreed. At this point, Ellie looked visibly more comfortable in front of the class. Mrs. M's patience and gentle cajoling continued to deescalate the situation, while putting Ellie at ease.

Situation 3. Two adaptive decisions were made by Mrs. M that demonstrated adaptability and flexibility. The first includes her decision of when to address the disruptive behavior of Jacob and Connor. At least three off-topic comments initiated by Jacob occurred, two of which prompted responses by his classmates, before Mrs. M chose to address the topic of the weather. In the follow-up interview, she commented about her choice to ignore the behavior at first, and her response is indicative of her enduring personality: "So I'm still trying . . . I must be feeling very generous with my patience. I'm still trying to ignore, hoping that it will go away, and it's starting to escalate, right?" (FUI, 4/3/14, p. 2). Though she could have stifled the disruptive behavior immediately, she focused on the rest of the students who were still engaged with the lesson and "give that the energy." Her decision to address the weather showed her flexibility; she was willing to sideline the planned lesson for a few minutes to address a concern that was affecting her students.

Once she made the decision to discuss the weather, Mrs. M involved the entire class, knowing that if a couple students had concerns, several others probably did as well. Mrs. M's second decision regarding the facilitation of the weather conversation was thoughtful and strategic because she connected the students' concerns to previous learning (e.g., making references to Wemberly Worrier and the Red Cross). Although the students were off-topic, she was still able to make the situation a teachable moment. Additionally, she controlled the amount of time the students discussed the weather, which allowed the students the time to process their

concerns, but not too much time that the students could not transition quickly to the next subject once the concerns were dispelled.

Situation 4. Three specific decisions the teacher made in Situation 4 reflect adaptability. The first is the teacher's decision to bring the boys to the carpet for a discussion. Mrs. M chose to pull the six boys to the carpet to discuss a bigger issue. She did not talk about the specifics of why each boy was "in trouble" for that particular day, but rather she wanted them to voice their opinions about the "discrepancies in the groupings that were going on" (FUI, 5/16/14, p. 7) regarding her alleged difference in treatment of boys compared to girls. This decision shows that she values what the students have to say, and wanted to model how "just listening to each other and knowing that we are listening and hearing each other . . . would pay off down the line."

The next decision includes the teacher's continuous redirection to clear up any misconceptions about "boys being bad" and favoritism towards the girls. Mrs. M reflected that she didn't think this situation "was an equity issue." She stated that, "I call you out when I've reached my limit regardless if you are a boy or a girl." Nevertheless, several of the boys felt that it was an equity issue, evidenced by several of their comments like Mrs. M "*treats the girls more politely than the boys*" (FUI, 4/16/14, p. 10). Though she didn't feel the same way, she validated these comments by initiating further conversation about them: "*Let's go back to your first issue...How did you put that? I'm more polite to the girls. Let's talk about that. Why do you think you feel that way?*" Even when the students got off topic, she redirected them to talk about the original issue: "*This sounds like something new,*" she says stopping him from speaking further. "*So back to what you were saying about me being more polite . . .*"

The last decision the teacher made was to recognize her wrongdoings and model how to move forward. After Mrs. M acknowledged that some of the boys felt that she favors the girls

over the boys, she promised to “work on this” because she values “build[ing] relationships” with her students (FUI, 5/16/14, p. 10). She knows that adults make mistakes sometimes and made it clear to the students that she wanted to fix the situation. At the same time, she pushed the conversation to prompt the boys to look at their own behaviors, and challenged some of their statements:

But I noticed that when you go to work on Daily Five, you are always seeking out George to do Daily Five with. You want to stand by him and you want to eat with him at lunch. You want to play with him at recess, right? Because you guys are friends. That’s what friends do. (FUI, 5/16/14, p. 11)

Kahlin recognizes the truth to her statement when he smiles slightly and agrees.

Unpredictability in the learning environment. Teachers are often faced with unpredictability in the learning environment. Often, unpredictability can be seen as a challenge-- something that disrupts the flow of teaching and learning. In an elementary classroom, these are numerous and frequent, including behavior issues, personality conflicts, a mismatch between learning styles and curriculum, learning differences, interruptions in the schedule, etc. An adaptive teacher must anticipate challenges and learn to deal with them quickly by minimizing their impact.

In Situation 1, Mrs. M did not let a potential challenge, Kayden’s negative reaction to another student choosing his role, derail the entire lesson; in fact she alleviated the threat of his negative behavior so well, that Kayden was encouraged to continue learning about plays on his own. Similarly, in Situation 2 when Ellie had a tantrum, Mrs. M managed to calm her down and help Ellie mentally switch gears in order to lead the Morning Meeting, while simultaneously modeling empathy and constructive behavior for the rest of the class.

In Situation 3, the weather, was unpredictable and unavoidable. So instead of fighting the students' need to talk about it, Mrs. M spent time discussing their concerns, and inviting everybody to contribute, so that everyone could move forward and focus on the lesson for the day.

In Situation 4, the boys' behavior was a recurring challenge, so Mrs. M invited them to discuss their issues. When she realized she might be part of the problem, she respectfully listened to the students and promised to be mindful of her own actions, all the while reminding the students that they needed to be responsible for their behavior as well.

Discussion

Evidence from all four situations suggests that my working definition of an adaptive teacher was supported by documentation from these four classroom situations demonstrating the teacher's decision-making adaptations. The data also suggest that adaptive teachers were more likely to make adaptive decisions when they were confident in the subject matter they were teaching, and that strategic engagement between the teacher and the students was key in facilitating an adaptive situation.

This working definition is not intended to be a series of traits, or a checklist of observable dispositions. This would be a reductionist approach. The evidence from this research can, however, be used as a case of how a teacher's adaptive practices in her classroom met each of the characteristics of my definition of a complex adaptive teacher. This is explained in further detail in the implications section.

The tensions discussed in Chapter four, identified in selected quotes from the follow-up interviews, illustrated the dilemma between how this teacher would have liked to teach and what was required of her by the district. Mrs. M's desire to honor student interest and build students'

social-emotional learning often conflicted with the required curriculum. She was torn between doing what she felt was right for her students while at the same time needing to fulfill the academic obligations laid out by the administration. Mrs. M's internal struggle with these tensions intensified an already complicated teaching situation and added another layer of complexity to these situations.

This chapter addresses my second research question regarding the decisions teachers make in response to student needs and the complex environment of the classroom. Each situation described in the section "adaptive decision-making" outlines several decisions made by the teacher within selected classroom examples. These decisions, influenced by cognitive, motivational and personality-related factors, demonstrated her adaptability. Noteworthy decisions made by Mrs. M included her decision to "let the curriculum go" in Situations 1 and 3, as well as her choices to prioritize the students' social-emotional learning over the planned academic curriculum shown to different degrees in all the situations. All of these decisions demonstrated persistence, and took into consideration the students' individual personalities, interests, and motivations.

Implications

This research has implications on three issues often cited in teaching and teacher education. These include bridging the perceived "gap" between theory and practice, providing a more holistic view of teaching, and empowering teachers and teacher candidates to take an active role in learning to be an educator.

Strengthening the Theory and Practice Connection

Creating and maintaining a seamless integration of theory and practice has been a constant struggle in teacher education (Korthagen & Kessels, 1999). Many teachers question the

need for theory, stating that they describe themselves as down-to-earth practitioners rather than theorists (Lawton, 2012.) Still others have complained that their preparation had over-emphasized theory and neglected the practical aspects of teaching (Joyce & Showers, 2003). These teachers do not see the relevance between what they are doing in the classroom and the larger ideas that provide the framework for understanding how or why these practices are appropriate. Part of this thinking occurs because teachers often perceive theory as abstract and disconnected to practical context. It is the responsibility of teacher education and on-going professional development programs to demonstrate the interactivity of theory and practice.

Many current teacher education programs make an effort to weave theory and practice together in the way they design their programs. A typical program begins with foundational coursework, after which the candidates participate in early field experiences conducted in tandem with methods coursework. Their preparation often concludes with a semester or two of student teaching. Quality programs integrate as much of the course work with supervised clinical experiences in an attempt to relate theory and practice (Darling-Hammond, 2006).

This approach is helpful in creating cohesion between the university and P-12 school; however, there is an assumption that deep connections are being made simply because candidates are spending time in the classroom and talking about their experiences in their courses. The same argument can be made for professional development conducted over a series of workshops, with time given afterwards for teachers to debrief. How these experiences are interpreted and discussed is a big factor in developing meaningful connections between theory and practice and, more specifically, how theory and practice can be integrated for teachers (Korthagen & Kessels, 1999). Teacher education candidates and teachers must experience how theory is demonstrated in practice using concrete examples. With this research, I offer one way to do just this.

Viewing the classroom theoretically as a complex adaptive system serves a practical purpose. When teachers see the classroom as a dynamic, interrelated system, it becomes easier to recognize unpredictability and respond to students' diverse needs, as shown in my research situations. Tools, like the screencasts I created, make this theory tangible. Teachers and teacher candidates can critically examine each component of a situation and analyze the types of decisions made in detail. Furthermore, they can take examples from their classrooms and critique their own teaching in the same way, which creates even more relevance and personal connections.

Embracing Holistic Teaching

With the recent implementation of the Common Core Standards and other initiatives such as Race to the Top and value-added teacher evaluation, teaching has become increasingly prescribed and evaluated with high stakes testing. Similarly, teacher education programs are increasingly being held accountable for the effectiveness of their graduates as demonstrated through measures of student growth (<http://www.ed.gov/teacherprep>). As the pressure to perform well on tests rises, both teachers and teacher candidates are being technically *trained* with the purposes of executing approved curriculum instead of being *educated* about how to creatively and innovatively navigate the classroom and respond to students' needs (Goodman, 1986).

Adaptive teachers struggle with this reality. I witnessed a powerful example of this one Friday afternoon in May in Mrs. M's classroom. Before viewing a videotaped segment together, I asked Mrs. M a few questions related to curriculum. In response to these questions, she described the district's specific curriculum requirements for literacy, which included a piecemeal approach of using Lucy Calkins method for writing, Jan Richardson's guided reading program,

and the Houghton-Mifflin textbook series, *Journeys*, for whole group reading. All of this would be changing next year because of a new textbook adoption, *Wonders* by McGraw-Hill, which would replace nearly all of the existing reading programs. When I asked her opinion about the literacy curriculum, her tone became sarcastic as she described the new *Wonders* adoption: “Next year, *Wonders* will take over writing, word work, reading . . . because one box has it all!” (p. 3). As we continued talking, her disdain for scripted curriculum was obvious as she began talking about the required benchmark tests associated with this type of program:

I, of course, am not willing to follow the box and the script like some people are. At the same time I look at my end-of-the-year assessments and realize what the hell have I done all year? [laughter] And obviously I realize I don’t have all the answers. At the same time I realize there are just things in the core [reading program] that are wrong for kids. Period. And I don’t want to do things that are harmful for kids. (p. 4)

Despite her laughter and dismissive sarcasm, I could tell her feelings were intensifying. I tried to diffuse the situation by gently suggesting, “[the assessments] only give you one picture, though.” She responded,

I realize, yes, thank you, I realize that. But it is the one picture that my administrator is going to rate my success with. So I have to be more proactive at thinking about what I’m going to use and defend my decisions that I make to be able to show growth. And that overwhelms me right now because, wow . . . [There is a ten second pause and Mrs. M’s face gets red and she begins to cry.] Who knew this was going happen on a Friday afternoon? (p. 5).

This conversation with Mrs. M reflects the extreme pressure there is on teachers to ensure high student achievement as measured by tests; tests that do not necessarily correlate closely

with what she has been teaching. She was worried about the future of her job because of her students' low benchmark scores, despite the numerous examples of exemplary teaching described in this research. The constant tension between knowing what is best for her students, yet needing to conform to the regulations of the district was taking an emotional toll. If this can happen to an experienced, hard-working, highly adaptive teacher, what is to stop it from happening to a novice teacher, struggling just to get through his/her beginning years of teaching?

The challenges in teacher education programs are similar and they must prepare candidates to teach in these kinds of environments. Field experiences for teacher candidates are often focused on teaching specific instructional techniques such as managing basal textbook programs or keeping students 'on task' (Goodman, 1986). Methods courses also are frequently organized to cover one topic at a time, leaving little opportunity for instructors to connect to bigger ideas and discuss how these topics are positioned within the complexities of a classroom.

Understandably, prospective teachers can be overwhelmed by the complexity of teaching, but focusing on instructional techniques one at a time may be doing them a disservice. Complexity theory offers a way to make sense of how instructional techniques are embedded in the larger context of teaching and schooling. For example, in Situation 1, Mrs. M introduces a readers' theater as opposed to reading the textbook. This is an instructional choice, but instead of discussing the benefits of using an interactive reading approach over a basic text, teachers using complexity theory can see how Mrs. M chose this strategy for the purposes of honoring student choice, adapted her approach through discussion and interaction, and how her decisions ultimately led to independent student learning.

Learning how to teach isolated instructional skills and execute prescribed curriculum does little to help educators understand the classroom and its complex, interactive workings.

These approaches do not inform the teacher of students' needs or interests. Without a clear understanding of how these needs and interests factor into decision-making, teachers will have a difficult time making sense of the demands in a complex classroom. Thus, a more holistic approach is supported when theory and practice are integrated and interactive, i.e., when complexity theory is used to understand the dynamics of classroom, adaptive teacher decision-making, and when teaching practice is used to refine one's theoretical ideas.

From Passive to Active Teaching

Field experiences in teacher education provide the opportunity for novices to observe so that they can see how the experienced teacher organizes and manages his/her students and the curriculum. It is also a chance for candidates to confront their beliefs about teaching (McDiarmid, 1990). However, candidates often assume a fairly passive role in their learning because of the way field experience activities are structured. In early field experiences, candidates are encouraged to sit and observe students and teacher, but they are provided little time to discuss what they see. They are given checklists to identify veteran teachers' actions and behaviors. During student teaching, candidates' roles are often more aligned with routine tasks that require little creativity or thoughtfulness (Goodman, 1986), such as executing a prescribed lesson from the textbook. As candidates progress through their student teaching semester, they are required to "take over" and are given the opportunity to create their own lesson plans and activities. However, they are rarely granted autonomy and are carefully regulated by their cooperating teacher, the requirements of the district, and the university evaluations.

Part of the reason field experiences are structured this way is because prospective teachers are, understandably, inexperienced and often intimidated by taking on too much responsibility. Continuing with this passive structure is detrimental because teacher candidates

primarily learn how to fit into the conservative and established patterns of traditional school practices, rather than learn how to become experimental, reflective, active, and adaptive in their approach to education (Goodman, 1986).

In addition, these processes shield novice teachers from developing a deep understanding the realities of teaching. Field experiences are often the time that candidates decide if they really want to teach or not. Teacher educators do them a disservice if they do not present teaching as it is--a complex and unpredictable environment that requires flexibility and adaptability. The earlier prospective teachers learn this, the better prepared they will be to handle it. Nevertheless, this research suggests that learning to teach is developmental and teacher candidates should begin small, i.e., an adaptive teacher builds confidence when he/she is proficient in a content area. Teacher preparation programs provide candidates with beginning understandings in multiple content areas, but teachers must continue to grow their own knowledge of content and teaching. This research suggests that candidates may be more able to be adaptive in navigating the complex classroom in areas where they have better command of the content.

Professional development is often structured similarly to field experiences and student teaching. Teachers sit in short, isolated workshops in which they are talked at, and are often told what they should be doing differently (Levin, 2012). There is little time for active learning or follow-up support, components of professional development necessary to get actual implementation and long-term effects (Garet, Porter, Desimone, Birman, & Yoon, 2001).

In both teacher education and professional development, teachers are rarely given the opportunity to engage with students as part of the learning, and if they are, the experiences are often limited to executing a predesigned lesson or activity. In each of my four situations, the decision of whom to engage with, as well as maintaining engagement with students was

necessary to making successful adaptive decisions. Engaging with students allows teachers to gain a deeper knowledge of them, as demonstrated by Mrs. M. Because she knew her students so well, she could anticipate problems before they started. She could enhance the relevance of her lessons to include activities that promoted learning for her students. I saw her regularly embolden her most hesitant learners. To force her to follow a prescribed curriculum was doing a disservice to her students, as their needs were clearly more complex than what can be provided from scripted lessons in a book. We should strive to empower teachers to take an active role with their students and provide a policy environment in which this can come to fruition.

Conclusions

This section outlined the potential implications this research has for teaching and teacher education. These includes the demonstration of the close and interactive relation of theory and practice by using concrete examples of theory within the practice of teaching, providing a more holistic view of teaching using a lens of complexity, and empowering teachers to take a more active role in curricular and pedagogical decisions about their students' learning. Informed by complexity theory, I have offered a set of principles that will help teachers understand the classroom as a system. The classroom is an inherently unpredictable place, but with principles, there are understandable parameters that can be tweaked or reengineered by the teacher to get the desired effects. There are observables that can be derived from these principles to better understand the complex classroom. Situations, like the screencasts presented in Chapter four, can be used to initiate rich dialogue about maintain the dynamism of the classroom. These potential dialogues are useful to understand the complex combination of cognitive, motivational, and personality-related components present in teachers' adaptive decision-making.

Future Research

My aim in this dissertation research was to explore the idea of adaptive teaching expertise in a classroom viewed as a complex adaptive system. I knew that this initial research would be exploratory and descriptive, meaning I had a sense of what I was looking for but was unclear what it would actually look like. I now have four solid examples of adaptive teaching that I can build upon, which is my first goal in continuing to work with this concept. I would like to continue to develop additional cases to deepen my knowledge of adaptive teaching by observing other teachers with expertise in a range of content areas. This may include different grade levels or subject areas.

I foresee my screencasts being used as teaching resources for undergraduate teacher education candidates and professional development. These can be used to show the complexity in classroom and assist prospective and veteran teachers in building a mindset of an adaptive teacher, i.e., how to build a dynamic classroom environment that is responsive to students' diverse needs.

Originally I had planned to explore the idea of 'non-examples' to compare with adaptive teaching expertise. I realized quickly that this would be a big undertaking--too big for a dissertation for several reasons. One reason is that it would have required describing what I mean by 'non-example.' Will a non-example be a direct contrast to an example? How do they differ? Is a non-example the same thing as non-adaptive? Can a teacher be classified as an adaptive or non-adaptive, or are there adaptive and non-adaptive moments in every classroom? Furthermore, I need to think about how non-examples might work within my frame of complexity theory.

The idea of non-examples of adaptive teaching is fascinating, and one that I would like to pursue further. I have already identified a situation from my observations with Mrs. M. that might be a good starting point. My short-term goal with this idea is to further develop the conceptual ideas for this approach and possibly work on a journal article for publication. My long-term goal is to use continue looking for and analyzing examples and non-examples of adaptive expertise to build on this foundational research I have begun with this dissertation.

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APPENDIX A

How long have you been teaching?

What are your favorite subjects to teach and why?

How do you recognize good teaching when you see it?

If you could use a metaphor to describe a classroom, what would it be and why?

When do you feel the most creative when teaching?

How do you organize your classroom to facilitate learning?

What factors of the students and the classroom do you take into consideration when planning a lesson?

What factors of the students and the classroom do you take into consideration when teaching or facilitating a lesson?

Think of a time that the outcome of a lesson did not go according to how you planned it. This could be because the students did not respond to your approach, they were confused by the material, or they became interested in part of the lesson, other than the objective, which led to learning in a different direction. Explain this instance and how you made the choices that you did to insure the students were still learning.

Do you get to teach the way you want to, or do you feel constrained by policies or district mandates, or a little of both?

APPENDIX B

Decentralization

Initial Interview	Situation #1 – The Play	Situation #2 - Ellie
<p>**“The environment is set up, but there doesn't always have to be that hands on and interactive piece coming from the teacher. . . that it's happening within, so the community is felt”</p> <p>“I'm most creative when I let the curriculum go; that's not very often”</p> <p>“We have a helper of the day each day and they lead the Morning Meeting, it's not me”</p>	<p>“Kayden wanted to do some readers’ theater. That’s what led to this play.”</p> <p>**“I didn’t sit down with a list of how we were going to assign them. I didn’t make up sticks of the characters and have them randomly pick”</p> <p>“Sure I could follow the manual and we could do what the book tells us to do but I think you’ve got to value their process and show them that they have some agency and what’s going on.”</p> <p>--“I had to make it reasonable and hopefully by going through this step together, the shared process, they can take it if they want to or they can do their own independent study”</p>	<p>“The choice to do the Robin project – that was a whole different decision to let go of the curriculum for a while.”</p>
Situation #3 – The Tornado	Situation #4 – Recess Discussion	
<p><i>(centralization) Several voices are heard talking. Mrs. M stops Jacob and says, “I’m sorry, I can’t hear you. I’m so</i></p>	<p>“What do you notice about our group here?”</p> <p>“Can I just give you my explanation and then</p>	

<p><i>distracted by the other talking that's going on. She waits for the class to be quiet. "Can you try that again?"</i></p>	<p><i>you can add?"</i></p> <p><i>Mrs. M: "Let's go back to the first... since this really isn't about helper of the day problems, let's go back to your first issue (touching Kahlin's leg) about I am more kind..." she pauses. "How did you put that? I'm more polite to the girls. Let's talk about that. Why do you think you feel that way?"</i></p> <p><i>See, it's behavior like this that makes me have to call you out, Matthew!"</i></p>	
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Connectivity

Initial Interview	Situation #1 – The Play	Situation #2 - Ellie
	<p>Yes the research guide, um, they got really excited about that and Kayden, I believe it was, wanted to break it down and do some a readers' theater with it.</p> <p>. . . that nonfiction piece that was also matching the fiction that we were reading together in social studies"</p>	<p><i>**Mrs. M: "Would you like a friend to come and help you?" Several hands go up in the air. Okay, why don't you pick someone who's being respectfully to come and help you?</i></p> <p><i>Mrs. M: "So I'm surprised at this point with this group, as cruel as they can be, that they weren't laughing at her and setting her off into another fit. I'm very grateful that we are now able to draw on some peers who are willing to help her through. Yeah that was nice."</i></p>

Situation #3 – The Tornado	Situation #4 – Recess Discussion	
<p>“We spent some time worrying about different things earlier on in the year, so I was trying to connect them back to that and our discussions earlier on in the beginning of the year about how we can worry about some things, that we can’t worry about some things that probably aren’t ever going to happen.”</p> <p><i>“Oh my, look around. You are not alone, Matthew.”</i></p> <p>“I knew we had just covered this with the Red Cross when they came in for a visit, but as you can tell maybe not everybody got that lesson.</p>	<p><i>My friend from second grade was name was Lucy. And Lucy and I did things together all of the time. I feel like I would’ve called on her a lot. And that might not have seemed fair.”</i></p>	

Neighbor Interactions

Initial Interview	Situation #1 – The Play	Situation #2 - Ellie
<p>“I think that when we get together on the carpet and we talk about ways that are going to make our classroom work and we establish our expectations together that we co-create those kinds of things and build on them”</p>	<p><i>**“And in fact Kayden took the play idea into writing and wrote . . . he had some other people working with him writing the play. ‘The first puppy’ I think is what he decided. He and Zahirah were writing on it.”</i></p>	<p><i>**Mrs. M: “Would you like a friend to come and help you?” Several hands go up in the air. Okay, why don’t you pick someone who’s being respectfully to come and help you?</i></p> <p>Mrs. M: “So I’m surprised at this point with this group, as cruel as they can be,</p>

		that they weren't laughing at her and setting her off into another fit. I'm very grateful that we are now able to draw on some peers who are willing to help her through. Yeah that was nice."
Situation #3 – The Tornado	Situation #4 – Recess Discussion	
<p><i>**There is one voice, Jacob, that is clearly heard saying, "We're all gonna die!" About a minute later, as most of the kids are on the carpet and Zahira is ready to get started, Jacob continues to act goofy. Then he states, "You can't be calling my name when a tornado comes." A student sushes him. Connor, sitting behind Jacob, can be heard softly saying, "No, it has to be warm for a tornado to come." Jacob looks directly at the camera and says, fairly loud, "We're all gonna die!" p.1</i></p> <p><i>When she takes out the marker to write the number, she accidentally knocks into a white board, which makes a loud sound. Jacob is heard saying, "You can't be doing that when a tornado comes, Zahira." Several students are heard saying, slightly exasperated, "There isn't a tornado!" p. 2</i></p> <p><i>**Jacob is heard saying, "It's going to</i></p>	<p><i>** Sebastian: "Boys are bad?" Several boys look at him, including Kahlin, and comment "No!"</i></p> <p><i>Mrs. M: "What you think about that?"</i></p> <p><i>Sebastian: "That means all the boys don't get recess and all the girls get recess."</i></p> <p><i>Kayden: "Oh don't go that far, Conner's not here."</i></p> <p><i>Another boy chimes in, "or Ashten," and another, "or Wesley." "It's not all the boys but it's most boys."</i></p> <p><i>Matthew: "Okay it's these boys."</i></p>	

<p>tornado.” Sebastian is heard saying, “STOP!” Jacob continues to provoke by saying, “Right through that smartboard!” Connor, again, is heard saying, “Jacob stop! It’s got to be warm for a tornado.” Jacob turns around and looks at Connor and says, matter-of-factly, “We’re all going to die.” Sebastian says, “No we aren’t.” p. 2</p> <p>Sebastian: “Matthew is doing the same as Jacob is, and I’m doing the same as Connor.”</p> <p>Matthew suddenly blurts out, “I quit!”</p> <p>Mrs. M: “I’m not understanding what you mean.”</p> <p>Sebastian begins to explain, “Matthew is worrying about the tornado and I keep telling him there is going to be... well, maybe this afternoon.”</p>		
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Self-Organization

Initial Interview	Situation #1 – The Play	Situation #2 - Ellie
<p>**“The environment is set up, but there doesn't always have to be that hands on and interactive piece coming from the teacher. . . that it's happening within, so the community is felt”</p>	<p>**“And in fact Kayden took the play idea into writing and wrote . . . he had some other people working with him writing the play. 'The first puppy' I think is what he decided. He and Zahirah were writing on it.”</p>	<p>After the situation was over Ellie and Cela, without prompting or encouragement elsewhere, sat down together to read</p>

Situation #3 – The Tornado	Situation #4 – Recess Discussion	
<p><i>Jacob is heard saying, “You can’t be doing that when a tornado comes, Zahirah.” Several students begin talking about the tornado, and a few are heard saying, slightly exasperated, “There isn’t a tornado!”</i></p>	<p><i>Sebastian: “Boys are bad?” Several boys look at him, including Kahlin, and comment “No!”</i></p> <p><i>Mrs. M: “What you think about that?”</i></p> <p><i>Sebastian: “That means all the boys don’t get recess and all the girls get recess.”</i></p> <p><i>Kayden: “Oh don’t go that far, Conner’s not here.”</i></p> <p><i>Another boy chimes in, “or Ashten,” and another, “or Wesley.” “It’s not all the boys but it’s most boys.”</i></p> <p><i>Matthew: “Okay it’s these boys.”</i></p>	

Internal Diversity

Initial Interview	Situation #1 – The Play	Situation #2 - Ellie
<p>“They are highly distracted by things going on in the classroom. Of course just like any classroom does, really, really bright kiddos that are reading and doing math up here and I’ve got my kids that are struggling to be successful. I’ve got two groups of kids that read below grade level. We’re talking about six - twelve about eleven - 11 or 12 kids out of 20 that are reading at grade levels?”</p>	<p>--“There are different things about them. For example, Kayden really struggles with initiating and really has a lot of anxiety about choosing a topic. With Zahirah, it’s all about syntax and making sure she goes back to reread and making sure it makes sense. Sebastian is a really strong reader; he’s one of the top leaders in the class. Decoding accuracy and fluency are all high with Sebastian, but his comprehension brings it down a little bit, like inferring. He’s autistic</p>	<p>#“Ellie has been diagnosed with ADHD, and I was pretty convinced early on that she was on the spectrum.”</p> <p>“To me, she’s already labeling herself when she stands in a room and spins around, or when she has some of the behaviors she has. The other kids are bright-they know that there are some differences there.”</p>

<p>“I’ve got one boy I identified autistic. I’ve got two that are identified ADHD. I’ve got some food allergy kiddos.”</p> <p>“I’ve got a group of five right now but go to daily enrichment class. That’s a pull out in the afternoon. Four go to intervention services</p>	<p>so he has other things he’s dealing within that communication areas that make his writing in a different place like the others. Brooklynn was in Group 2 for a while. She had worked really hard for a while but she is so quiet and shy, so I moved her up because I thought it would help her confidence a little bit. She’s doing well in that shy quiet sort of way. Again she does well with fluency and comprehension.”</p> <p>#“I feel they work well together, but they often are not attracted to each other during partner work. At Daily Five time, they often break out and work with other people, which is fine. That way they get to share different books and whatnot. I don’t see that I’m not getting along. I think they have a high tolerance like when Sebastian gets off task. They’re very patient, but they don’t necessarily step in and offer that peer support.”</p>	<p>--“I think it’s the environment that needs to be different for her in order for her to really thrive because she’s brilliant. I mean, she has some really strong content knowledge that needs to be tapped into. But it’s not necessarily scripted curriculum content knowledge, it’s her interest content knowledge that really needs to drive her learning.”</p>
<p>Situation #3 – The Tornado</p>	<p>Situation #4 – Recess Discussion</p>	
<p><i>**Jacob is heard saying, “It’s going to tornado.” Sebastian is heard saying, “STOP!” Jacob continues to provoke by saying, “Right through that smartboard!” Connor, again, is heard saying, “Jacob stop! It’s got to be warm for a tornado.” Jacob turns around and looks at Connor</i></p>		

<p><i>and says, matter-of-factly, “We’re all going to die.” Sebastian says, “No we aren’t.”</i></p> <p>**“I think he was equally worried about the weather probably, just reacts to it differently so I was trying to give him an outlet for that. At the same time, I had a lesson to do, right?” p. 3</p> <p>I don’t want to put it in any kind of hierarchical order—not a better kind of control, just a different kind of control. Just as Connor had a different kind of control over his fears as opposed to what Jacob and Matthew and Sebastian were doing.”</p>		
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Non-Linearity

Initial Interview	Situation #1 – The Play	Situation #2 - Ellie
<p>“I know what probably we're going to be working with but I don't know always where it's going to go until we get there. Sometimes the plan isn't ... doesn't have that finality of this is where we're going. I don't want to say that, I don't have outcomes. It's depending on that student feedback where they're taking me and</p>	<p>“I wanted them to work through this process so that if there were more plays available to them they would have a system of how to take it to that level without support, right?</p>	

where they're taking the class”		
Situation #3 – Recess Discussion	Situation #4 – Recess Discussion	
<p><i>**There is one voice, Jacob, that is clearly heard saying, “We’re all gonna die!” About a minute later, as most of the kids are on the carpet and Zahira is ready to get started, Jacob continues to act goofy. Then he states, “You can’t be calling my name when a tornado comes.” A student sushes him. Connor, sitting behind Jacob, can be heard softly saying, “No, it has to be warm for a tornado to come.” Jacob looks directly at the camera and says, fairly loud, “We’re all gonna die!” p. 1</i></p>		

Adaptability

Initial Interview	Situation #1 – The Play	Situation #2 - Ellie
<p>“Guided reading groups and in shared reading in our tables and one of the kids in one of the group said, “Who do you think we could try this out writing?” I thought, “Why not,” taking their lead sometimes I’d like to build on that”</p> <p>“Yeah, I don’t factor those things in but I make them happen. Sometimes you just</p>	<p><i>Hmmmm, I wonder who . . . Who would like to be the woman?” Zahirah raises her hand.</i></p> <p><i>“Zahirah, you would be willing to play the woman for us? Well that makes perfect sense doesn’t it?”</i></p> <p>We had one girl left in the script right? And I knew I had to fill that woman spot, and though this group would probably be flexible enough to take on that woman role and not let</p>	<p><i>“And today would be Amina’s day [to lead Morning Meeting] if she was here, but she’s not here this morning so Ellie it would be your day but I’m not sure are you ready?” and she along, with the class, looked over at her.</i></p> <p>“What I really wanted to say, is obviously you’re not ready to come...”</p>

<p>got to go with what they're saying.”</p> <p>**“I know what probably we're going to be working with but I don't know always where it's going to go until we get there. Sometimes the plan isn't ... doesn't have that finality of this is where we're going. I don't want to say that, I don't have outcomes. It's depending on that student feedback where they're taking me and where they're taking the class on how ...”</p>	<p>it be a big deal.”</p>	<p>(begins laughing). But instead I pulled myself together and asked her if she was ready to take on this responsibility for the day. I looked at it as an opportunity to get her on task with everybody else. I was hoping that she would be excited to take on that role and move on. Just move on and not persevere with that situation. But that certainly wasn't planned (laughs.)”</p> <p><i>“Why don't you, while were waiting for the rest of them, go and get a tissue and dry your tears. I think that will help.”</i></p>
<p>Situation #3 – The Tornado</p>	<p>Situation #4 – Recess Discussion</p>	
<p><i>Mrs. M finishes with Zahira and thanks her. Then she says, “So it seems like there is some concern about the weather this morning.” p. 2</i></p> <p>**I think he was equally worried about the weather probably, just reacts to it differently so I was trying to give him an outlet for that. At the same time, I had a lesson to do, right?</p> <p>“So obviously this discussion was not something I had planned. I felt that that topic was going to cause more conversation with everybody that could</p>	<p><i>Mrs. M looks around at the other boys and says, “Do I do that?” Kayden responds, “Yes.”</i></p> <p><i>Mrs. M nods and says, “You know what I'm going to do? I'm in work on that part,” putting her hand to her chest, “of being more fair. Because I hear you say that that is not fair.”</i></p>	

have prolonged everything, so I thought that if I asked them to acknowledge that fear as a group, we could get through it faster” p. 4		
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CODES

**** mentioned in more than one category**

-- included in follow-up interview only (not mentioned in situation or in analysis

-- not included in situation, but included in analysis (after the chart)