ABSTRACT

BRINKLEY, BRIAN ROUNTREE. Innovating in an Era of Standardization: A Case Study of a Teacher’s Implementation of Inquiry-based Instruction (Under the direction of Dr. Meghan Manfra).

Teachers in the United States are under unprecedented pressure in response to reform efforts of the last thirty-five years. More so than at any other time in modern history, the American educational landscape is dominated by standard instructional objectives linked with high-stakes testing (Kamenetz, 2015; Kempf, 2016). In the midst of these conditions, however, some teachers are overcoming the pressures to conform and are transforming their classrooms into places where children and teachers can ignite a passion for lifelong learning (Hursh, 2008). This case study describes how a third grade teacher at Oak Hills Elementary, a typical, suburban school in the southeastern US, implemented student-initiated inquiry with her students.

Findings from a semester-long case study suggest that our understanding of pedagogical content knowledge (PCK) (Shulman, 1986) changed when teaching and learning become inquiry-based. In addition to understanding how to teach specific content, the teacher reconsidered how each learner (L) figured intimately into the teaching equation. Inquiry-based teaching required consideration of students’ prior knowledge and questions first. The resulting student-centered teaching and learning transformed PCK into PCK+L. When the teacher utilized students’ interests, learning preferences and strengths, all learners, including students and teacher, were more motivated to learn. Students were encouraged and taught how to ask and answer their own questions, and the teacher became a facilitator of learning rather than a disseminator of knowledge.
Findings from the study also suggest that a strong community support network is co-requisite for implementing an inquiry-based pedagogical change. While the teacher in this case study was successful in implementing student-initiated inquiry in her classroom, the success was attributed to a strong coaching and co-researching relationship with the participant researcher (Lincoln & Guba, 1985). Teachers who decide to implement inquiry in their classrooms need colleagues they can confide in, reflect with and received feedback from in order for the pedagogical change to endure (Fullan, 2006; Guskey, 2002). In this study, critical reflections on the teacher’s interactions with colleagues, parents and students, both positive and negative, gave insights into what teachers require to initiate and sustain inquiry, especially considering the pressures to teach a standard curriculum.

A third set of findings from the study centers around positioning, that is, the rights and duties this teacher assumed as she made curricular, instructional and assessment decisions (Harré & Van Langenhove, 1999). Implementing inquiry required the teacher to reallocate time from teaching the standardized curriculum. The teacher’s duty to prepare students for the end-of-grade test was in conflict with her responsibility to engage them in personally meaningful, inquiry-based learning. The positions she adopted provided key insights into how teachers balance and rationalize their choices as learning leaders.

This research adds to the current understanding of professional development and instructional change by opening the “black box” (Cuban, 2013) of teacher thinking. Findings encourage us to rethink how we support teachers in implementing pedagogical innovation. Efforts to help teachers develop their pedagogy must take into account their personal aspirations and professional values. Likewise, support must develop teachers’ adaptive expertise and provide opportunities for students and teachers to learn together. Finally,
efforts to help teachers grow must acknowledge their struggles against the pressures associated standardization and help them maintain hope that the goal of personally meaningful learning can be realized for all learners including their students and themselves.
Innovating in an Era of Standardization: A Case Study of a Teacher’s Implementation of Inquiry-based Instruction

by
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A dissertation submitted to the Graduate Faculty of North Carolina State University in partial fulfillment of the requirements for the degree of Doctor of Philosophy

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DEDICATION

This study is dedicated to the thousands and thousands of children who have learned to ask and answer their own questions…and to the thousands and thousands more who may experience the joy of personal, meaningful learning by doing so. I also dedicate this study to the devoted, inquisitive, caring teachers who, even in times of incredible pressure to measure every component of student output, are assured that teaching children to think for themselves and to become life-long learners are what education is really about.
BIOGRAPHY

Brian Brinkley grew up in eastern North Carolina. Born in a small northeastern county, he spent his formative years between two, mid-NC coastal towns and, finally, made his way to Wilmington for college. Brian began his career as a North Carolina Teaching Fellow at UNC Wilmington, after which he taught children in kindergarten through fifth grades for fourteen years. While teaching, he earned a Master’s degree in Curriculum & Instructional Supervision from UNC Wilmington and worked as a consultant for The Wright Group. He welcomed many teachers, future teachers and parents into his classroom to explore how developmentally appropriate practices support and challenge learners to reach their greatest potential. At the turn of the century, Brian and his wife, Joanne, became founding teachers of Cape Fear Center for Inquiry, the first charter school in southeastern North Carolina. It was there he learned the importance of teaching children to ask and answer their own questions. That is where he also learned that real education begins with students’ sense of wonder.

For the past thirteen years, Brian has served as the director of the Betty Holden Stike Education Laboratory in the Watson College of Education at UNC Wilmington. In this role, he has worked with more than 3,500 future teachers, helping them “put their teacher hats on,” often for the very first time. What he loves most about his job is watching emerging teachers have their own lightbulb moments; just as they watch their first students have their own lightbulb moments. Teaching the next generation of teachers is the best way to pay forward all that education has enabled him to accomplish.

Brian lives in Wilmington with his wife, Joanne, and his daughter, Grayson. They love traveling, especially to Walt Disney World.
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I would like to acknowledge the support of my dissertation committee, particularly my advisor, Dr. Meghan Manfra. Your wise counsel helped move this dissertation from idea to reality.

I would also like to acknowledge the support of my colleagues in Watson College of Education at UNC Wilmington. For thirty years, I have had the good fortune to be involved with the caring and dedicated educators who have prepared generations of teachers. While many individuals have made a deep and lasting impact on my philosophy and practice as an educator, I would specifically like to recognize Becky Walker – Our Friday conversations challenged me to decide what I really believe about teaching and learning; Karen Wetherill – You saw something in me before I saw it in myself; Hathia Hayes – From my first day as a kindergarten teacher, you pushed me to hold the highest expectations for myself and for my students; and Denise Ousley, my colleague and capital ‘F’ Friend - you helped me through the final stretch and for that, I am forever grateful. Your support got me over the finish line.

Finally, I am thankful for the support of my family. I have been a student for most of my life. I attribute my motivation to my mother and to my sisters who instilled in me a love of learning, well before I struck out on this journey towards a doctorate. To my wife, Joanne, thank you for the time I could have spent doing all number of other things, to complete this degree. To my sister, Denise, thank you for listening, daily, to all of my ideas, good and bad, and for patiently refocusing me when I needed it and distracting me when I needed that, too. Most of all to my daughter, Grayson, thank you for writing me the most important reminder. I read it each and every time I sat down to write this dissertation: “Strive for progress, not perfection.”
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CHAPTER 1: INTRODUCTION

Teachers in the United States are under unprecedented pressure in response to the standardization reform efforts of the last thirty-five years. More so than at any other time in modern history, the American educational landscape is dominated by standards and associated high-stakes testing (Kamenetz, 2015; Kempf, 2016). Teachers are expected to apply common teaching pedagogies to convey a standard set of information and skills to an increasingly diverse group of students (Au, 2011; Goldstein, 2014). The No Child Left Behind Act (NCLB, 2001-2015) and the broad implementation of the Common Core State Standards (2010-present) have had a deep and lasting impact on what happens in public school classrooms (Au, 2011; Ferguson-Patrick, 2018; Hannaway & Hamilton, 2008; Sparapani & Perez, 2015).

Those who advocate for curriculum standardization claim that it helps articulate clear expectations for students, align resources, focus professional development, and establish accountability measures for states, districts, schools and teachers (Bleiberg & West, 2014). Standards, as a set of developmentally appropriate curricular expectations, are valuable. However, the movement to standardize, and therefore constrict, the curriculum coincided with re-invigorated high-stakes summative testing for students in all grade levels. The assessment-focused atmosphere has affected the way that teachers teach, as well as what and how students learn (see Dee & Jacobs, 2010).

In the midst of these conditions, however, some teachers are overcoming the pressures to conform and are transforming their classrooms into places where children and teachers can ignite a passion for life-long learning (Hursh, 2008). This dissertation describes how a third grade teacher at Oak Hills Elementary School implemented student-initiated
inquiry with her students even in the context of standardization. The research consisted of a case study focused on the practices the teacher utilized, the issues that arose during implementation, and the effects it had on her teaching. As a co-researching team, the teacher and I utilized the structures of cognitive coaching (Costa & Garmston, 1994, 2015) to support and capture the changes that she made while implementing inquiry-based pedagogy.

The case study approach enabled us to focus on a specific issue in a bounded environment, that is, the implementation of a student-initiated inquiry in an elementary school classroom (Stake, 1995). Because of the particular nature of the case being studied, the single case study approach was especially applicable (Merriam, 2009). It is important to note that the case is actually the teacher’s implementation of pedagogical change, specifically how she implemented student-initiated inquiry, and not the teacher, herself. In that way, this case study sought to describe the real-life setting in which the teacher changed. In this research, I focused on her attempts to engage in innovation in the midst of a conflicting context, namely the omnipresence of end-of-grade test preparation and the standardized instruction inspected of her.

**Standardized Testing**

Of course, the goal of standardizing what students should know and be able to do is not new. Standardized testing has been part of the American educational landscape for more than one hundred years (Kamenetz, 2015). The College Entrance Exam Board began a testing program in 1900. The Standardized Achievement Test (ACT) was first distributed in 1926 and the American College Testing program (ACT) was designed in 1939. However, it has only been within the last thirty-five years, since the publication of *A Nation at Risk* (NCEE, 1983), that standardized testing has swept through the country, causing teachers at
all grade levels to focus their attention on preparing students to pass the tests (Au, 2011; Kamenetz, 2015).

One key difference in the current era of standardization is that statistically normed assessments are now used in kindergarten through 12th grade. Standardized assessments have found their way into an unexpected array of subject areas including primary grades writing and high school fine arts classes. Perhaps it is not the assessment of what students know that is the problem. The problem is the system’s overreliance on standardized testing as the preferred and most trusted way to determine if and what students have learned (Hursch, 2008).

As a result of the misplaced trust in standardized assessments, testing is often the driving force behind what teachers teach and how they choose to teach it (Au, 2011). Common assessments and mandated reporting result in the ranking of districts, schools, teachers and children. The aim of this practice seems to be to find the one, efficient way to manage curriculum and instruction. Ironically, this “single process model – which has led American manufacturing to its full collapse – is based on the ability to grow and profit from change” (Sparapani & Perez, 2015, p. 81). States and districts employ testing regimens to acquire federal funding and for accreditation. Likewise, educators make high-stakes decisions across grade levels, whether they be about high school students receiving advanced placement college credits or if a first grader is proficient enough in reading to advance to second grade.

Contemporary research has documented the effects of standardized testing on teaching. In his meta-analysis, Au (2007) found that in most cases, the curriculum was constricted to the content of the standardized tests. Curriculum that was not tested was readily excluded from instruction. Moreover, in a majority of the cases, the methods that
teachers used were more teacher-centered and transmissive. Robinson (2001) and Eisner (2008) lament the social efficiency model dominating schools today, especially considering the damage done to countless students’ and teachers’ creativity, intelligence and potential. Experts have raised similar concerns across disciplines and grade levels (see Au, 2011; Schwartz, Bransford & Sears, 2005).

In some cases, standardized testing paradoxically led to a broadening of curriculum and more use of student-centered methods (Au, 2007, 2011). Au explains that while standardization and high-stakes testing lead most teachers to teach to the test, some designate time for what they consider “authentic teaching.” They feel conflict between the ways they know they should be teaching versus what they know is expected of them (Perreault, 2000). Some teachers feel this disequilibrium because they understand that children learn by asking and answering their own questions. They choose to transcend the “show, do, test” pedagogy and actually teach their students how to think for themselves. These teachers engage students in a chain of achievement in which success on tests is a natural result of an authentic learning process (Sparapani & Perez, 2015).

Unfortunately, trust in teachers and students to engage in authentic learning is not driving instruction (Kohn, 2000). Neither is innovation. Teachers who want to try new ways of teaching can face peer scrutiny and even the threat of losing their jobs if their students do not perform well on standardized assessments. Noddings (2013) challenges the conception of teacher-as-factory-worker, arguing that “if people want to promote creativity in students, they should also encourage it in teachers” (p. 210). Trusting teachers to teach, then, is essential to reorienting education towards creativity, human potential and progress.
Background of the Study

Teaching is a complex endeavor. Working to reimagine teaching within the current educational context in which assessments are valued more than innovation is daunting (Goldstein, 2014; Ravitch, 2001). The goal of having every student prepared for college or career, as measured by standardized tests, has had the unintended consequences of constricting curriculum and homogenizing teaching methods (Jones, Jones & Hargrove, 2003; Kamenetz, 2015). In this efficiency-centered atmosphere, teachers who attempt progressive pedagogy encounter challenges, both extrinsic and intrinsic. Extrinsic pressures set teachers’ aims on teaching only what is prescribed in the standard curriculum and only in ways students are likely to see it on a test. At the same time, the intrinsic struggle many teachers face is how to balance such rigid expectations with opportunities such as that of a third grader who brings in a chrysalis ready to hatch. Surely, there is room to explore students’ interests and make the learner the center of what can and should be learned in school (Darling-Hammond & Bransford, 2007).

For many years, schools have focused on preparing students and teachers for the needs of the 21st century. However, the inner workings of classrooms have changed little and the jobs in which many children today will work do not yet exist (Darling-Hammond, 2010; Freidman, 2006). How do leaders empower teachers to lead classrooms in which their students take charge of their own learning and are prepared for an increasingly complex world?

Inquiry Based Instruction

Inquiry-based instruction provides part of the answer. Inquiry, as a teaching method, has its roots in the theories of Dewey (1897), Piaget (1952), Bruner (1961), and Vygotsky
Practical applications of students learning-by-doing and by constructing their own meaning have come about in the work of Montessori (1915), and through problem-based learning and hands-on science. Encouraging students to ask their own questions and, in essence, influence their own curriculum, is not a new idea (see Brooks & Brooks, 1999 for discussion). What is new is the social context in which this kind of learning takes place.

Unlike most of the 1900s, current knowledge-based systems offer information at the click of a button. “In an era of high technology, information in the form of facts is easily obtained, but one needs a reason for seeking it” (Noddings, 2013, p. 213). More than ever, students need to develop the skills to process information efficiently, communicate with others, validate sources, solve problems, disseminate results and collaborate in an interconnected world. In short, a teacher’s job is to teach students how to ask and answer their own questions. That is the foundation of inquiry-based teaching and learning in a knowledge-based society.

Progressive educators must provide time and space for students to engage in inquiry. Advocates of inquiry-based instruction must be ready to explain the value of teaching children to think for themselves, even as prevailing influences enforce standardization and high-stakes testing results (Au, 2011; Goldstein, 2014). Advocates of inquiry know that while implementing inquiry-based instruction with students, a teacher also embarks on his or her own professional inquiry journey. When that teacher is ready to grow, aspects of teacher development come into focus (Darling-Hammond, 1996; Fullan, 2014, Fullan & Hargreaves, 1994). Growing as a practicing teacher involves the development of professional knowledge, content knowledge, pedagogy, self-awareness and dispositions. A teacher will also need to specifically understand and use inquiry-based instruction in order to change practice.
Coaching and Professional Learning

It is rare for teachers to attempt such bold changes alone. Those who support teachers’ growth must develop their use of methods to help teachers as they move forward in their careers. Coaching is a powerful strategy towards those ends (Costa & Garmston, 1994). Cognitive coaching positions the teacher as a learner, specifically to study his or her own ways of teaching and how it affects students’ learning. Cognitive coaches encourage teachers to think about their professional practices. Over the course of time, coaches also press teachers to make choices about which specific features of instruction they need to improve. Data-focused, reflective coaching cycles establish a co-investigative relationship in which the teacher feels supported enough to make change happen (Costa & Garmston, 2015; Freire, 1996; Lincoln & Guba, 1985). The learning-centered atmosphere supports the teacher’s growth. It also serves as a model of the co-learning relationships that inquiry-based teaching requires.

In an effort to intensively study the issues a teacher faces while changing her teaching practice, this dissertation study followed a third grade teacher in a suburban elementary school in southeastern North Carolina as she implemented student-initiated inquiry. The teacher and I engaged in in-depth interviews both before and after specific lessons she designed to support her student’s inquiry. Detailed observation notes, as well as the cognitive coaching interviews, revealed the teacher’s perspectives on the changes she and her students experienced. In the way that Costa and Kallick (1993) describe the role of a “critical friend” in reflective practice, this dissertation study places the researcher as a critical friend for the teacher involved. “Every student – and educator, too – needs a trusted person who will ask
provocative questions and offer helpful critiques” (p. 49). It is through this relationship that the teacher changed, and this study documents those changes.

**Purpose of the Study**

If we are to liberate learners to be independent thinkers, to be able to ask and answer their own questions while engaging in a complex world, then advocates of inquiry-based education need to know more about how teachers move towards an inquiry mind-set (Shor & Freire, 1987). Cuban’s (2013) *Inside the Black Box of Classroom Practice* urges us to closely examine why, after so many years of educational reform, teaching remains largely unchanged. This study is important to teacher development because there is a need within the field to identify and describe the mechanisms by which practicing teachers make significant and fundamental changes. Rust (2009) proposes that the problem of practice in teaching is the practice itself. Therefore, this study chronicles a teacher’s journey and the way her practices transformed.

There are a number of studies that describe characteristics of teaching practices which engage learners to be active and critical thinkers (see Christenson, Reschly & Wylie, 2012; Marzano, Pickering & Pollack, 2001). In addition, there are many studies of different facets of teacher learning (see Part 6 in Cochran-Smith, Feiman-Nemser, McIntyre & Demers, 2008; Gitomer & Bell, 2016). This dissertation study extends the current research by adding to what we know about how implementing a pedagogical change affects teachers’ professional development. It also explains how inquiry-based teaching motivates a community of learners into action. It describes how a teacher struggles against the current of standardization and maintains hope that the goal of personally meaningful learning can be realized for all learners including the students in her classroom and herself.
Research Questions

There were three main questions and two subordinate questions that framed this case study:

1) How does a third grade teacher change her pedagogy to implement student-initiated inquiry in her classroom?
   - Which teaching strategies and structures does she use to support students’ inquiry studies?
   - What obstacles does she face as she makes the pedagogical shift and what does she do to address those obstacles?

2) How does the process of teacher inquiry support pedagogical change in the classroom, specifically using cognitive coaching to support and capture the process?

3) Given the external pressures on teaching, in what ways does a teacher position herself to succeed and persist?

Conceptual framework

The *How People Learn (HPL)* framework (Bransford, Brown, & Cocking, 2000) guides this study. Produced by the National Research Council, the *HPL framework* describes optimal conditions in which learning takes place. The conditions are described as four dimensions of learning and can be used to explore the contexts of any person as they engage in learning (see Figure 1.1). In a knowledge-centered learning environment, the classroom context and interactions reflect an appreciation of the fact that learners bring rich experiences, extant schema, pre-conceived notions, and misperceptions to new learning. In learner-centered environments, there is a keen understanding and respect for the characteristics of learners in general, and the idiosyncratic needs of each one. In community-
centered learning environments, the social contexts in which the learning occurs is emphasized, including the relationship between teacher and student, among students in a classroom, as well as extra-curricular affiliations (such as families). Finally, in assessment-centered learning environments, feedback from others, as well as opportunities to self-evaluate, give learners formative information with which they can judge their own growth.

![Diagram of the How People Learn (HPL) Framework](image)

**Figure 1.1. Dimension of the How People Learn (HPL) Framework.**

The National Research Council summarized these four dimensions of learning from decades of educational research. Both theoretical and empirical perspectives were compiled to describe the nexus where each of the “centered” environments coalesce, in other words, the optimal conditions in which learners tend to learn best. Elements of many research fields are integrated into the framework (e.g. cognition, meta-cognition, skills performance) to create a sophisticated, cohesive model of learning that can be applied in a number of settings.

In this dissertation research, the *HPL framework* provided a heuristic to explore and document the professional growth of the teacher under study. Further, it described the
conditions in which the teacher makes decisions while implementing new pedagogy. While educational researchers such as Darling-Hammond (2008), Ball & Cohen (1999) and Timperley, et al. (2008) have long called for studies of teacher learning that focus on the classroom environments in which the teachers practice, there is still a need in the field to document teachers’ practice in detail.

In addition to applying the HPL framework to teacher learning, theories regarding teacher change (Elmore, 2004; Fullan 2006, 2014; Guskey, 2002) were used to analyze data collected in the teacher’s classroom. Research on teacher change suggests that, even though changing one’s teaching is a complex commitment, it is possible given certain conditions. Teacher change experts agree that intentional teacher change can last if teachers perceive the benefits to themselves and to the students as greater than the risks involved (Elmore, 2004; Fullan, 2006; Guskey, 2002). The dynamics of external pressures and internal motivations are dually at work. This conflict creates numerous occasions for the teacher to make choices about curriculum and instruction. The teacher’s reflections then frame the change in ways that are acceptable to her colleagues, to her supervisors and, perhaps most importantly, to herself.

Positioning theory (Harré & Van Langenhove, 1999; Harré, Moghaddam, Cairnie, Rothbart and Sabat, 2009) was the final framework used to analyze the findings of this study. This theory holds that, considering the complex and often-antagonistic conditions in which successful teachers work, the decisions they make about what and how they teach reflect a sophisticated adaptive capacity. Successful teachers position themselves to survive and succeed by understanding what is required of them and the scope of their power to make decisions. Indeed, the power that they possess in carrying out their will in what and how they
teach that is the core of the theory (Harré & Van Langenhove, 1999). In this dissertation study, positioning theory was used to analyze a teacher’s frame of reference regarding her rights and duties, and the choices she made as she goes about implementing student-initiated inquiry as a new pedagogy.

**Scope of the Study**

This case study (Merriam, 2009; Stake, 1995) began in February 2018 with the identification of a teacher who was interested in implementing student-initiated inquiry as part of her instruction. After receiving the appropriate permissions from supervising agencies (IRB, district, school administration) and participants (teacher, parents, students), I conducted an initial interview with the teacher to invite her into the study. The interview captured her initial thoughts about attempting to implement student-initiated inquiry as a new pedagogy in her classroom. Over the course of twelve weeks, I conducted five bi-weekly coaching cycles (Costa & Garmston, 1994). During each cycle’s pre-conference interview, the teacher reflected on her practice and identified focus areas of interest for classroom observations. For each cognitive coaching cycle, I collected specific classroom observation data regarding the teacher’s focus area to discuss in the post-conference interview. During the weeks between coaching cycles, I conducted wide-lens classroom observations during content-area instruction. I specifically observed to see if and how the teacher actually integrated inquiry-based teaching methods into her daily teaching. I also conducted a mid-study interview to record how the teacher reflected on the changes that had been taking place in her teaching and in her students’ learning. Concurrently, I transcribed data from the pre- and post-conference interviews, as well as the data from classroom observations. In addition
to the transcribed conversations and observation data, I collected artifacts from the classroom. Data collection concluded with a comprehensive, closing interview.

My data collection and analysis were informed by Bransford, Brown and Cocking’s (2000) *How People Learn: Brain, Mind, Experience and School*. Through the cognitive coaching cycles, the teacher and I were conscientious of how our discussions and her focus areas were centered on knowledge, learners, community and assessment. At the same time, I analyzed how those dimensions were affecting the teacher's learning, the changes in her pedagogy, and the changes that were occurring in her classroom.
CHAPTER 2: LITERATURE REVIEW

While many teachers have long aspired to use engaging teaching methods, the current era of standardization has pushed teachers to use methods that emphasize efficiency rather than innovation (Cuban, 2013; Eisner, 2008; Robinson, 2001). The effect is that traditional teaching methods continue to permeate elementary classrooms. Worksheets, rote repetition and lecture are still prevalent in classrooms today (Cuban, 2013; Herold, 2015; Levstik, 2008; Ravitch, 2001; Zemelman, Daniels, & Hyde, 2005). Teacher preparation programs and professional development organizations push for differentiated and personalized learning, yet it is often the case that teachers return to familiar, proficiency-based methods of instruction (Imig and Imig, 2006; Richardson, 2005). It tends to be that these traditional instructional methods are teacher-centered, lack meaningful engagement and cover limited content (Richardson, 2005; Zemelman, Daniels, & Hyde, 2005). Unfortunately, many elementary classrooms remain places where behavior management and performance on standardized assessments are more of a concern than meaningful, in-depth student engagement (Hamilton, Stecher & Yuan, 2006; Jennings & Bearak, 2014).

Because of these conditions, inquiry-based instruction, particularly instances where students take the lead in deciding what and how to explore, is underutilized (Hamilton, Stecher & Yuan, 2006). As a teaching method, inquiry-based instruction engages students and allows them to initiate and sustain their own learning. To implement inquiry, teachers must withstand currents of change that pull towards more standardized methods and assessments. Teachers need support for their classrooms to change in that progressive direction. For that to happen, teachers must study their own practices and, in essence, conduct their own inquiry about their own practices in order for their classrooms to change.
Making pedagogical changes is a complex endeavor, especially when such changes are in conflict with the common practices in a school or district. In contrast to typical, out-of-context professional development, teacher learning needs to happen within the teachers’ classrooms (Elmore, 2004; Joyce & Showers, 2002; Putnam & Borko, 2000; Timperley, Wilson, Barrar & Fung, 2008). In other words, the best opportunity we have to help teachers change is to engage them while they are in the practice of teaching. Teachers who study their practice through teacher inquiry, or action research, accept an important and impactful locus of control over their practice. “The kind of research that teachers can do…does justice to the complex contexts in which teachers of young children work” (Meier & Henderson, 2007, p. x)

Through their own learning, teachers can change their practice and, subsequently, improve what students experience in their classrooms. In this review of the literature, I examine the complex context of teacher learning and the varied dimensions that researchers and theorists have identified to illuminate teacher learning. Supporting research explores how teachers change their practice, including the idea of positioning, by which teachers make ethically just decisions about the curriculum they teach and the pedagogical methods they use to teach the curriculum. In addition, the review of the literature includes a look at teacher inquiry. It is an interesting parallel to consider that the teacher is asking questions of her own teaching while students are exploring questions of their own. The review of the literature also addresses cognitive coaching as a useful framework to engage educators to change their practice. The analysis of the literature offers a priori empirical findings and theoretical frameworks that will undergird my research to illuminate unexplored areas within the field.
Teacher Learning

Constructivism, as a theory of knowing, holds that learning occurs by connecting new ideas to what one already knows (Piaget & Cook, 1952; Piaget & Inhelder, 1969; Von Glasersfeld, 1995). Learners make meaning and create new understanding by reflecting on significant experiences. Educators have translated the theory of constructivism into teaching practices that includes hands-on, participation-rich activities (Barell, 2007; Brooks & Brooks, 1999; Dewey, 1938, 2007; Montessori, 2013; Vygotsky, 1962, 1978).

Mostly, this kind of engagement has been applied to children in PK-12, however, adult learners benefit from engaging, personally meaningful learning, as well. “The principles of learning and their implications for designing learning environments apply equally to child and adult learning” (Bransford, Brown, & Cocking, 2000, p. 27). As adult learners, teachers need opportunities to investigate their beliefs and their practices within conditions that promote growth. This includes providing teachers with structured opportunities to try new teaching methods. Consistent with the constructivist paradigm, the new teaching methods should challenge and extend a teacher’s current philosophy of teaching. At the same time, teachers will most likely implement changes when they consider those changes natural extensions of what they are already doing, not exceedingly different from what they consider normal practice (Darling-Hammond & McLaughlin, 1995; Guskey, 2002). Research is needed to describe the constructive learning that occurs when a teacher goes about changing her practice, specifically, implementing inquiry-based instruction in her classroom (Cuban, 2013).
The *How People Learn (HPL)* framework

Bransford, Brown and Cocking (2000) offer a useful structure to think about the nature of learning. In the book, *How People Learn: Brain, Mind, Experience and School*, the authors describe a practical framework that proposes four dimensions through which human learning can be viewed and analyzed. The framework, generated by a committee of the National Research Council, describes four dimensions that, when optimized, set up a beneficial context for learning. While the framework is primarily applied to student learning, these four dimensions also offer lenses through which we can analyze teacher learning. The framework consists of four overlapping areas of emphasis: knowledge-centeredness, learner-centeredness, community-centeredness and assessment-centeredness.

![Diagram of the How People Learn framework](image)

*Figure 2.1. Dimension of the How People Learn (HPL) framework.*

Knowledge-centeredness

Knowledge-centeredness refers to the content of what is being taught in the classroom, as well as the prior knowledge learners bring with them to the learning event.
Knowledge-centered environments also include an emphasis on sense-making – on helping students become metacognitive by expecting new information to make sense and asking for clarification when it doesn’t.

(Bransford, Brown & Cocking, 2000, p. 125)

Knowledge, in this sense, includes the curriculum, learning objectives and concept development that teachers expect their students to master to better understand the world in which they live. The curriculum consists of what teachers plan to teach, often aligned with national, state or local objectives. In elementary classrooms, knowledge is regularly compartmentalized into disciplines such as reading, writing, math, science and social studies. Standards and objectives are translated by the teacher and goals for learning are identified from very general (e.g. students will be able to read texts appropriate to their grade level) to very specific (e.g. Jarod will recite the 3’s times table in 45 seconds). Historically, teachers have had some flexibility to decide what students learn and what constitutes success. More recently, outside influences such as the Common Core State Standards and standardized testing have directed what teachers are required to teach, when they teach it, and what is accepted as mastery (Jones, Jones & Hargrove, 1999; Kamenetz, 2015). Consequently, the PK-12 curriculum has constricted, and common standards have been “pushed down” the grade levels such that there is little time for teachers to depart from the prescribed, common curriculum or to innovate their pedagogical practices (Kempf, 2016). Moreover, the standardization of curriculum and teaching methods has resulted in skills-based performance as a goal, rather than the meaning making and application of learning to students’ understanding of the world.
Knowledge-centeredness applies to teacher learning, as well. Considering this dimension of teacher learning, the knowledge base for teachers has not been well defined, nor is there a knowledge base agreed upon by the profession (Ball & Cohen, 1999; Darling-Hammond & Bransford, 2007). Traditionally, the compartmentalization of teacher education consisted of content knowledge, pedagogy and dispositional issues. Beyond those three components, the decisions about what teachers should know have diverged, whether it be in teacher preparation programs or in in-service training. From foundational topics like the history of education, diversity and instructional technology, to practical matters like student discipline, textbook management and workroom equipment, there are many varied and competing views of what teachers should know. Once in their own classrooms, however, it is often left up to teachers to learn, grow and improve their practice, including their knowledge base (Ball, Thames & Phelps, 2008; Imig & Imig, 2006). Meaning making for the teacher is often distilled into which skills they choose to emphasize in their teaching and which methods will most efficiently teach those skills.

“Professional expertise” is defined as the ability to notice, remember, and organize information in order to use it in addressing teaching problems. Studies of professional expertise have revealed that individuals exhibit routine expertise, that is, the ability to solve relatively similar problems, and adaptive expertise, the ability to solve non-standard or unique problems in creative ways (Baroody, 2003; Hatano & Inagaki, 1986). Adaptive expertise, as opposed to routine expertise, suggests that teachers continually develop methods that stretch beyond what they already do in their classrooms (Darling-Hammond & Bransford, 2007; Schwartz, Bransford & Sears, 2005). New teaching techniques,
instructional methods, and, ultimately, pedagogical perspectives can be reached as teachers adapt, accommodate and construct new pathways of understanding in their teaching.

The contrast between routine and adaptive expertise provides for a potential obstacle as a teacher takes on a new pedagogical approach. Routine expertise is valuable when efficiency is the goal of learning. Adaptive expertise is valuable when innovation is the goal. Given these two competing goals, implementing a new pedagogical approach could be frustrating as a teacher thinks about what students are to learn and the best ways to teach. In the current educational environment in which high-stakes testing and standardized curricula and instruction necessitate a priority on efficiency, it may be too risky to try a new approach (LeFevre, 2014). The time and energy it takes to innovate, and therefore lose some efficiency, could make an experienced teacher look and feel like a novice, something that might be unacceptable to an experienced teacher. Working towards the goal of efficiency promotes routine expertise, so the question remains how one overcomes the routine to learn, grow, change and innovate (Joyce & Showers, 2002).

**Learner-centeredness**

Learner-centeredness refers to a classroom context in which a teacher understands the needs of the children. “Overall, learner-centered environments include teachers who are aware that learners construct their own meanings, beginning with the beliefs, understandings, and cultural practices they bring to the classroom.” (Bransford, Brown & Cocking, 2000, p. 124) Knowing how children learn, considering their prior knowledge, and the funds of knowledge they bring to the learning environment all contribute to a learner-centered classroom (Charney, 2015; Moll, Soto-Santiago & Schwartz, 2013). In addition, by understanding the constructive nature of knowing (Dewey, 1938, 2007; Piaget & Inhelder,
teachers in a learner-centered classroom plan for students’ incomplete knowledge and misunderstandings. Teachers who are learner-centered value approximations, or bold attempts, at learning (Cambourne, 1988).

It is important to consider that the teacher is a learner, too. Translating learner-centeredness into the realm of teacher development, Shulman (1986) suggests that teachers bring their own propositional, case and strategic knowledge into the teaching and learning situation. With more experiences and generalizations to draw from, a teacher has many more ‘hooks’ on which to hang new experiences. The irony is that, even with many more experiences to connect to, it is often the case that more experienced learners choose not to make expanded connections. Rather, they rely on the familiarity of past experiences through an “apprenticeship of observation” and are satisfied to do the same things over and over (Lortie, 1975). The challenge with teachers who commit to try something new is that they must be helped to overcome the hurdle of past success.

Similarly, when thinking about teachers as learners and the rich prior knowledge they bring, it is important to help them consider their expert blind spots (Nathan, Koedinger & Alibali, 2001). Implementing a new pedagogical strategy requires stepping into areas that are potentially less comfortable, especially with inquiry methods that are more student-led. Helping teachers remember that all learners, including themselves, bring pre-conceived notions, misconceptions and expectations into a new learning situations, and that approximations are accepted and encouraged, addresses concerns they may have about not knowing (LeFevre, 2014).

Finally, in thinking about the teacher as a learner, it is critical to note that change requires letting go of pre-conceived notions or ways of doing things. In Mindset, Dweck
(2006) proposes that growth of any significance requires the leaving of something behind or letting something go. As previously stated, teachers, as adult learners, are hesitant to initiate drastically different ways of teaching because what they have been doing works. In a corresponding way, teaching differently would mean giving up ways of thinking and doing that have, heretofore, been comfortable. For example, a teacher who attempts manipulative-based mathematics will have to give up the time she used to do worksheets. Using manipulatives to teach mathematics may also require the teacher to relinquish control of quiet, paper/pencil work to louder, hands-on activity. Progress would mean that one way of doing is left behind for another, new way.

Considering that teachers are learners opens new doors in the ways mentors and coaches can work within the profession. When we frame “teaching as the learning profession” (Darling-Hammond & Sykes, 1999), we can work to model the very understandings and instruction we hope for students in their classrooms with the teachers, themselves.

Community-centeredness

Elementary school teachers often have a goal of developing a community of learners in their classrooms (Charney, 2015; Noddings, 2013). Teachers actively work to develop shared norms and common practices that reinforce positive relationships among all of the people in the room. “Ideally, students, teachers, and other interested participants share norms that value learning and high standards. Norms such as these increase people’s opportunities to interact, receive feedback and learn.” (Bransford, Brown & Cocking, 2000, p. 142) Community-centered classrooms are characterized as places in which taking learning-risks is encouraged and making mistakes is viewed as part of the learning process. Cooperation is
emphasized and, if competition is used in the classroom, it is friendly competition, without high-stakes effects on the social structure. Additionally, in community-centered classrooms, there is positive regard for those who believe differently, think differently and behave differently. When conflicts arise, there are mechanisms to address them in respectful and proactive ways (Charney, 2015). An emphasis on the development and maintenance of relationships is key in a community-centered learning environment. It is in the context of these relationships that learning is enhanced, conflicts are addressed, and problems are solved.

Just as the classroom community is an important dimension to consider for student learning, the professional community in which a teacher practices is important for growth, as well. Unfortunately, teaching is often an isolating endeavor and the community-centeredness that teachers create in their classrooms is not often mirrored in their own professional communities (Conley & Cooper, 2013; Lortie, 1975). However, the social nature of learning that has been applied for decades to children within the classroom can also apply to adult learning (Bransford, Brown & Cocking, 2000; Vygotsky, 1962, 1978). The rise of professional learning communities has attempted to address the social learning needs of teachers, as has the increased emphasis on induction of teachers into the profession and subsequent mentoring (DuFour & Eaker, 1998; Hord, 2009; Ingersoll & Strong, 2011). It is important to consider the need for a strong, supportive community and its effect on the practice of teachers.

Questions arise regarding whom teachers trust to help them improve their practice and with whom they cooperate (Marzano & Simms, 2013; Rowley, 1999; Sprinthall, Reiman & Theis-Sprinthall, 1996). Reflecting on one’s practice with a trusted colleague or team is
critical component of a community-centered, professional atmosphere (Costa & Garmston, 2015). Having such a relationship will affect how a teacher perceives her own identity as a teacher, decision-maker and innovator (Miller Marsh, 2002). Those changes in identity, supported in a trusting, community-centered environment can move a teacher along in her own development and learning. Alternatively, teachers who are not supported by an effective professional community can feel isolated or even alienated when they attempt to reflect on their practice or innovate in their classrooms (Pugh & Zhao, 2003).

**Assessment-centeredness**

The fourth dimension of the *HPL framework* is assessment-centeredness. In the *HPL framework*, assessment refers to the gathering of data to provide feedback to the student about his or her progress and feedback to the teacher to inform instruction. “The key principles of assessments are that they should provide opportunities for feedback and revision and that what is assessed must be congruent with one’s learning goals” (Bransford, Brown & Cocking, 2000, p. 139-140). While it may seem that assessment-centeredness refers to outside judgment on achievement, often manifested as grades, the concept actually intends that one’s own learning goals serve as the basis for comparison. External objectives or others’ judgement may inform assessment, but the goal should be to meet one’s own high expectations of learning. External standards for knowledge and skills are omnipresent in formal education. The reality of providing balanced feedback on external standards while helping the learner interpret the data with regard to his or her own expectations is paramount. In the end, the purpose of feedback should be for the learner to confirm his or her own learning or meeting a standard.
Unfortunately, in the current school environment, assessment is often synonymous with high stake, multiple choice testing (Au, 2011; Kempf, 2016). North Carolina Department of Public Instruction reported that students in third grade spend 13 hours on state mandated standardized tests (Guindon, Huffman, Socol & Takahashi-Rial, 2014). This statistic does not include county-imposed benchmark testing, probes, retakes, data analysis, nor does it include time spent on in-school and after-school test preparation.

Likewise, the assessment of teachers, often couched in words such as “accountability,” “data-centered teaching,” or “teacher effectiveness,” has, of late, been driven by accountability modeling. Using student test scores to determine the value of a teacher’s teaching conflates the primary goal of assessment-centeredness, that is, the success that the learner achieves towards his or her own goals.

Given the intense emphasis on testing as the primary form of assessment and the subsequent use of those test scores in the assessment of teachers, what does an effective assessment-centered learning environment look like for a teacher’s professional development? The state of affairs for professional development suggests that teachers receive informal feedback from a variety of sources: colleagues, parents, students, mentors and administrators. Most teachers also receive formal, summative evaluations (often including statistically modeled student test data) from administrators, supervisors and mentors, however, the value of such evaluations is uneven, at best (Bransford, Brown, & Cocking, 2000; Darling-Hammond, 2015; Hallinger, Heck & Murphy, 2014).

A supportive assessment-centered learning environment for teachers should focus on the daily work in which teachers engage, not just the achievement data student testing provides. Assessment for teachers includes ample opportunity to discuss and time to process
in-context data collected by a trusted “knowledgeable other” (Richardson, 2005) or “critical friend” (Costa & Kallick, 1993). Such coaches can provide data about planning, instruction, interaction with students and reflection directly to the teacher for her to analyze. Coaches give teachers support to help them interpret the data and make decisions to move forward. Though the process may seem time-intensive, such coaching provides the time required to develop trusting relationships, as well as time for extended observations and conversations that affect the teacher’s change in practice. By extension, effective assessment includes an emphasis on self-evaluation and decision-making (Reiman & Oja, 2006). These conditions for an assessment-centered learning environment place a teacher at the center of learning, where information is shared not for decisions of reward or punishment, but for the purposes of reflection and growth. In the end, the teacher’s improvement goals should be the center of the teacher’s assessment.

**Summary of Teacher Learning**

To start using a new pedagogical practice such as inquiry-based instruction, a teacher will have to take on the role of learner. While encouraging her students to ask and answer questions for themselves, the teacher will be engaging in the same process at a different level. The teacher will ask herself what she knows about inquiry, what she needs to know, what her students need to know, and how to teach them the strategies and skills they need to be successful. Just as she is asking her students to take risks and try on new ways of thinking, she too will be stepping into new teaching territory. “Inquiry-based teaching and learning” will gain new meaning for students and teacher.

The *HPL framework* described by Bransford, Brown and Cocking (2000) provides a clear and comprehensive way to look at learning environments. The *HPL framework*, based
on a constructivist view of learning, can help determine if such environments, whether they are classrooms where students work or collegial networks in which teachers work, are conducive to learning. While the framework describes classrooms and children’s learning, it is applicable to teachers work, as well. The framework can help determine if and how the provisions of knowledge-centeredness, learner-centeredness, community-centeredness and assessment-centeredness are represented in the complex learning environment for teachers. These lenses can also be used to view and evaluate the conditions in which teachers attempt to implement innovative educational practices, such as inquiry-based instruction.

How Teachers Change Their Practice

Intentionally changing one’s pedagogy is hard work. Teachers come into their teaching roles with expectations about what kind of teacher they are, what kind of teacher they are expected to be, and what kind of teacher they want to be (Nieto, 2005, 2015). New teachers have the experiences gained during their teacher preparation program and their experiences as students. Quickly, they face being the professional decision-maker in their own classrooms, choosing instructional materials and implementing instructional strategies to address the curriculum. The curriculum is most often provided as a set of standards or objectives not chosen by the teachers, themselves. Regardless of their philosophies, ideals and expectations when accepting a teaching job, teachers try to adapt and adopt to the culture and instructional expectations of the first schools in which they work and of grade level colleagues with whom they teach (Imig & Imig, 2006). How teachers are inducted sets the pathway for the teachers they will become and sets a baseline for the changes they will implement over their careers.
Limitations of the Workshop Model

Making changes in one’s teaching practice requires foresight, intentionality and support (Fullan, 2006; Guskey, 2002). How does a teacher make changes in her professional decision-making, in her instructional practices and in her pedagogy? The common perception is that teachers engage in professional development activities throughout their careers, often in the form of workshops, conferences, graduate classes or at other venues outside of their classrooms (Stewart, 2014). By attending workshops and the like, teachers learn about new materials and methods, and are expected to integrate them into their teaching. School systems spend thousands of dollars on this model of professional development and, therefore, it is expected that the teachers will implement these externally imposed changes with vim, vigor and fidelity (Joyce, Wolf & Calhoun, 2009). Professional development in this format attempts to convince teachers of the value of a new program or a new set of materials. The goal is to encourage the new program’s use because teachers believe they will “work.”

“Professional development leaders, for example, often attempt to change teachers’ beliefs about certain aspects of teaching or the desirability of a particular curriculum or instructional innovation. They presume that such changes in teachers’ attitudes and beliefs will lead to specific changes in their classroom behaviors and practices, which in turn will result in improved student learning” (Guskey, 2002, p. 382). In fact, professional development efforts such as this have limited lasting effects (Guskey, 2002; Joyce, Wolf & Calhoun, 2009).

Starting with Classroom Practice

Instead of starting with attempts to influence teachers’ beliefs and attitudes, an alternative approach is to start with their classroom practices (Guskey, 2002). While beliefs and attitudes affect a teacher’s choice of instructional techniques, it is the actual classroom
practices that students experience and are what we can actually observe. Beginning by helping teachers change their practice will, in turn, influence their beliefs and attitudes (Ball & Cohen, 1999; Zeichner, 2012). Through reflective actions, teachers are empowered to make decisions about their practice by looking at the resulting changes in student learning and student outcomes. If outcomes are positive, teachers refine their practices and their beliefs and attitudes change. Such a professional learning model reinforces how teachers change their practice: They see the methods positively affect learning in their classrooms and with their students and the change persists. Helping students reach their potential is the reason given by most teachers entering the profession (Rentner, Kober, Frizzell & Ferguson, 2016). A professional learning model that emphasizes changing a teacher’s practices in order to help students improve stands a better chance of sustained effort and positive motivation than do models that rely on external influence, pressure or, at worst, coercion.

Fullan (2006) suggests that there are seven core premises regarding how teachers change their practices. The seven core premises he describes are motivation, capacity building, learning in context, changing context, reflective action, tri-level engagement and persistence with flexibility. He suggests that if teachers learn from colleagues from down the hall, down the street or across the state, they may more likely to attempt changes in their own classrooms. Critically analyzing results of their attempts will encourage teachers to persist in refining their efforts. However, Fullan notes that premises 2-7 all point back to motivation as the key. It is the individual teacher’s desire to help students by improving her teaching that ultimately ignites the other conditions for learning and change. Fullan’s work has been used to look at change at many levels, especially at the district level. His arguments are rooted in
the culture of the school and in the classroom, the epicenter of where change happens and where efforts should be focused.

Elmore (2004) explains that, for most teachers, there are two, seemingly opposed influences when making decisions about curriculum and instruction: external pressure vs. internal accountability. He contends that external pressures such as parent expectations, supervisor evaluations and end-of-grade testing results sway teachers towards standardization and to ‘cover’ material efficiently. Internal accountability comes from a teacher’s desire to do what is right by her students, not to cause undue stress, but to hold students and themselves to high expectations.

Paradoxically, Elmore points out that how a teacher views external pressures is often proportionate with the teacher’s internal accountability. Said a different way, teachers who hold themselves to high levels of internal accountability are most often the ones for whom external pressures are perceived the most intensely. In this era of standardization and intense external accountability, teachers may find it difficult to attempt innovation because it puts the balance of internal motivation and external accountability into unwieldy disequilibrium. The imbalance can even stop some teachers from attempting change, even before they start (LeFevre, 2014).

Given that teachers have a vision of the kind of teacher they want to be and that instructional changes happens best when the success of a new practice sustains the change efforts, how do teachers innovate in such conditions? Timperley, et al. (2008) suggests that teachers take advantage of elements of a school’s culture that supports risk-taking. Innovative teachers often seek opportunities to participate in research or pilot new curricula or technology. Teachers who want to innovate also identify and use the support structures
that exist to sustain her attempts. They collaborate with like-minded teachers and engage with experts, both inside and outside the school environment. In addition, by engaging in intentional, reflective practice, innovative teachers critique their own work, asking, “‘What happened?’ ‘What does it mean?’ ‘Where do I go from here?’ The process of answering those questions and employing the decisions that come about opens the door to new possibilities of knowing oneself and one’s profession” (Brinkley, 2015, p. 648).

**Positioning Theory**

In teaching, there are demands from many different stakeholders: parents, administrators, supervisors, and students. There are also community standards to which teachers must attend, as well as curriculum standards they must teach. For teachers who attempt new ways of teaching, attending to all of these entities can be daunting. Innovative teachers adapt (Hursh, 2008). They find ways to adjust their teaching and learning and they find ways to address the concerns of stakeholders while still upholding their educational values and personal principles. They adapt to the ever-changing contexts and they realize that varying approaches are appropriate for varying needs. For teachers to be so accommodating may seem arbitrary, however, it is more to the point that flexible teachers fare better in demanding situations, such as the conditions they find themselves in these days in the era of standardization (Goldstein, 2014).

How is it that some teachers are able to adjust to new teaching situations, to diverse student needs and to new pedagogies while other’s struggle? Bullough (2005) offers three dimensions to consider regarding teacher success. First, he suggests that through self-confirmation, teachers are able to locate acceptance and approval within themselves. Teaching is, by design, a social event, and others (including students, colleagues and
supervisors) provide significant input into one’s perceptions of success. However, the adaptive teacher takes in those outside perspectives and, yet, claims success as a matter of personal responsibility.

A second dimension Bullough suggests that helps teachers adjust is self-transcendence. Self-transcendence means choosing goals that lead to growth because they see the value to those beyond themselves. For example, they want to see students succeed, or they want to contribute to a peer group or to the profession. Self-transcendent teachers understand their place in the system of teaching and learning and do not assume that they are the center of that system.

The third dimension Bullough identifies is positioning. Described by Harré and Van Langenhove (1999) and updated by Harré, Moghaddam, Cairnie, Rothbart and Sabat (2009), positioning theory refers to “cognitive processes that are instrumental in supporting the actions people undertake particularly by fixing for this moment and this situation what these actions mean. These processes serve to explain the actions to which we are attending” (Harré, et al., p. 5). In effect, adaptive teachers are able to see the teaching situation at hand for what it is, whether it be while teaching a specific lesson, planning a unit with a grade-level team, or developing a long-term view of how their classroom functions. They mentally define and hold onto long-term goals, make decisions in the present and maintain boundaries on external pressures. While this theory has been used elsewhere to discuss socio-cultural, feminist and post-structural implications of research, it is used here to illuminate a teachers mental maps regarding how she clarified her rights and duties in order to take control of her learning situation and that of her students.
Teachers who position themselves for success do so by making choices that give them agency within the context they can control. “By attending to features of the local context, in particular normative constraints and opportunities for action within an unfolding story-line, it becomes clear that access to and availability of certain practices, both conversational and practical, are determined not by individual levels of competence alone, but by having rights and duties in relation to items in the local corpus of sayings and doings” (Harré, et al. p. 5). It is through ownership of the “rights and duties” that a teacher positions herself, from a moral standpoint, to succeed. An adaptive teacher can see the cultural and moral norms in which she is making decisions. Then she makes a conscious choice to adapt to those pre-suppositions for morally just reasons. For example, some teachers are expected to utilize ability grouping to drill students on end-of-grade test items. An adaptive teacher who does not believe that teaching to the test is morally defensible may choose to use the time with her group to offer personally relevant reading passages. She would then teach students how to ask questions of the passage similar to those they may see on the test. She positions herself within the confines of what is required to provide instruction that is morally aligned to her sensibilities. In these ways, teachers who are troubled about the emphasis placed on standardized curricula and assessment can function in a self-positioned space of moral stability. “Through positioning, people take risks to make improvements for themselves and others because it is the right thing to do, thus the connection to moral development. Personal gain will most likely be in the form of feeling good about one’s self, not in winning extrinsic rewards” (Huisman, Singer & Catapano, 2010, p. 490). Rather than teaching behaviors being measures of action and reaction, positioning theory places the meaning of the teachers’ actions at center stage.
Obstacles to Implementing New Pedagogy

Teachers face many challenges when they try to innovate in their classrooms. Some of the issues that may deter teachers’ efforts to innovate include the need to try the innovation more than once, giving up control, tension with colleagues, and lack of support (LeFevre, 2014; Stigler & Hiebert, 2009).

A case study examined a group of veteran science teachers as they attempted to implement inquiry learning into their classrooms (Ermeling, 2010). The teachers had worked extensively outside of the classroom with experts, learning about inquiry-based teaching. They also observed model lessons and collaboratively wrote their own lesson plans. Despite all of that groundwork on the logic and research behind the model, the teachers’ first attempt to apply the new method was unsuccessful and messy. They had to practice inquiry teaching several times, watching video tapes of their attempts in teams and hearing feedback about their performance before they were able to master the skill. This case study is not an outlier. In fact, studies suggest that mastery of a new skill takes teachers twenty separate instances of practice, on average, and that number may increase if the skill is exceptionally complex (Joyce & Showers, 2002).

Implementing inquiry-based instruction is a complex endeavor. It involves a shift in ways of thinking about knowledge and about students’ involvement in the learning process. Teachers must “believe in the value of students having some element of control over what they will do” (Colburn, 2000, p. 44). Teachers grapple with issues of control over activity, curriculum, and behavior as they move from traditional, transmission formats of teaching to inquiry-based instruction in which students’ voices are heard, valued and followed (LeFevre, 2014).
Another potential obstacle to innovative teaching is tension with colleagues. In a case study, Ponticell (2003) followed a team of teachers as they learned about and implemented a ‘school-within-a-school’ to help prevent sophomores in high school from dropping out. The innovation was moderately successful, but one teacher involved in the implementation reported that there was a remarkable loss in collegial relationships. Other teachers’ perceptions of “perks” and “favoritism” were reported as reasons for this distancing of professional relationships. Other research has found that negative interactions with peers has affected teachers’ implementation of innovative pedagogy, as well (Achinstein, 2002; Darling-Hammond, 1995; Fullan, 2001).

Finally, it is well documented that teachers need support when attempting a significant pedagogical change (Costa & Garmston, 1994; Drago-Severson, 2004; Shulman & Sherin, 2004). The lack of such support would mean that teachers must either sustain efforts single-handedly, or marginalize their efforts when energy or interest wanes (Fullan, 2001, 2014). To combat this implementation dip, teachers need structures on which they can depend to reinforce their efforts, even if they do not go as planned on the first attempts.

In thinking about how teachers change their practice, it is important to consider that teachers come to teaching with their own ideals of what good teaching is and what good teachers do. They will evaluate any change that they implement through those lenses. Likewise, teachers engaged in innovation need to see the value of changing practice as opposed to just changing their beliefs. The latter is the common purpose in much of what passes for professional development, while the former means attempting new methods with an eye towards student learning. In attempting to change their practice, teachers should be aware of their motivations for change and should also be aware of the obstacles they may
face when attempting to change their teaching. “In sum, educational leaders must recognize the many factors that are critical to the success of reform, including the ways and practices that support teacher learning as well as the obstacles that can inhibit its progress. With such understanding, we can foster action that will support valued change and, importantly, address limiting factors” (Davis, 2003).

**Inquiry-based Teaching and Learning**

Simply stated, inquiry is the process of asking and answering one’s own questions (Barell, 2007; Daniels, 2017). More accurately though, inquiry is a philosophical stance about how humans learn and how teachers best teach (Harste, 2001). We often think about academic inquiry as abstract research done at higher levels of education. However, inquiry is also found in a young child wondering what happens when you drop a pebble in a pond. Inquiry is part of the process of an adolescent pondering occupational opportunities. Inquiry is a parent’s fascination with his or her child’s learning to walk and talk. Inquiry is part of the human condition: to wonder, to predict, to test and to learn from observing patterns. Honoring that very human process is at the heart of inquiry-based teaching and learning (Barell, 2007; Daniels, 2017; Harste, 2001).

Within schools and classrooms, teachers attempt to employ hands-on activities, student choice and project-based learning to engage students to be ‘part of the learning.’ Unfortunately, many of these attempts are in opposition to the status quo, that is, the teacher’s control of the curriculum being explored or the topic of the projects that are to be completed (Au, 2007, 2011). While the foundation of these attempts to engage students is touching on the human need to explore and discover for ourselves, they are undermined, often at the outset, by the teacher’s preconceived notions of what is to be learned and how it
is to be experienced (Colburn, 2000). In contrast, student-initiated inquiry opens the door to a learner’s interest in any realm or topic, opens the means by which he or she is allowed and encouraged to explore that topic, and emphasizes ownership in the learner’s ultimate expertise in the area explored. The process involved with inquiry-based teaching de-emphasize learning as receptive and passive and emphasize learning as generative and inspirational (Brooks & Brooks, 1999; Daniels, 2017; Harste, 2001).

In inquiry-based classrooms, there are two direct beneficiaries: students and teacher. Students are invited and expected to participate in designing curriculum. They share in the tasks of instruction, research, resource management and assessment. In inquiry-based classrooms, students have a voice in what and how they learn, and they have agency in decisions that affect them. In addition, teachers in inquiry-based classrooms admit that they are not omniscient content experts. They learn alongside their students, even as they study their teaching practices. What does inquiry look like when it is put in practice? Moreover, how do teachers conduct their own professional inquiry as they teach students to ask and answer questions?

**Inquiry in the Classroom**

Most people understand inquiry to mean asking questions. By extension, an inquiry-based teacher, then, either ask questions of students or encourages students to ask their own questions. However, inquiry-based instruction is more nuanced than a teacher simply paying more attention to questions (Colburn, 2000; Harste, 2001; von Glasersfeld, 1995).

Inquiry-based instruction is a pedagogical orientation with its foundation in constructivism. Teachers who employ inquiry-based instruction offer opportunities for students to actively engage with learning materials, ask questions and find answers. Colburn
(2000) gives a practitioner’s definition: Inquiry-based instruction is “the creation of a classroom where students are engaged in essentially open-ended, student-centered, hands-on activities” (p. 41). In the inquiry-based classroom, the teacher is a learner along with the students, and stands as a model inquirer instead of as a traditional disseminator of knowledge. In its essence, inquiry-based instruction is about teaching children how to ask better questions, deeper questions, probing questions and meaningful questions. It is about teaching learners how to find answers, evaluate information and resources and to think for themselves. Inquiry-based teaching entrusts learners with their own learning (Dewey, 1938, 2007).

**What does inquiry-based instruction look like?**

As one might expect, inquiry in practice can take many forms. Depending on the discipline being studied, students’ interests and the confidence of the teacher in implementing inquiry-based practices, inquiry could be confirmatory, structured, guided, or open (Banchi & Bell, 2008; Colburn, 2000). The activities associated with inquiry involve demonstrations, thematic units, literature circles, experiments, scientific data collection, interviews, data and statistical analysis, presentations, literature searches, or any of a number of works of art including performance, fine arts and language arts, representing all of the traditional elementary school disciplines. In inquiry-based instruction, these disciplines are intimately intertwined in the activities associated with inquiry-based learning.

However, inquiry is not simply discovery learning in which students are left to their own devices to determine the direction and rigor of the curriculum. Nor is inquiry only project-based learning in which generating a product is the goal (Barell, 2007; Colburn, 2000; Harste, 2001). Hmelo-Silver, Duncan and Chinn (2007) point out that inquiry-based
learning is a structured endeavor, and that it is the teacher’s construction of the process that guides students towards conceptual understanding. In agreement with other authors, they note that the knowledge, skills and dispositions of inquiry-based teachers are paramount in the implementation of inquiry-based instruction (Barell, 2007; Mills, 2014; Stephenson, n.d.).

In inquiry-based instruction, the teacher takes the role of facilitator as opposed to information disseminator. Apparent in the 5E inquiry planning model (Bybee, et al., 2006) and in the explanation of the four phases of inquiry (Heick, 2013), inquiry-based teaching hinges on the teacher’s sharing the role of curriculum designer with students. More specifically, inquiry-based teaching has identifiable characteristics and is observable in a teacher’s practice and in an inquiry-based classroom. A synthesis of characteristics and descriptions of inquiry-based learning from Brooks and Brooks (1999), Dewey (1938), Exline (n.d.) and Pilburn, et al. (2000), yields observable characteristics of inquiry based teaching including:

- Accessing students’ prior knowledge and student exploration before formal instruction
- Students asking divergent questions
- Conceptual focus for student learning (as opposed to procedural)
- Connecting learning among disciplines
- Students reflecting on their own learning (metacognition)
- Reciprocal teaching and learning among teachers and students
- Climate of mutual respect between students and teacher

All of these characteristics need to be operating in concert for inquiry-based teaching to reach the potential of deep and meaningful student learning.
In essence, inquiry-based teaching and learning honors curiosity. It is human nature to want to know how and why things work. In the inquiry-based classroom, the teacher joins the students as a learner, putting aside expectations that the teacher knows all of the answers (Daniels, 2017). Instead, what one sees in inquiry-based classrooms are students fully immersed in asking questions, finding answers and then asking more questions about what they just learned. Likewise, one sees an engaged teacher, accountable to her own curiosity and to making sure her learners have the tools and skills to answer their own questions, wherever they may lead (Barell, 2007, Brooks & Brooks, 1999, Daniels, 2017). Moreover, one sees teachers and students designing a community in which all learners have creative license and accountability (Harste, 2001).

**Student-initiated inquiry**

Many teachers want their students to be more engaged. Teachers also see the value of honoring students’ areas of interest, but fewer teachers develop structures that allow students to delve into their areas of interest or know how to encourage students to take full ownership of their own learning (Bundick, Quaglia, Corso & Haywood, 2014). Such pedagogical perspective requires a teacher to question assumptions of classroom control, curricula, and ownership of learning (Marzano & Pickering, 2010).

When considering inquiry-based instruction, Colburn’s (2000) definition gives educators a place to start when considering the power of student-initiated inquiry: Inquiry-based instruction is “the creation of a classroom where students are engaged in essentially open-ended, student-centered, hands-on activities” (p. 41). Colburn describes approaches to inquiry in which the teacher’s control of curriculum and learning process decreases while students’ responsibility for learning increases.
Structured Inquiry

Guided Inquiry

Open Inquiry

Student-initiated Inquiry

More teacher-led

More student-led

Figure 2.2. Approaches to Inquiry

In structured inquiry, the teacher designs hands-on experiences in which students engage. In doing so, there is often a pre-determined goal or ‘discovery’ for students to uncover. Consequently, the teachers generally pre-determines the purpose, investigation, resources and product, as well. In guided inquiry, the teacher maintains control at the outset of the experience and provides resources, but learners are expected to decide on procedures to address the issue at hand, whether it be a problem to solve or a question to research. The learners then may depart from the teacher’s expectations, exploring novel facets of the original problem or question. Likewise, in guided inquiry, the product or findings may be different based on the direction the individual learners take their studies. Even so, in guided inquiry the impetus for work originates with the teacher (Colburn, 2000).

Student-initiated inquiry places the responsibility for learning squarely in the hands of the learner (Daniels, 2017, Llewellyn, 2014). As the name implies, student-initiated inquiry originates with a problem, issue, topic or question born from the wonder of the student. Curiosity is the inspiration for student-initiated inquiry, and the teacher’s role from the outset is to help learners discover their own deep interests and to help them refine those interests into manageable, explorable questions (Ostroff, 2016). The teacher’s role fundamentally changes from knowledge-dissemination to facilitator. The teacher acts less as the gatekeeper
of information or sage-on-the-stage (King, 1993) and more as the chief question-asker. The teacher is not required to know the answers, rather to be the one who knows how to teach learners how to find and report answers themselves (Barell, 2008; Harste, 2001).

Much of the history of inquiry-based instruction has its roots in science education (Llewellyn, 2014). Dewey, a former science teacher, saw inquiry as a means for students to bring personal knowledge to science learning (Dewey, 1938). From the late 1950’s through the new millennium, science education curriculum, instruction and policy encouraged teachers to teach science content and, even more so, to teach children to think scientifically through inquiry (AAAS, 1994; NRC 1996; NRC 2000). Embedded in science curricula for the past seventy years, teachers and students have been encouraged to follow the “scientific method” to pose questions, create experiments, control variables, scrutinize sources, collect and analyze data (See Barrows, 2006). It is through versions of these same processes that student-initiated inquiry can be employed in a variety of interdisciplinary settings, and with children of all ages.

The implementation of student-initiated inquiry ranges from a workshop model (e.g. genius hour) wherein teachers designate regular periods of time for students to research issues or topics of interest (Juliani, 2014; Martin-Hansen, 2002) to imbedded inquiry in which units of study contain opportunities for student-initiated investigations into personally meaningful components of the overarching study (Barell, 2008). Other opportunities for authentic student-initiated inquiry include service learning endeavors, self-directed studies and internships (Arenglado, Bradley & Lane, 1996; Kallick & Zmuda, 2017; Ostroff 2016). In its many forms, student-initiated inquiry demonstrates characteristics and uses processes that
raise the responsibility for learning for the students and also puts the teacher in a position to teach how to think, not just how to perform.

Pahomov (2014) offers five critical characteristics of classrooms to support student-initiated inquiry: Choice, personalization, relevance, empowerment and care. The first three, choice, personalization and relevance, represent values that the teacher must actively seek to promote in order for the last two, empowerment and care, to grow. Choice insures that each student is studying a topic, issue or question that is meaningful while personalization refers to the ways in which he or she carries out the study. “Compared to the vision of the traditional classroom, this scene looks like chaos” (p. 21). However, when students are deeply engaged in learning the answers to their own, relevant questions, the work of the classroom becomes much more like real life – offices, laboratories, construction sites – where each person is engaged with his or her own responsibilities while accountable to the whole. Such classrooms in which there is a curriculum of choice, personalization and relevance also reflect an empowerment the learners gain through goal setting and accomplishment. Because each person is engaged in work that is meaningful, competition and grade-seeking gives way to collaboration, cooperation and care. The ethos of an inquiry-based classroom becomes a microcosm of what the world should be.

**Phases of student-initiated inquiry**

Processes to support student-initiated inquiry in the classroom tend to look similar, no matter which form the inquiry-based instruction takes. Moving back and forth among the phases of finding inspiration, asking questions, investigating answers using effective resources, reporting findings and reflecting over one’s own learning process, learners go
through inquiry cycles, improving each time (Areglado, Bradley & Lane 1996; Barell, 2007; Harste, 2001; Kallick & Zamuda, 2017; Ostroff, 2016).

Student-initiated inquiry begins with students asking themselves “What inspires me? What do I like to think about? What makes me wonder?” These questions help a learner begin the journey toward understanding a certain topic, skill or concept. Inspiration is the seed of what one wishes to think about, read about, talk with others about, and write about. Experts in self-regulated learning affirm that making a commitment is one of the key aspects to successful, independent learning (Zimmerman & Schunk, 2001).

Developing questions of varying degrees of depth and breadth is at the heart of inquiry. Questioning is a part of human nature and this phase of the inquiry cycle honors and elaborates on a learner’s innate sense of questioning. Ritchhart (2011) suggests classroom cultures that respect deep questioning provide safety for the students and for the teacher to admit what they do not know. Such classroom cultures also provide the space to look for the answers. He proposes that questions do more than just pose blanks to fill with correct answers. Good questions model intellectual engagement, form the constructs for integrated understanding and build a culture of inquiry. Teachers move beyond avoiding closed ended questions like “yes or no?,” even beyond using question stems like “who?, what?, where? and when?” Teachers hold the responsibility to promote “why? how? and what if?” questioning as the sustenance for deep thought and life-long learning (Anderson, et al., 2001; Bloom, 1956).

Student-initiated inquiry also requires that learners employ different methods to explore and to answer their questions. Pulling from Zemelman, Daniels and Hyde (2005) and Ostroff (2016), there are three common components to the explorations students make to
answer their questions. First, planning requires that a learner decide how to go about finding the answers while adhering to any external expectations, for example, time limits, curriculum obligations, grading requirements, or resource availability. Second, discovering is the core of the investigation, with learners taking time to read, experiment, talk with experts, and think about the answers to their questions. Determining what resources to use and judging the quality of those resources is a key part of discovery (Pahomov, 2014). Finally, recording calls for a learner to decide on a method to document the answers to questions, not necessarily for sharing at this point, but to remember what has been learned. Notetaking is a valuable skill that aids a learner in capturing new ideas and connections (Marzano & Pickering, 2010). These records will be used when the learner reports what has been learned. Investigation often takes the most time in a cycle and may overlap a great deal with the other components.

Finding answers to one’s questions is rewarding and is often enough to sustain motivation. However, inquiry also requires that learners make public what they learn in forms that are personally meaningful (Barell, 2008; Short, Schroeder, Laird, Kauffman, Ferguson & Crawford, 1996). In primary classrooms, it is often called sharing, while older students often call it reporting. In Making Thinking Visible, Ritchhart, Church and Morrison (2011) offer many ways for students to push their understanding, capture their thoughts and explain their thinking in ways others can understand. Students show their learning in any number of formats including written or oral reports, artistic representations, and/or video presentations. Digital resources and social media have opened up a wide array of options for students to share their learning (Pahomov, 2014). While an elaborate final product or project
is not a primary aim of inquiry-based learning, a learner’s responsibility and need to share what has been learned are (Harste, 2001).

An important, ongoing part of student-initiated learning is reflection. Reflection requires that learners analyze their own learning processes as a means to judge their own effort and accomplishment, as well as prepare for future studies. While this often occurs at the end of an inquiry-cycle and gives some closure, self-evaluation can and should comingle with the daily work of inquiry (Llewellyn, 2014; Ostroff, 2016). Learners naturally judge their own work, but most do not develop a sense of metacognition, nor do they learn to document self-evaluation well (Costa & Kallick; 2014). Reflection is an opportunity to do both. Questions like, “What did you do during the inquiry cycle? What did you learn to do better? Was the experience worth it?” help the learner develop a sense of responsibility for their own thinking and for their own work. Students should address what they think they did well and what needs to improve on during the next inquiry cycle. Generally, reflection is an opportunity for the learner and the teacher to celebrate learning accomplishments and plan for future learning together.

**The roles of students and teacher in inquiry-based classrooms**

As one might anticipate, the traditional roles of students and teacher are transformed in a classroom where student-initiated inquiry takes place. In a traditional classroom, the teacher is the decision-maker for both curriculum and instruction. Often following an externally designated course of study and/or pacing guide, the teacher decides what, when and to what degree of mastery students engage in topics and skills. In terms of instruction, the teacher decides the methods used to engage learners in the curriculum (Zemelman, Daniels & Hyde, 2005). Accomplishment is determined by teachers’ judgement, rubrics or
tests. Rarely does a student have a say in reporting success, mastery or accomplishment in his or her own learning (Costa & Kallick, 2014). This is pattern is familiar to most people who attended traditional schools.

In a classroom in which student-initiated inquiry takes place, students take responsibility “posing questions, planning procedure and analyzing results” (Llewellyn, 2014, p. 11). Ownership of learning is placed in the hands of all learners, including the teacher. As lead questioner, the teacher models the kinds of thinking she expects of students. However, the teacher is still responsible for instruction. Instead of teaching a concept or skill towards the goal of recitation or mastery, instruction becomes foundational to inquiry. Teachers teach questioning techniques, research methods, and source evaluation (Areglado, Bradley & Lane, 1996). Instead of teaching persuasion to write a mock ‘letter to the president,’ students write a persuasive letter to an authentic recipient of his or her inquiry interest. Teaching math skills enables students to display their research in appropriate graphs or charts. Teaching reading skills enables students to better access informational texts like news articles. Teaching interpersonal skills enables students to confidently interview experts. Clearly, “the basics” take on a different meaning in an inquiry-based classroom. Teaching students “the basics” empowers them to affect the world in which they live. Dewey (1897) sums it up best: “Education, therefore, is a process of living and not a preparation for future living” (p. 78).

**Research on inquiry-based education and achievement**

A question that is often asked about inquiry-based instruction is how students who experience such schooling fare with regard to achievement. While standardized testing is
only one way to judge students’ success in school, it is a common indicator that warrants attention.

In a meta-analysis of 138 research studies looking at inquiry-based science teaching practices and student achievement over eighteen years, Minner, Levy and Century (2010) found “a clear, positive trend favoring inquiry-based instructional practices, particularly instruction that emphasizes student active thinking and drawing conclusions from data” (p. 474). Their study continued a line of work by Shymansky, Kyle and Alport (1983) who found similar trends in a synthesis of studies conducted between 1955 and 1980.

In a study by Abbott and Fouts (2003), these similar findings were made across curricular areas. They observed 669 classrooms using the Teacher Attributes Observation Protocol, an instrument designed to identify constructivist practices in classrooms. Their analyses found that 17% of classrooms observed consistently used constructivist practices and that positive correlations existed between constructivist practices and student test scores. They also found negative correlations between use of constructivist practices and students from low socio-economic background, meaning that students from low socio-economic backgrounds were less likely to be involved in inquiry-based educational settings.

Unfortunately, this inequity has been corroborated in other research, as well (Wilson, Taylor, Kowalski & Carlson, 2010).

In an often-cited study interrogating discovery learning, Kirschner, Sweller and Clark (2006) contended that constructivist methods, specifically methods that exclude direction from teachers or other instructional leaders, are inferior to instruction that provides guidance. Their findings have been used to oppose methods like project-based learning, problem-based learning, Montessori Method, discovery science approaches and inquiry-based learning. In a
brilliant response to their critique, Hmelo-Silver, Duncan and Chinn (2007) explained how
the authors conflated constructivist philosophy with instructional practices that provided little
guidance, and how inquiry-based instruction (and constructivism, for that matter) is, in fact,
founded on the premise of scaffolding learners’ attempts to make sense for themselves. What
Hmelo-Silver, Duncan and Chinn pointed out is that constructivist practices are, at their best,
structures in which students can ‘construct’ their own understanding. While the final chapter
is not written on the impacts and efficacy of inquiry-based teaching and learning, what does
seem clear is that teachers and researchers are very interested in engaged learning, with all of
the aspects of study it provides.

Teacher Inquiry

Teacher inquiry involves a teacher looking at, analyzing and potentially changing her

If teachers investigate the effects of their teaching on students’ learning, and if they
read about what others have learned, they become sensitive to variation and more
aware of what works for what purposes in what situations. Training in inquiry also
helps teachers learn how to look at the world from multiple perspectives and to use
this knowledge to reach diverse learners. (p. 95)

Teacher inquiry is generally synonymous with action research, classroom research
and practitioner inquiry and has its roots in the idea that teachers regularly reflect on their
work (Schön, 1983, 1988). While each of these practitioner research paradigms has
developed through different histories and hold refined differences in processes and outcomes,
teacher inquiry, as a category, highlights the fact that the teacher holds the locus of control in
asking and answer questions about her own practice (Dana & Yendol-Hoppey, 2009).
Different from traditional quantitative or qualitative research in which an outside researcher collects data and makes observations and generalizations about a teacher’s classroom, teacher inquiry originates from a teacher’s interest in her own practice, and how she seeks to find out more about that interest within the context of her own teaching and in her own classroom (Dana & Yendol-Hoppey, 2009).

Teachers regularly ponder why a particular lesson did not go as well as expected, why a student behaves in a certain way, or what needs to happen tomorrow based on the events of today. Inquiry invites teachers to be intentional about examining specific areas of their teaching, their classroom, their students or of their curriculum. Almost one hundred years ago, educator and educational philosopher, Dewey (1933), called for teachers to engage in reflective action rather than simply completing daily routine lecture, followed by assessment. He urged teachers to be learners with their children and to explore topics of interest for both practical and personal purposes.

**Using Reflection to Change**

Schön (1988) echoes Dewey’s sentiments, differentiating reflection *on* action from reflection *in* action. He encourages teachers to not only ruminate on the happenings of the instructional day, but to look for patterns of one’s own decisions and how those decisions affect teaching and learning. Moreover, he suggests that teachers translate that reflection into action by attempting new ways of approaching teaching or interactions with students to see what different results might be possible.

Mezirow (1991) points out that critical reflection moves thinking from meaning schemes (sequence of events or cause/effect associations, for example) to meaning perspectives (networks of understanding that help us organize and define complex
relationships). For teachers to move their understanding from schemes like ‘us and them’ to professional perspectives like ‘best opportunities for my students to learn,’ they need opportunities to challenge their own thinking. In effect, Dewey, Schön and Mezirow are encouraging teachers to be researchers of their own work, emphasizing the “practice” component of “reflective practice.”

**Teacher Inquiry in Practice**

Teacher inquiry can take many forms, including an individual teacher reviewing a video recording of her lesson to see how she moves around the classroom or a cohort of teachers’ in-depth look at a yearlong science curriculum and how students in various classrooms experience the curriculum differently (Dana & Yendol-Hoppey, 2009). In any case, teacher inquiry centers on the teacher’s interests and on initiating a process for systematically and intentionally exploring those interests (Manfra, in press). Another key ingredient for teacher inquiry is that it is cyclical. With the purpose of gaining insight to affect her own classroom and her own teaching, a teacher’s inquiry cycle is one in which questions ultimately lead to decisions about what and how to change. That in turn, leads to the teacher either refining her teaching in that same area or choosing another, most-assuredly related, area of teaching or learning to explore (Costa & Garmston, 1994).

While different teachers’ questions lead to different modes of exploration, the process of teacher inquiry typically follows a basic track. According to Dana and Yendol-Hoppey (2009), the process begins with a teacher “finding a wondering” (p. 19). This could be within the realm of helping an individual child, improving curriculum, developing content knowledge, or experimenting with a new teaching technique, among other topics. The teacher then makes a plan to explore. Such explorations can include seeing what other people
have said about the topic, experimenting with teaching practices, or engaging a coach or mentor to help.

One of the most important parts of the teacher inquiry process is gathering data. Teachers look for opportunities to gather information along the way by journaling, taking pictures and videos of their adventures or even looking at quantifiable data like survey results and standardized scores. The collection of data is a key difference between typical teacher reflection and teacher inquiry (Mills, 2017). In typical teacher reflection, much is left to the teacher’s memory about how events transpired or what was said. By collecting data, there is a more concrete record to refer back to while analyzing and making decisions.

Teacher inquiry progresses they reflect on what they notice in their practice. Teachers methodically peruse what they collected over the experience to uncover patterns or trends. Dana & Yendol-Hoppey (2009) strongly encourage teachers to write as they evaluate the data that they collected. The writing they produce is not necessarily for others to read, but is a means to think through their findings. In addition to writing, teachers can draw, graph, chart or otherwise graphically organize their thinking as they process their data.

In the final phase of the cycle, teachers are encouraged to assess the quality of their inquiry and put into place some decisions they made regarding what they learned (Mills, 2017). Whether through changing their classroom practice, reporting their learning to a supervisor or to colleagues or by some other means, it is important for teachers to also make their inquiry public in some way, thereby making a contribution to the profession and, perhaps, influencing others to study their own practice. It is interesting to note how the phases of teacher inquiry parallel with the phases of student-initiated inquiry, as well.
Challenge to Implementing Teacher Inquiry

Getting started in the teacher inquiry process and sustaining the effort can be difficult. Teaching is a mentally and physically demanding job, so making the commitment to study one’s own practice requires commitment. To begin and sustain the effort, it is imperative that a teacher find something about teaching and learning about which she is passionate. An inspired, personal and meaningful choice of topic leads to interesting questions, which in turn keeps the curiosity moving forward. Practically, a teacher should aim for an inquiry cycle to be feasible in terms of scope and time (Yendol-Hoppey, 2009). As well, a teacher is well served to find or create a support structure, such as working with colleagues provides some accountability and outside input. Working directly with a coach or mentor is a powerful tool a teacher can use to keep the inquiry momentum moving forward. Ericsson (2006) mentions how coaches and mentors are critical to the accomplishments for those who reach high levels of expertise. By helping a teacher generalize to “representative situations” (p. 687), a mentor can bridge the mastery gap with well-placed challenges or questions.

Teacher inquiry is important because it places the power of informed decision-making in the hands of the teacher (Dana & Yendol-Hoppey, 2009; Manfra, in press; Mills, 2017). It empowers teachers to improve their practice and to explain their practice to others. The importance of the intentional, iterative inquiry process cannot be overlooked. With all of the distractions that are incumbent on teachers, concentration on improving one’s teaching can easily get pushed to the bottom of the list. At least, the kind of attention that results in deep, substantive improvement is often diminished. Teacher inquiry is a tool for professional development in the most authentic sense. Teachers know best what happens in their
classrooms and, given the opportunity to explore and challenge their current state of affairs, they are the ones best suited to develop their professional practice.

In a similar regard, teacher inquiry formalizes and capitalizes on a process many good teachers do regularly anyway. Reflective practice is central to effective teachers’ thinking (Schön, 1983, 1988). The process of teacher inquiry requires individuals to see their work more clearly and, in doing so, become more able to help others. In designing support for teachers to improve their teaching, time to improve through deliberate practice (Ericsson, 2006) should be of paramount importance. Paired with thoughtful feedback from peers & instructors, and one’s own self-evaluation, teacher inquiry stands on a strong foundation to support professional development across a career.

**Summary of Inquiry-Based Teaching and Learning**

Classrooms in which student-initiated inquiry takes place are different from traditional classrooms. Harste (2001) asserts that “education as inquiry is a philosophical stance” (p. 1). He explains that to implement student-initiated inquiry, a teacher must rethink his or her role, relinquish power to make decisions to students, and perhaps most importantly, reconsider the very purpose of teaching and learning. “Since we don’t have the answers to the problems future generations will face, I don’t think we can afford to ‘train’ children in the name of education. We need to give them tools with which they can outgrow us and yet help themselves” (p. 1). Harste’s vision of education as personal and social knowing serves as a foundation for teachers who are interested in growing their practice beyond scope and sequence and standardized testing. Teaching students the processes of questioning, exploration, research, analysis and self-evaluation are critical to student-initiated inquiry. These inquiry-enabling skills are also critical to prepare students to be life-long learners.
Although there will be obstacles in the path of teachers who want to empower students to ask and answer their own questions, the promise of intense student engagement and personally meaningful learning is captivating. Student-initiated inquiry gives students a voice and choice in their own education.

Unfortunately, many of the decisions about what happens inside the walls of classrooms are made outside those walls (Darling-Hammond, 1994; Cochran-Smith & Lytle, 2006). Perhaps, through teacher inquiry, intentional and focused study of their own practice, teachers can reclaim their professional stance. In today’s information society, schools should be places where students and teachers rediscover how to learn, how to navigate their everyday worlds, and how to prepare for a changing tomorrow. As a distinctive instructional practice, seated in the theory of constructivism, inquiry-based teaching and learning is uniquely suited to provide for those needs.

Ultimately, learning is an individual task, performed within a social system. Inquiry-based methods honor both components. The teacher shares control of curriculum and instruction, knowing that learners can and should take responsibility of their own learning. In this way, the constructive nature of education is centered within the learner, with the teacher serving as a learning catalyst. “Inquiry is a whole process that cuts across and integrates personal and social knowing, knowledge systems, and sign systems within an environment based on education for democracy” (Short, et al., 1996, p. 11).

Using inquiry-based instruction to scaffold learning requires more than guiding students through the steps or having an ‘inquiry time’ once or twice a week. It is ongoing and seeps into all aspects of the learning environment. A teacher’s role during inquiry-based instruction is different from that of a traditional instructor. The teacher is a fellow learner,
facilitator, questioner, listener, and mentor all of which move everyone involved towards a deeper and more personally meaningful understanding of not only topics of interest, but of learning itself.

**Cognitive Coaching**

Mentoring is a broad category of support for teacher development that includes supervision and coaching. Mentoring is often associated with induction programs only for beginning teachers, but that need not be the case. Mentoring is also valuable for teachers across the spectrum of their careers (Oja & Reiman, 1998). Blase (2009) describes three orientations to mentoring: humanistic, with a primary goal of emotional support; situated apprentice, with the goal of enhancing practical knowledge; and critical constructivist, a transformative and emancipatory approach. Of course, most mentoring situations find some combination of these purposes and processes. Teachers whose needs are met through some combination of these purposes are more likely to stay in the profession, have more satisfaction with their job, and have better student outcomes (Avalos, 2011; Blase, 2009; Ingersoll & Strong, 2011; Joyce & Showers, 1996). Even though mentoring can be relatively expensive, considering the cost of human resources, the impacts are impressive (Villar & Strong, 2007).

**The Emergence of Coaching**

Some argue that the concepts of mentoring and coaching have become intertwined and synonymous (Garvey, Stokes & Megginson, 2017). Others, however, see mentoring in a broader scope, and coaching as more of a specific relationship between mentor and protégé (Costa & Garmston, 2015). Coaching often brings up images of baseball fields or basketball courts, with athletes trying to keep up with drills or following advice from the sidelines.
While the sport connotation might be valuable, a discussion about coaching for teachers is better served by considering that the origin of “coach,” meaning a conveyance or wagon is perhaps more instructive (“Online Etymology Dictionary,” n.d.). As described by Costa and Garmston (1994), a coach, like a stagecoach, is a means of getting from one place to another. That idea is a good fit for considering the growth of teachers and those who serve to move teachers forward in their development.

As a way for a successful teacher to support a novice or even another experienced teacher to learn and grow, coaching has been a natural part of professional relationships since ancient Greece (Garvey, Stokes & Megginson, 2017). The term “coach,” however, was not adopted by American educators until the 1950’s (Fletcher, 2005). In a time when science and math dominated the field of professional development, teachers were in urgent need of help to learn content and to integrate more science and math into their teaching. A corollary change that occurred at the same time was an intentional focus on teacher-directed change. School systems invested in coaches to bring teachers along in their content knowledge and in their use of hands-on applications in their classrooms, often at their own request (Fletcher, 2005).

Today, coaching typically denotes a reflective process in which a “knowledgeable other” (Richardson, 2005) helps a colleague within a collaborative relationship, as opposed to a hierarchical one focused on supervision and evaluation. Coaching seeks to engage colleagues in specifying target issues, mental maps that underlie their professional decision-making. Most coaching is dialog-rich and relies on explicit confidentiality. With roots in psychological counseling, coaching places emphasis on reflective conversations between colleagues with the goal of affecting subsequent thought and action (See Fletcher & Mullen,
Several forms of coaching have evolved in the area of teacher development, including reflective coaching (Schön, 1988), instructional coaching (Knight, 2008), peer coaching (Joyce & Showers, 1996) and cognitive coaching (Costa & Garmston, 1994).

**The Cognitive Coaching Model**

For more than twenty years, the principles and structures of Costa and Garmston’s (1994, 2015) cognitive coaching have been employed to help teachers improve their professional practices and, in turn, their students’ learning. The underlying goals of cognitive coaching are:

1) to develop trusting relationships in which teachers can take risks and step out of their safety zones,

2) to focus on learning, that is, the mental maps and thought processes that empower complex decision-making, and

3) to develop teachers holistically within the system of the profession, as well as in one’s school and classroom.

*Figure 2.3. Underlying Goals of Cognitive Coaching*
The process of cognitive coaching is practical. Together, a coach/teacher pair plan for a classroom observation of the teacher’s lesson, followed by the observation and a post-conference interview. A coaching cycle begins with a planning or pre-conference interview. During the pre-conference interview, the coach attends to the teacher’s goals. Using active listening, the coach helps the teacher clarify expectations, choose a teaching focus, rehearse the lesson and think through any potential problems. During the observation of the lesson, the coach collects data on focus areas such as instructional techniques, teacher actions, students’ behavior or time management - data that the teacher has requested. In the reflecting or post-conference interview, the teacher shares impressions of the lesson and reviews the data the coach collected. The coach’s role is to encourage the teacher to interpret the data in light of the goals set during the pre-conference interview. The mental maps that the teacher uses to make decisions are exposed and non-judgmentally analyzed. The coach also asks probing questions and helps the teacher make reflective, action-oriented decisions about future practice. A fundamental tenet of cognitive coaching is that these cycles are repeated, so that the trusting relationship grows, as well as the teacher’s repertoire of effective instructional practices. Over time, the teacher becomes more aware of the mental maps she uses to organizer her professional decisions and integrates her actions, thoughts and beliefs in her teaching (Costa & Garmston, 1994, 2015).
The benefits of cognitive coaching are similar to those of other forms of professional development, as previously mentioned: increased teacher satisfaction, expertise development and enhanced student learning (Costa & Garmston, 2015). In addition, one of the broader advantages cognitive coaching brings is a change in the learning culture of the educational system. “Coaching develops positive interpersonal relationships which are the energy sources for adaptive school cultures and productive organizations” (Costa & Garmston, 1994, p. 8). So one goal, and consequential benefit of cognitive coaching, is the pervasive effect it has on a focus on learning for all members of the school community. Coaching in this way develops a culture of “critical friends” (Costa & Kallick, 1993). Having critical friends helps teachers clarify their professional identities and helps set a path towards improvement through supporting, challenging, listening and critiquing. Different from traditional forms of supervision which tend to be one-way, evaluative and sporadic in nature, cognitive coaching is designed to be part of a systematic change in the way professionals interact.
Critiques of Cognitive Coaching

As Fletcher (2005) noted in the *SAGE Handbook on Mentoring and Coaching in Education*, little research has been done on the efficacy of coaching as an instructional improvement tool or as a means to impact student learning. This is an astounding fact, given the widespread interest in coaching in the past twenty years. Meta-analyses of coaching in the field of management have been undertaken, but none in the field of education, specifically. Even within management, coaching is woefully understudied (Theeboom, Beersma & van Vianen, 2013). The research that does exist on coaching in the context of education is often paired with mentoring research or is completed by practitioners as action research. Research on cognitive coaching is even more meager. Cornett and Knight (2009) summarized what had been published on cognitive coaching in a chapter of *Coaching: Approaches and Perspectives*. While not a meta-analysis, their comprehensive review concluded there was “evidence of positive outcomes and experiences as a result of cognitive coaching. Yet, rigorous means of investigation are largely missing” (p. 203).

One report that Cornett and Knight included was written by Edwards in 2008. Her report, now in its 12th edition (Edwards, 2015), is a project of The Thinking Collaborative, the organization that owns and promotes the cognitive coaching model. In it, she offers ten research-supported effects of cognitive coaching. Those effects are:

- links to increased student test scores and other benefits to students
- growth in efficacy for teachers and administrators
- positive impact on reflective and complex thinking
- increased career satisfaction
- enhanced professional school cultures
- increased teacher collaboration
- positive benefits to teachers professionally and personally
- positive benefits to administrators and to others outside of teaching.

Each of these benefits is followed with research that supports the findings. While one can question bias based on the source, it remains that Edward’s findings are the most cohesive base of scholarly research on the topic of cognitive coaching available. Largely, these findings support the positive impact cognitive coaching has on all aspects of teaching and learning. However, Edwards, too, suggests that there is ample room for more scholarly research on the topic.

Perhaps the most challenging critique of cognitive coaching involves the costs associated with time and training (Knight, 2012). In a practical sense, developing relationships, conferencing and observing take a significant amount of time. Compared to checklist observations and walk-throughs, cognitive coaching is an investment. There is also a financial cost in developing a coach’s expertise. Coaches often participate in intensive seminars or attend graduate classes to study the methods of cognitive coaching, developing capacities for active listening, data collection and questioning techniques. Preparation for any mentoring or coaching takes time and financial commitments from administration, as well as from colleagues who are interested in helping one another grow (Knight, 2012).

There are also concerns about other consequences in the professional relationships and collaborative culture cognitive coaching intends on creating. Hargreaves and Dawe (1990) warned of a “contrived collegiality” that coaching could exploit. Instead of organic, growth-oriented purposes, it is possible for coaching to be “administratively designed to smooth the path of externally imposed innovation” (p. 230). These concerns resonate with
educators who may see coaching as another form of evaluation or as another passing trend. Coaching has also been used as an intervention with poorly performing teachers such that it is not valued as an authentic path for growth, rather an evaluation scheme of which to be suspect (Knight, 2008).

Despite the critiques of cognitive coaching, the promise it holds as a way to help teachers improve their practice is convincing. The purposes are clear-cut. The format is easy to understand. It is practical and pragmatic. Given the fact that up to 90% of professional development initiatives go unused in what Fullan (2014) calls the “implementation dip,” any means to assist teachers in using what they have learned should be carefully considered. As a widely cited benefit for coaching, Joyce and Showers (2002) asserts that the likelihood of implementation of new learning is increased nine times with the addition of coaching to professional development initiatives. That makes coaching one of those means to consider carefully.

**Potential Impact on the Field of Teacher Professional Development**

This study seeks to expand the body of literature on teacher professional development in three ways. First, by using the *HPL framework* to analyze a teacher’s implementation of a new pedagogy, we can better know how different features of learning affect a teacher’s decision-making in her classroom. In this study, the conditions of knowledge-centeredness, learner-centeredness, community-centeredness and assessment-centeredness are applied to the teacher in the classroom rather than the students. Through those lenses and through analyzing how a teacher positions herself to succeed, we learn more about how a teacher changes her practice.
Second, while much as been written about inquiry-based learning, less has been examined about how teachers come to use inquiry-based practices in their classrooms. How do teachers implement student-initiated inquiry, and how do teachers, themselves, engage in teacher inquiry at the same time? Watching how a teacher interrogates her own teaching, manages student work, encourages discovery and releases control, all while maintaining rigor and focus on curricular objectives is enlightening.

Finally, given the promise of the cognitive coaching model as a means to capture and support teachers while changing their practice, and the sparse research on its strength, my research will begin to address this much-needed area.
CHAPTER 3 METHODOLOGY

This qualitative research study focuses on the process a teacher goes through as she implements a new pedagogical approach, specifically student-initiated inquiry. Over the course of three months, I followed Sabrina (pseudonym), a third grade teacher at Oak Hills Elementary School, a suburban elementary school in southeastern North Carolina.

Qualitative research is valuable in documenting and analyzing how transformations such as pedagogical change take place (Creswell, 2013; Merriam, 2009). Moreover, qualitative research methods offer specific benefits when attempting to explain decision-making and the changes that result (Schramm, 1971; Stake, 1995). The current study seeks to discover how a teacher implements student-initiated inquiry, specifically when teaching strategies and structures to support student-initiated inquiry and the obstacles she faces as she does so. The research seeks to explore how Sabrina positions herself and her class of students to succeed, given the pressures of standardized curricula and testing. Further, this study tracks Sabrina’s teacher inquiry, that is, her study of her own teaching as she implements a new pedagogy. Cognitive coaching is used to capture this process.

Focused and wide-lens observations detail the context of the study, while interviews with Sabrina encourage clarification of the context and of her decision-making. Findings were generated through analysis of these data, as well as relevant student and teacher-created artifacts.

Specific Methodological Approach

A case study approach is used for this research. The case study approach is appropriate in such instances because case study data collection and analysis techniques allow for an in-depth understanding of an issue (making a pedagogical shift towards student-
initiated inquiry) in a bounded environment (one elementary-level classroom) (Stake, 1995). The change this teacher undertakes offers a valuable opportunity for insights, especially with regard to what Merriam (2009) calls the “special features” (p. 43) of case study research.

This case study is particularistic (related to the specific change event this teacher goes through), descriptive (provides a thick description of the change) and heuristic (aims to give the reader insight into the change). The current research is based on varied sources of evidence, with the goal of triangulating data, as it is possible and appropriate to do so.

The context for this study is a third grade classroom in which the students and Sabrina live and learn each day. It is informative to study a successful teacher who is interested in using student-initiated inquiry in her own classroom. While I originally intended to study multiple teachers as they implemented inquiry-based learning and compare their development, I concluded that for the purposes of this study, it is more prudent to focus on a single, descriptive case. In the current era of standardization, teachers who are willing to teach beyond the prescribed curriculum are few. A single, well-described case will likely reveal important aspects about the change a teacher experiences as she modifies her pedagogical approach. The limitations of time and availability of teachers who are interested in making such a pedagogical change also affected this decision. In fact, four teachers expressed initial interest. However, given the commitment I was asking them to make towards an unfamiliar pedagogy, the time required to complete the coaching cycles, and the level of input I was asking for the partner teacher to take as a coinvestigator, most were simply not willing to obligate themselves to the change process and to the research. Likewise, as this research was conducted across the spring semester, most teachers who were
interested would not commit because they were concerned about how it might interfere with their end-of-grade test preparations.

While it is not the goal of a single case study to yield generalizations nor explicate causality (Merriam, 2009), I trust that this research will illuminate important facets of the change process specific to implementing student-initiated inquiry. The goal of the present research is more in line with what Shields sees as a strength of case studies: “[T]hey account for and include differences – ideologically, epistemologically, methodologically – and most importantly, humanly. They do not attempt to eliminate what cannot be discounted. They do not attempt to simplify what cannot be simplified” (Merriam, 2009, p. 13). It is left to the reader of this case study to generalize findings and implications.

Finally, I used the cognitive coaching framework to engage the teacher in reflecting on her practice. The reflective interviews I conducted at the beginning and end of each coaching cycle served as the data for my research. As mentioned in chapter two, cognitive coaching encourages the participant to clarify the mental maps used to explore the terrain of teaching and learning. Through pre-conference interviews, focused data collection during observations, and post-conference interviews, I was able to capture the teacher’s insights into her own decision-making processes. The cognitive coaching model does not favor specific pedagogical approaches or philosophical stances, however, for this research, cognitive coaching cycles were used to move towards the implementation of student-generated inquiry: That is the pedagogical change involved in this study and the change that Sabrina was interested in implementing. Therefore, the cognitive coaching process facilitated discussion and data collection for the present research.
Lincoln and Guba (2000) locate case study research between a constructivist and participatory stance. In terms of constructivism, the research aims are “propositional and transactional” (p. 172) and seek to capture the process of Sabrina transforming her teaching. She is actively reconsidering her role as a teacher, her students’ roles as learners, and the very purposes of her teaching and their learning. In terms of participatory research, “practical knowing about how to flourish with a balance of autonomy, cooperation and hierarchy” (p. 172) is valuable, as well. Sabrina is looking for what works and is continually reviewing her work’s effect on her students’ learning. I take the lead in describing and expressing the changes revealed in the case study, but I also invite Sabrina to validate and clarify, as an attempt to bridge the emic (insider) vs. etic (outsider) divide (Shank, 2002).
Research Questions

There were three main questions and two subordinate questions that framed this case study:

1) How does a third grade teacher change her pedagogy to implement student-initiated inquiry in her classroom?
   • Which teaching strategies and structures does she use to support students’ inquiry studies?
   • What obstacles does she face as she makes the pedagogical shift and what does she do to address those obstacles?

2) How does the process of teacher inquiry support pedagogical change in the classroom, specifically using cognitive coaching to support and capture the process?

3) Given the external pressures on teaching, in what ways does a teacher position herself to succeed and persist?

The answers to these questions are important because research is needed to see how a teacher implements a student-centered pedagogical approach that challenges both the status quo and the influences of standardization present in today’s schools. Results of the standardization movement include a contraction of the curriculum and a move away from instruction based on students’ interests (Jones, Jones & Hargrove, 2003; Kamenetz, 2015). This research also illuminates how a teacher gives her students voice and choice in the curriculum. This issue is timely, considering the prevailing influences of standardized curricula and testing. These research questions provide for a crystallization of a teacher’s decision-making process towards broader, more student-centered curricula and towards engaging instruction in which control is shared among teacher and students. The questions
are structured so that the challenges the teacher faces can be revealed, including how she responds to those challenges.

The implementation of student-initiated inquiry is the case that is studied in this research. While the teacher, her students and the classroom in which their work takes place are all critical components, it is the implementation of the pedagogical method and the change process that I document and interrogate.

**Partner Teacher and Site Selection**

As noted in the vignette at the end of Chapter 1, approximately a year before the current research, I had the good fortune of informally mentoring a fifth grade teacher, watching as she tried to use inquiry-based teaching strategies with her children. From that experience, I knew that it would be valuable to carefully and comprehensively document a teacher’s attempt to implement student-initiated inquiry, especially as standardization and end-of-grade testing dominate the landscape.

I anticipated that this research would be conducted in a third, fourth or fifth grade classroom in a traditional public school in southeastern North Carolina. It is in these grades that standardized testing has come to play an integral role in teachers’ planning and instruction. In line with Patton’s (2002, 2005) idea of purposeful sampling and LeCompte and Preissle’s (1993) concept of criterion-based selection, I chose a teacher who would be involved with this study, and consequently her classroom of students, based on essential conditions:

1. I intended to invite a teacher who was willing and eager to give rich input throughout the process (Creswell, 2013; Patton, 2002). I sought a teacher who agreed to participate in cognitive coaching, in-depth interviews, and co-investigation, and who
had a concerned awareness about the emphasis that is being placed on standardized testing and the common curriculum.

2. The teacher had to have a personal and professional interest in implementing student-initiated inquiry (i.e. the issue) (Stake, 1995). She had to be interested in and agree to participate in the learning process to make the change toward student-initiated inquiry in her classroom. It was important that the teacher had demonstrated success in teaching at the given grade level and, by extension, had some experience (i.e. not a first-year teacher).

3. I set out to recruit a teacher whose classroom represented a typical, general education elementary setting (i.e. the bounded environment) (Stake, 1995). In this case, typical meant a heterogeneous class of students in terms of ethnicity, academic ability, and socio-economic status. Typical also meant that the class and school implemented the common core curriculum and participated in standardized testing. I excluded classrooms that were “high performing” or “academically gifted.” I also excluded private schools that did not participate in state-mandated standardized testing and a charter school that was focused on inquiry-based teaching.

4. The research site, consisting of the students in the classroom, and the school, in general, needed to be amenable and conducive to the case study.

To identify a willing and fascinating teacher to engage in this case study, I reached out to principals, teachers and university colleagues for nominations in the late fall of 2017. Five potential partner teachers were selected, based on the criteria above. Through informal conversations with each potential partner teacher, the pool quickly narrowed. Some of the teachers declined, saying that it was “not the right time,” or because they were concerned that
it would take too much time away from teaching. Another was not interested in the co-
research aspect of the study.

In determining the appropriate site, I asked potential participant teachers questions
about the make-up of the student body and of the faculty. I asked principals about the
expectations they had regarding my research. My overarching goal was to choose a teacher,
classroom and school that were agreeable to be part of my study and would potentially
benefit from participation.

One teacher, nominated by a university instructor, was particularly interested. Sabrina
is a third grade teacher at Oak Hills Elementary. In our first conversations, when I asked if
she would like to participate, Sabrina was concerned about the time commitment and if it
would mean she had to give up something else in her teaching. However, her curiosity about
helping students take ownership in their own learning drew her in. Sabrina had recently
worked with another university professor in a less formal, less intensive literacy study. She
expressed that she wanted to stay connected to the university and that being a part of research
was professional development for her. She was comfortable with having someone in her
classroom, observing and interacting with her students, and was familiar with coaching.

IRB approval, consent and/or assent from school leadership, district, students and
parents was obtained between December 2017 and January 2018, and the study commenced
in early February 2018.

Teacher and Classroom Context

Sabrina was an energetic third grade teacher at Oak Hills Elementary School. At the
time of this research, she was in the last half of her third year of teaching and “loved every
minute of it.” Having come to teaching from a career in business, Sabrina received her
teaching licensure a little more than two and a half years ago and promptly began working at
an elementary school as an interventionist, teaching children in one-on-one and small group
settings to help improve their reading and math skills. She continued in her position as an
interventionist at the same school through her first full year of teaching, during which she
taught across many grade levels. Sabrina believed that this helped prepare for a classroom of
her own. “I knew what students were expected to be able to do up and down the grade
levels,” she said. At the end of her first year of teaching, she requested a classroom of her
own and was assigned third grade at the same school where she served as interventionist. She
accepted the assignment with some apprehension because she knew that third grade was a
heavily tested grade. By all accounts, she had a very successful year. She was eager to teach
third grade for a second year. Her supervisors’ observations were very positive, and her
students performed well on end-of-grade measures. Most importantly to Sabrina, her students
left her care as joyful learners.

Sabrina was mostly satisfied with where she had brought her class to date. At the
same time, she knew she wanted a change. She had a sense that she was focusing too much
on test preparation and not enough on students’ interests. At the time the study began,
Sabrina’s students were finishing an “Influential Black Americans” project the third grade
team had designed. Sabrina liked that the students each chose a person to study and that the
project integrated many of the required Common Core reading, writing and speaking
standards. She wondered, though, what it would be like to offer a more open-ended
opportunity for each student to choose a personal and meaningful topic of his or her own.
Our initial conversations lead to Sabrina asking the key question that kicked off our
exploration together, “How do we get started?”
Now in her third year of teaching and second year in third grade, Sabrina felt the pressure of teaching the standardized curriculum and of the concurrent, mandated testing. “It’s just my second year in the classroom and third grade is heavy. With RTA [Read to Achieve] and EOG’s [end of grade testing], there are a lot of demands.” Her third grade team consisted of four other third grade teachers, a part-time assistant, a literacy coach and a typical array of specialist teachers (art, music, physical education, etc.) who all worked with her students over a week’s time. The third grade team planned together, focusing mostly on the scope and sequence of the reading and math curricula, and grouped their students according to ability for small group instruction. There was little interdisciplinary or thematic planning among the team members or with other teachers in the school.

Sabrina’s school, Oak Hills Elementary School, was a mid-sized elementary school of about 600 children, grades kindergarten through fifth. There were between four and six classes at each grade level, with eighteen to twenty-five students per classroom. The neighborhood school served children from a varied, suburban population, almost half of whom are identified as economically disadvantaged. Therefore, the school received federal Title I funding to provide additional student services. In terms of standardized achievement data, during the 2016-2017 school year, the school exceeded growth expectations, with approximately 65% of students achieving proficiency on reading and math assessments. The school received a North Carolina school report card grade of “B” for the 2016-2017 school year.

Classroom Demographics

Sabrina had nineteen students in her class during the semester of this research, almost equally divided between boys and girls. The children ranged in academic ability, socio-
economic status, and home support. Sabrina reported that she had three students with Individual Education Plans (IEPs) or 504 Education Plans. In terms of motivation, she said that, compared to other groups of children she had worked with, the children in her classroom were typical. Some loved to learn while others needed extrinsic rewards. Overall, students behaved respectfully towards the teacher and towards each other. Respect was a concept Sabrina taught and that students practiced regularly.

**Classroom Layout**

The physical space that the classroom offered was a challenge. At approximately 18’ x 20’, or 360 sq. feet, the room was about half the size of other classrooms in the school. The room had been converted from a computer lab into a classroom because of an increasing student population and overcrowding. The classroom was part of the media center suite, and was accessed off the school’s main library. The classroom had no exterior windows or doors. There was fluorescent lighting that Sabrina supplemented with floor lamps and hard laminate flooring with a small area carpet the class used as a gathering space. Sabrina had gathered an array of round, rectangular and trapezoid-shaped tables and had arranged them so that each child had his or her own spot. Bookshelves, dry-erase boards, a teacher’s table, a computer center, and storage spaces were located around the perimeter of the room. Succinctly stated, there was very little room for class members to move freely around the room without considering the personal space of others.

Considering the limitations that the physical space provided, Sabrina had assembled a wide variety of resources for her students to use. There were math manipulatives, a well-appointed writing table, a small classroom library, four desktop computers, and arts & crafts materials, all available within steps for the teacher and students to use. Another resource that
Sabrina had cultivated was family support. Parents regularly provided assistance, from instructional materials to snacks for class celebrations. Parents volunteered their time to support whole-class instruction and to work with students individually. Sabrina was proud of the relationships she had built with parents of students in her classroom.

**Schedule of the Day**

A typical school day began over the course of about half an hour, with students coming into the room from their buses, from having eaten breakfast in the cafeteria, or from being dropped off by parents. As students came in, they checked in with Sabrina, read, put materials away, and completed morning work she had provided. When school officially began with the buzzing of the bell, Sabrina gathered students at the carpet. They moved through an instructional day that consisted of reading rotations, whole group and small group instruction for math and writing. Homogenous ability groups met for instruction with other teachers/classes, and teachers used activity-based instruction for science, social studies, art, music and physical education. Students had lunch and recess at predictable times, as well. Sabrina used whole group, small group, individual, and peer instructional methods fluidly and had set structures for the various segments of the day. Students were aware of what they were expected to do and where they were expected to be. If a student was not aware, the classroom community was such that they reminded each other what was expected. Sabrina often compared her class to a family. It was remarkable how carefully Sabrina monitored students who flowed in and out of the room, going to the restroom, library, and special classes.
Focus on Individual Students

One distinctive characteristic about Sabrina’s teaching was a focus on individuals. While students participated well in group settings and knew how to navigate in such a small space, each student had his or her own area to work. Differences were respected, and disrespect was addressed immediately by the teacher and by one another. Sabrina used a class behavior management system by which she assigned points that were projected on a class screen. Points could be gained or lost individually or as a class, and the teacher often addressed the behavior of the class by giving points. The behavior management system was intended more as a means to recognize positive examples of her expectations, than as a means of concrete rewards.

Sabrina was keenly aware of each student’s academic abilities and anticipated which students would need specific support with a given assignment. She was aware of which students would need to be challenged, and she often let them “figure out how to do it on their own.” Sabrina knew her students’ likes, dislikes and interests and was sensitive to each student’s mood. She kept in contact with families to know how home life was affecting school life. In one instance, a student began crying as the class brainstormed topics they would like to learn more about. Sabrina commented that he and his family had recently moved to the US from South Korea. She explained: “It could have been triggered by something about home, because he has only been here [in the US] only over a year.” Since she knew about his personal situation, she could identify, care for, and understand his emotional state. Sabrina’s teaching expertise included her ability to organize and manage a productive classroom and know her students in ways that enhance teaching and learning.
Data Sources and Collection

In this research, I gathered three types of data: teacher interviews (three main interviews and five sets of cognitive coaching interviews), classroom observations and teacher- and student-generated artifacts. I made contemporaneous field notes regarding informal interactions I had with Sabrina, with the students in the classroom and about observations she and I made over the course of the twelve-week period.

Figure 3.2. Data Sources for Case Study Approach

Interviews

At the outset of the research, I conducted an initial interview with Sabrina and invited her into the research. The purposes for the initial interview were to find out what she knew and had done regarding student-initiated inquiry in the past, to find out about her experiences with cognitive coaching, and to orient her to the timeline for research. It was important to find out what her goals were as she set out to implement student-initiated inquiry. It was also important to share my goals for co-investigation and for the cognitive coaching cycles.
A mid-study interview was conducted in place of a cognitive coaching post-conference interview halfway through the coaching cycles. During the mid-study interview, questions were designed to elicit Sabrina’s thinking regarding several themes that had emerged during our first three cognitive coaching cycles. She also discussed the value of the change process to her and to her students. Questions and prompts were aligned to the research questions for my inquiry into her implementation of student-initiated inquiry.

Finally, our data collection sequences ended with a lengthy closing interview. The purposes of the closing interview were 1) to capture Sabrina’s thoughts about how the implementation of student-initiated inquiry in her classroom went, 2) to specify which teaching strategies she attempted and how effective they were, 3) to elicit the challenges she encountered and how she dealt with those challenges, and 4) to ask how the change affected her students. The interview protocols for the initial, mid-study and closing interviews can be found in Appendices D-F.

The cognitive coaching framework facilitated collection of the majority of the data in this research. I conducted five cognitive coaching cycles which resulted in nine interviews (five pre-conference interview and four post-conference interview), five focused classroom observations and five teaching-focused sets of data resulting from those observations. The pre-conference interviews encouraged Sabrina to define and clarify her teaching objectives and anticipated the flow for a specific learning episode. The pre-conference interview also set the purposes for my classroom observations. During each classroom observation, I collected data based on the focus the teacher and I chose during each pre-conference interview. Then, the post-conference interview allowed the teacher to analyze, synthesize and evaluate the data I collected and make professional decisions about her work and her students’ learning,
based on data. Post-conference interview conversations led to the teacher’s determination of next steps in her teaching. The pre-conference interviews, observations with data collection, and post-conference interviews, each occurring within five iterations of the coaching cycles, gave Sabrina many opportunities to scrutinize, question, clarify, and revisit her thoughts about implementing student-initiated inquiry in the non-linear, recursive reflective process that is teaching. Pre-conference and post-conference interview protocols can be found in Appendices G-H.

**Classroom Observations**

Classroom observations are embedded components of the cognitive coaching framework. During the pre-conference interview for each cognitive coaching cycle, the teacher and I collaboratively selected a focus for a subsequent classroom observation. The data collected during these observations were typically related to the teacher’s implementation of structures and strategies promoting student-initiated inquiry, but only if that focus was one Sabrina selected. Data collection during observations took the appropriate format for the focus determined in the pre-conference interview. For example, when the teacher’s focus was on encouraging students to ask questions of their own, the data collection format consisted of Sabrina’s verbatim comments that facilitated or even required students to ask questions and of students’ responses. In another instance, the teacher’s focus was on engaging students in brainstorming and refining topics that they were very interested in studying. Data collection for that coaching cycle consisted of synchronous observer notes of instances in which the teacher prompted students (as a class or individually) to become aware of what “enchanted” them. Instances of how she taught students to either narrow or broaden their topics was also part of the data collection for this cycle.
Through the multiple iterations of cognitive coaching, the teacher’s interests and needs were at the center of the observations. At the same time, the dimensions of learning described in the *How People Learn* framework are embedded in the observational data and provided a rich reservoir of teacher thinking available for analysis.

In addition to the five cognitive coaching observations, I conducted five wide-lens observations in the interim weeks between cognitive coaching cycles. The purpose of these general observations was to see if and how pedagogical changes related to inquiry-based teaching were occurring in Sabrina’s “everyday” interactions. These observations followed the protocol of documenting the teacher and students’ actions as well as the teacher and students’ talk. Along with the more specific cognitive coaching observations, these wide-lens observations provided an important opportunity to witness the transfer of learning from the teacher’s point of view.

**Artifacts**

Over the course of the research period, a limited set of artifacts was collected to review and analyze with regard to research questions. These items were produced by the teacher and by the students as part of implementing inquiry-based teaching.

Sabrina decided that students needed a folder in which they kept all of their written work for their inquiry project. Included in each student’s folder was a brainstormed list of topics that they might want to study, note cards with questions they had generated, along with answers to some of their questions. They also had examples and copies of items they might use in their presentations and a draft of what they intended to do as a presentation. Sabrina and the students had generated a handout to give parents regarding the timeline to
completion. Students’ self-evaluations of their work are also included in the artifacts collected for this research.

One other, very interesting set of documents was collected during this research. It was a class set of questions created by a group of students Sabrina taught in a flexible-group setting. They wrote their questions as part of an end-of-grade test preparation lesson. While these were not artifacts produced as part of her main class’ student-initiated inquiry projects, the documents represent her attempts to transfer her learning about inquiry to new and different settings.

Finally, I provided Sabrina with printed copies of each of our interviews and the observation data I collected for each cognitive coaching cycle and interim observations. As part of her co-investigator role, Sabrina made notations on the scripts and observations to provide contemporaneous feedback and to prepare for the subsequent interviews. All of these artifacts were utilized to help answer my research questions. The artifacts were also used to triangulate findings and coordinate inferences from other sources of data.

Data Security

Even though this research is a single participant/single class case study, every effort has been made to de-identify the members. Pseudonyms are used for the teacher, class, students, school and district. Identifying descriptors have been excluded. Participant member-checking has also been used to confirm that identifying factors are not present in the report. Likewise, teacher participant data (observations, interview recordings) could be linked to the single participant and student-generated artifacts (e.g. projects, written reflections) may have had student names on originals. Therefore, all participant data and artifacts have had identifying information redacted.
Audio recordings were collected and stored on my password protected portable electronic device. The audio recording app was password protected, and all electronic data were protected in encrypted files. Audio recordings were transcribed without identifying information, and all field notes, transcripts and artifacts were kept in a locked filing cabinet in my office.

No audio files will be retained at the end of the research. Student-generated artifacts will be returned to students or destroyed at the end of the research. No links between data and participants will be retained.

**Data Analysis**

While the research questions for this study center on how the teacher implements student-initiated inquiry and the methods she uses, in fact, it is not the teacher, nor her students or classroom, who serve as the case for this research. Freire (1996) cautions against using an individual as a case to study. Instead, he argues that the patterns and themes which emerge from the study are the more important features. Therefore, the implementation of the new pedagogical approach, student-initiated inquiry, is the case to be examined.

To understand the change in pedagogy and instruction that the teacher undertakes, the data collected from the three main interviews, nine pre- and post-conference interviews, five focused observations, five wide-lens observations, as well as the artifacts produced, were examined. Analyses utilize *a priori* theories (i.e. the *HPL framework*, positioning theory), but, as Creswell (2013) suggests, qualitative data analysis also results in emergent perceptions and representations that illuminate facets of the case that would otherwise not be evident. Through five phases of analysis of this case study, I examined the data to reveal patterns and establish trust in the deductive and inductive themes, as the data allowed.
Merriam (2009) suggests a recursive flow of data analysis in qualitative research. The process is intended to weave back and forth, beginning with raw data and ‘first read’ to coding, categorizing codes, and determining themes. The recursive nature of data analysis means that I revisited codes and categories continually in order to make meaning of the data and, ultimately, generate findings.

**Holistic Reading**

Phase one of data analysis consisted of spending time reading through the data collected. Seidman (2006) suggests reading qualitative data holistically as a way to familiarize oneself with the body of evidence. My first reads occurred as I transcribed the recorded interviews. Since I conducted the cognitive coaching cycles every other week, with a wide-lens observation in interim weeks, I was able to transcribe and re-reread the pre-conference interview, observation/data collection and post-conference interviews concurrent with my research. While transcribing, I kept my research questions in mind, as well as the
theoretical frameworks that were to guide my analyses (i.e. *HPL framework* and positioning theory). During transcription, I made research memos about impressions of emerging issues within and beyond the scope of my research questions and theoretical frameworks. I watched for emerging patterns from what Sabrina said and did. By doing so, I was able to refine questions for subsequent interviews, and first impressions evolved as the case unfolded.

At the mid-point of data collection, I conducted initial coding and highlighted the transcripts I had collected to that point. I also highlighted the focused and wide-lens observations I had conducted. The *a priori* lens of the *HPL framework* brought to light instances of each dimension and of Sabrina’s positioning. Issues such as the topics the students wanted to study, how the teacher guided those choices, what kinds of structures the teacher implemented to encourage sharing and interaction, and how the students and teacher reflected on their learning emerged. Notations also highlighted revelatory moments in which Sabrina explicitly mentioned her own changes in thinking and changes in her decision-making process. These moments of meta-cognition informed the remainder of my interviews with her. It also informed subsequent analysis of data.

**Codes, Patterns and Categories**

The *HPL framework*, as well as positioning theory, guided my initial data analyses. Saldaña (2009) says codes “symbolically assign a summative, salient, essence-capturing and/or evocative attributes” to a unit of qualitative data (p. 3). In terms of guiding my coding, theoretical frameworks also informed the next two phases of my analysis. By using the *HPL framework*’s descriptions of knowledge-centeredness, learner-centeredness, community-centeredness and assessment-centeredness (Bransford, Brown & Cocking, 2000), I coded instances that match the depictions offered by the framework. Also, the descriptions of
positioning provided by Harré and Van Langenhove (1999) and Harré, et al. (2009) gave direction to identifying instances in which Sabrina made choices to position her and her class to succeed in implementing student-initiated inquiry, even as external influences pressed down.

My second pass through transcripts, observations and artifacts, revealed more details with regard to the theoretical frameworks, specifically instances of repetition, moments that surprised me, insights that Sabrina espoused directly (in vivo codes) and suggestions of causation. One important feature of qualitative research is that new questions, patterns and understandings can emerge as data is analyzed (Koshy, 2010). Indeed, several novel codes emerged in my second pass through the data, beyond the *a priori* dimensions I anticipated. Through several subsequent readings of transcripts, I identified ten additional emergent, exploratory categories. Those codes were justified, condensed or eliminated, as support was identified for each.

Subsequently, I arranged the data in matrices, pulling all instances of dimensions of the *HPL framework* and positioning from transcripts. I also arranged data matrices for each of the emergent categories, with supporting instances from each transcript, as well. Having data arranged by codes and categories allowed me to cross-reference and triangulate ideas across and among like groupings (pre-conference interviews, post-conference interviews, coaching observations, wide-lens observations, main interviews and artifacts). Although this case study research has driving questions to answer, the research process revealed more insights because of the iterative nature of my review of the data, codes, categories and themes.
Themes

As I read and reread codes and categories, I increasingly became aware of persistent themes among the various sets of data. Themes became apparent when I reached saturation in the codes I could derive from the *HPL framework* and positioning. Since these are pre-conceived categories, I looked for examples of the *HPL framework*’s “centers” and the positioning theory’s examples more so than attempting to determine categories from raw data. However, Mills (2017) reminds us that analysis of data can raise more questions than it answers, and that discovering patterns is not akin to statistical analysis or making generalizations. He encourages qualitative researchers to take those patterns and employ deeper data interpretation techniques: extend analysis by raising questions; connect findings with personal experience; seek advice from critical friends; contextualize findings in literature; and, turn to theory. I used these extensions while coding and categorizing by making research memos as I read. The broader concepts in the theories of teacher change offered by Guskey, Fullan and Elmore helped bring together the codes and categories into salient themes that ultimately coalesced into findings.

Findings

As is suggested by multiple qualitative methodologists (Merriam, 2009;; Lincoln & Guba, 1985), the process of reading, rereading, note-taking, coding, writing memos and mapping categories is recursive and time-intensive. Even so, as Lincoln and Guba (1985) suggest, analysis of this data will likely never be complete. Analyzing the data in this study using *a priori* and emergent codes, I reached saturation and generated six key findings regarding the questions that guided my research. Findings are presented through the lenses of how Sabrina changed her pedagogy, how she became a participant in inquiry and how she
positioned herself and her students for success. Future reading of the transcripts and other data might well reveal new understanding of the case, based on new theoretical frameworks or through other researchers’ eyes.

**Trustworthiness and Consistency**

Lincoln and Guba (1985) explain how more positivistic, quantitative research addresses validity and reliability as justification for data analysis and findings. In contrast, they argue for a different paradigm of trust in qualitative (naturalistic) inquiry such in this case study research. Instead of looking for one representative truth in my research, my purpose is to expose the authentic, lived experience of the teacher with whom I worked. I describe the process of change this teacher undertakes, making sure to characterize my vantage point as a participant-observer and her point of view as the originator of change. Lincoln and Guba also suggest that “to demonstrate ‘truth value,’ the naturalist must show that he or she has *represented those multiple constructions adequately*” (p. 296, original emphasis). Truthful representation of our interdependent constructions was my goal.

Merriam and Tisdell (2016) suggest that consistency means that the representation of findings matches the data. To accomplish adequate representations of the participant’s experiences within this research, we used two, complementary strategies: triangulation and co-investigation. To find “convergence of data collected from different sources, to determine the consistency of a finding” (Yin, 2013, p. 241), I triangulated the information gathered from interviews, observations and artifacts. What I glean from interviews was confirmed in observations, through cross-referencing data sources and through confirmation from Sabrina (Koshy, 2010). Looking at multiple representations of Sabrina’s experience enhanced the
trustworthiness of the findings (Creswell, 2013; Denzin, 1978; LeCompte & Preissle, 1993; Lincoln & Guba, 1985).

Another means by which I develop trust in findings is by subjecting them to review by Sabrina. Involving those who may otherwise be seen as subjects in reviewing data and findings is recommended to reduce bias, and in doing so, emboldens challenges to assumptions (Gunzenhauser, 2004; Lincoln & Guba, 1985; Merriam, 1988). More than member-checking, the full expectation that the cooperating teacher reviewed, revised and advised regarding the content of findings and implications of the research confirmed our relationship as collegial and co-investigative (Freire, 1996). Having Sabrina’s full participation holds my relationship to the data up to the light with the intent to expose any findings with honesty and candor. Likewise, inviting Sabrina to revise and edit her remarks and my findings increases the trustworthiness and consistency of the findings I offer.

In this research, cognitive coaching provided another confirming component that framed our co-research. Cognitive coaching required that Sabrina engage in thinking about her own practice, making choices about which feature of instruction she wishes to focus on, and subsequently reflecting on data collected during observations to determine which steps to take next. Probing questions, think-alouds, and active listening were used to elicit the teacher’s thinking and decision-making processes as the coaching evolves. This reflection in action (Schön, 1987) becomes an integral part of the co-investigation and, consequently the analysis of the implementation of new pedagogy. With opportunities to review pre- and post-observation transcripts, data collected during observations, and analyses generated through triangulation, Sabrina’s input to clarify not only provided for revisions, but also guided the
investigation as it unfolded. Perhaps most importantly, her crosschecking served to provide a truthful representation of the case.

**Subjectivity Statement**

As I collected and analyzed data, I was keenly aware of my biases. Indeed, my experiences and educational philosophy weighed heavily at the outset of my research. Most qualitative researchers urge that one’s subjectivities be declared and examined before and during the research process, that those viewpoints might be understood by the reader to inform the purposes, process and findings (Creswell, 2013; Lichtman, 2010; Guba & Lincoln, 1989; Merriam, 2009). Such biases do not invalidate the representation of a case. In fact, the nature of case study is to represent the multiple realities of the participants and even the researcher (Lincoln & Guba, 1985). With careful, reflexive thought and intentional use of methods to contemplate and mitigate biases, such subjectivities can strengthen findings in qualitative research. I offer my biases and interests here to expose the lenses through which I have viewed and continue to view this research.

First, I believe that becoming a teacher is a transformative experience that involves dispositions, pedagogy, knowledge of content, self-awareness and professional knowledge. Having been an elementary classroom teacher for nearly fifteen years, I have a strong affinity to the work of elementary school teachers, the successes and struggles they face as they endeavor to reach students of diverse backgrounds and abilities. I understand how teachers are surrogate parents, social workers, and health care providers. I understand that, for many, choosing to become a teacher is choosing to follow a vocation. Many people who become teachers do so for reasons they attribute to spiritual calling, to serve a higher purpose, to
'give back,' to ‘pay forward,’ or for a love of children. Most teachers are life-long learners and wish to instill that love for learning in their students.

Secondly, I believe that teachers’ expertise, historically and presently, are underappreciated. Teachers are often seen as public servants, similar to police officers and health care workers. Moreover, in the current political climate, public servants are being blamed for society’s woes. Therefore, teachers are being held accountable for issues well beyond their control. As high stakes standardized testing is being touted as the decisive means of accountability for teachers’ success, broader society has marginalized the social benefits, the un-measureable attributes of relationship-building, and the democratic purposes of schooling that teachers provide. Even so, I see teachers continue to search for the best ways to help their learners understand new ideas and meaningfully engage in learning. I also see how teachers, themselves, are in a quest to do the same, to constantly remember the reasons they wanted to become teachers in the first place.

Third, my professional experiences also affect my work in the field of inquiry-based learning. My own teacher preparation focused heavily on student-centered pedagogy and meaningful learning for students. In the era of whole language, it was instilled in me that learning happens within the mind of the learner and that only through active construction from one’s own frame of reference does learning occur. Being ‘in the learning’ with students was a laudable purpose for teaching (Cambourne, 1988, Harste, 1988; Routman, 1988, 1994). Therefore, two overarching goals I have had throughout my teacher career have been to understand the constructivist philosophy and strive to create conditions for learners to make meaning for themselves. Because of these beliefs, I became involved in the opening of and taught in an innovative charter school focused on inquiry-based education. My work in
teacher mentoring at that school and elsewhere, specifically using the cognitive coaching approach, extends my view that much of the work of learning is the responsibility of the learner, whether it be a child or a teacher. I believe that it is the teacher’s (or mentor’s) role to set the most optimal conditions for learning and growth to take place.

With these personal perspectives in mind, I engage in this qualitative study of teacher change. Qualitative research is about making meaning with the researcher often interacting as a part of the context. Reflexivity requires realizing that the researcher works within the context of the research (Koshy, 2010; Merriam, 2009). In my case, I acknowledge that I am an active participant and will influence the context of the research: Through cognitive coaching, I will be involved in thinking through the curricular and instructional choices that the teacher makes. Choosing the teacher, collecting and analyzing data was all completed through my subjective lenses, and should be noted as part of the interpretive process.

While the HPL framework will be helpful in looking at the teacher’s implementation of a new pedagogy in her classroom, it is also instructive to the coaching relationship Sabrina and I built. Issues regarding knowledge, learner characteristics, community and assessment permeated our interactions. We were aware that our professional relationship was developing as a coaching team while she grew as a teacher, and her students are learning, as well, is a complex system of interactions. As Sabrina and I interacted within the classroom, within the coaching relationship and within the HPL framework, the emerging understandings each of us generated ultimately coalesced into the findings of this research.
Along those lines, acting as a participant observer during this research, I had a working relationship with the teacher and, to a degree, with the students in her classroom. Merriam (2009) describes the role as “researcher vis-à-vis participant” (p. 125). On his continuum of participant--observer, Patton (1990) places this kind of research much more on the end of participant than observer, however I maintained observer status to document conditions, collect data, probe for clarity and provide feedback. In this stance, the purposes of the research were known to the teacher. We worked together more as colleagues and collaborators rather than as traditional omniscient, observer/observed research. Experts warn that this stance can pose problems in the course of research, specifically with data analysis, as both of us may be reconfirming our beliefs within an echo-chamber effect (Merriam & Simpson, 2000; Patton 1990; 2002).

To mitigate the effects, I interrogated how my biases and assumptions influence the research at every step and invite my co-investigating teacher to do the same. Through holding one another accountable to triangulation, comparing findings to our own perceptions, and revisiting theory, we abated bias and aim to represent findings with authenticity and honesty.
Ethical Considerations

While there are no major risks involved with conducting a case study on Sabrina’s implementation of student-initiated inquiry, there are minor considerations that should be anticipated. All standards of the American Educational Research Association Code of Ethics (2011) are adhered to in this research.

Potentially, case study research can be problematic when it comes to ethical representation of the case (Lincoln & Guba, 1985; Merriam, 2009). Most of the ethical considerations center on the teacher’s potential apprehension regarding her teaching becoming a part of published documents. With only one teacher and one researcher in the study, it is possible that coworkers and others knew whose work and whose classroom was represented in the research. It is possible that the teacher’s thought processes and decisions about pedagogy, or even decisions about specific students, would be made available for outside critique. The cognitive coaching approach is predicated on confidentiality, and the perceived lack thereof may well influence the interactions between the teacher and researcher. These concerns were mitigated by including the cooperating teacher in a co-researching role. Indeed, we worked diligently to represent the case as a composite as opposed to easily identifiable individuals (Creswell, 2013), and we maintained a keen awareness of the issue of confidentiality as we engage in cognitive coaching, analyze data and prepare findings.

A secondary, related concern the teacher may have is being singled out as either a ‘model’ or ‘rogue’ teacher. If the teacher were to be perceived as doing something innovative in a manner exclusive to others, or if she were to express dissatisfaction with any part of teaching (students, parents, leadership, colleagues), she could put herself at risk of critique.
Keeping in mind that participation in the research reinvigorated this teacher’s instruction, these potential problems could just as easily be seen as opportunities to reify her commitment to the profession and to personally meaningful teaching.

Finally, there is a concern with studies such as this one that the participant, in this case a teacher, may experience discontent with what she discovers (Lincoln & Guba, 1985; Merriam, 2009). Any movement towards changing ones approach will likely lead to self-analysis. In doing so, the teacher in this study may raise questions of her own efficacy or identity as a good teacher. While it is not the intent to problematize the teacher’s change process, it is important to consider these potentialities and to be ready to give the teacher time and space to think through these new thoughts. Once the research is complete, it is our hope that the supportive, professional relationship we have built will continue.

**Summary of Methodology**

In this study, I used a single case study approach to explore and describe how a teacher implemented student-initiated inquiry in her classroom. Case study methodology, advocated for by Stake (1995) and Merriam (2009), provided guidance to select an appropriate participant, collect and analyze data, and insure trustworthiness and consistency the representing the findings. The case study method best represents my constructivist stance and mirrors the inquiry processes that the teacher implements with her students and that the students are using to explore their own topics of interest.
CHAPTER 4 FINDINGS

Introduction

This study explored how a third grade teacher changed her pedagogy to implement student-initiated inquiry in her classroom. It described how the teacher, Sabrina, approached this complex change in her teaching by learning more about the new pedagogy, herself as a learner and about her students. The data traced her path across three aspects of her professional development: changing her pedagogical approach, engaging in inquiry with her students, and overcoming obstacles along her journey. The three sources of data that were collected included teacher interviews, classroom observations and teacher- and student-generated artifacts.

There were three main questions and two subordinate questions that framed this case study:

1) How does a third grade teacher change her pedagogy to implement student-initiated inquiry in her classroom?
   - Which teaching strategies and structures does she use to support students’ inquiry studies?
   - What obstacles does she face as she makes the pedagogical shift and what does she do to address those obstacles?

2) How does the process of teacher inquiry support pedagogical change in the classroom, specifically using cognitive coaching to support and capture the process?

3) Given the external pressures on teaching, in what ways does a teacher position herself to succeed and persist?
Findings from this study suggested that Sabrina changed her teaching as a result of discovering more about her students and about the nature of teaching and learning. Findings also document how Sabrina implemented inquiry-based instruction with her students while, at the same time, she engaged in professional inquiry about the new method of teaching. A final set of findings explains how she intentionally positioned her teaching decisions to overcome outside pressures and insure success for herself and for her students.

Figure 4.1. Scope of Findings: Three Aspects of Research

Altogether, the findings represent the multi-layered, complex relationships that exist among Sabrina’s understanding of learning, her teaching, her students and of the contexts in which she teaches. Sabrina ultimately learned how to better wield her power within the boundaries of her position.

**Changing Pedagogical Approach**

Teachers often have pre-conceived notions of the profession and of what teachers are supposed to do (Nieto, 2005, 2015). They have mental maps of how students should behave and how teachers should teach (Costa & Garmston, 2002). The *How People Learn* framework (Bransford, Brown & Cocking, 2000) suggests four landmarks on those mental maps: knowledge, learner, community and assessment. Learning to teach differently means reorienting one-self within those mental maps, and that requires intentional, hard work.
How did Sabrina reorient her teaching and begin to implement inquiry-based teaching in her classroom? The essential answer is that Sabrina discovered new perspectives on herself and her students. She decided to think in new ways about how she and her students learned. In so doing, she chose to teach differently. Using the four dimensions of the HPL framework (Bransford, Brown & Cocking, 2000), it became evident that these dimensions were only a starting point to understand her deep-dive into inquiry-based teaching.

As her students were liberated to make choices about their own learning, Sabrina, too, made new choices in her teaching. Consequently, she saw the dimensions of learning begin to coalesce into an integrated whole.

![Figure 4.2. Sabrina’s “Centers” of Learning: A Modified HPL framework](image)

**Finding 1: By implementing inquiry, knowledge- and learner-centeredness became inextricably linked.**

Prior to participating in this study, Sabrina knew that inquiry-based teaching existed and she agreed that having students involved in designing their own learning was a good idea. In our initial interview, she expressed concern about students asking their own questions: “I know it is not about gearing them towards certain things. Or is it gearing them
towards…? My question is how to encourage them to ask and answer, to find the answers, without giving up too soon, to not rely on me to give them the answers.” These comments led me to believe that Sabrina was intrigued by inquiry-based teaching, but she was not sure how to get started.

In our initial interview, Sabrina also shared about a hands-on lesson she had attempted early in the school year, before our research began. She was not sure if it was in “inquiry” lesson, but it was the lesson that came to mind when I asked what she had attempted in that realm. The lesson was an engineering activity in which students were to build mini-bridges out of various materials to see how many pennies they could support without breaking. Sabrina reported how the scientific content of the activity was valuable, but that the class needed her to micromanage their questions, from handing out materials to giving step-by-step instructions. “I didn’t have everything out for them. They said, ‘We don’t have books.’ I said, ‘You’re in a classroom full of books.’” She expected them to take responsibility for the activity and for their own learning, even without being taught how. “The pennies became a huge issue because they didn’t take a rationed amount. Some people had all the pennies. Then they were counting the pennies on their bridge and someone else would come over and take them… People weren’t being kind.” She knew her students were capable and inquisitive. She also knew they loved hands-on activities. Reflecting on this lesson that, in her words was “complete chaos,” sparked a deep interest to learn more about inquiry-based learning and to rethink her teaching.

From our initial conversations and from classroom observations, I learned that Sabrina was attuned to her students. In the first interview, as well as in every other interview, she talked about individual students in her class. During our twelve interviews, there were no
less than sixty instances in which Sabrina related something that she knew about her students either as a group or as individuals. She knew her students’ family situations, their academic abilities, and sports and hobbies in which each participated. She was aware of the balance she needed to maintain between thinking about her students as a group (“I love them. I just love them all.”) and as individuals (“Lucas has a really hard time writing. He gets anxious.”). She thought she knew what motivated her students and at what level of independence they could work. By learning more about inquiry-based instruction and about her learners, she was surprised just how much one informed the other.

**Sabrina and the class jumped into inquiry**

Over the four months of the study, Sabrina learned more about what student-initiated inquiry is and what it looks like in practice. While I had provided her with the book, *Why are School Buses Always Yellow?*, by John Barell (2008), and some inquiry notebook activity sheets I had used in my own classroom, she later admitted that she had only skimmed the book and had not looked at the activity sheets. Instead, Sabrina jumped headfirst into the inquiry experience.

As she set out, she engaged students in choosing topics to study. To get students to choose topics that were inspiring to them, Sabrina referred to a biography they had recently read together about a photographer who was enchanted with the subjects she photographed. Sabrina and her students used the word “enchantments” to brainstorm lists of topics they wished they could study. Students were encouraged to choose topics that were personally meaningful and not necessarily related to a particular unit of study. She wanted students to choose a topic that captured their interests, ones that they would be interested enough in to research over several weeks (Table 4.1). “What if I told you that you could do a project on
“It?” she asked the class. “Start thinking about it because this is happening!” The class erupted with a lot of questions about when and how they were going to get started. In initiating the process, she relied on her own conceptions of what it would look like. In fact, this honored the very spirit of the inquiry process she wanted for her students. Her approach to learning about inquiry was focused on trying it out with them. She decided to “trust the process and, even though I like to control things, give them the opportunity...Don’t underestimate them!”

**Table 4.1. Students’ Inquiry Topics and Presentation Methods**

<table>
<thead>
<tr>
<th>Student</th>
<th>Topic</th>
<th>Mode of Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How to Draw Action Figures</td>
<td>Guided drawing presentation with poster</td>
</tr>
<tr>
<td>2</td>
<td>JK Rowling</td>
<td>Poster</td>
</tr>
<tr>
<td>3</td>
<td>How the Body Works</td>
<td>Poster</td>
</tr>
<tr>
<td>4</td>
<td>Unicorns: Real or Fake?</td>
<td>Art project – unicorn horns</td>
</tr>
<tr>
<td>5</td>
<td>Training for the Secret Service</td>
<td>Poster</td>
</tr>
<tr>
<td>6</td>
<td>How Cursive Came to Be</td>
<td>Google slideshow</td>
</tr>
<tr>
<td>7</td>
<td>The Invention of Football</td>
<td>Poster</td>
</tr>
<tr>
<td>8</td>
<td>How and When Soccer Was Invented</td>
<td>Poster</td>
</tr>
<tr>
<td>9</td>
<td>Niagara Falls</td>
<td>Google slideshow</td>
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<tr>
<td>10</td>
<td>How is Plastic Made?</td>
<td>Google slideshow</td>
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<td>11</td>
<td>Russian Alphabet</td>
<td>Google slideshow</td>
</tr>
<tr>
<td>12</td>
<td>What it Takes to Be a Gymnast in the Olympics</td>
<td>Google slideshow</td>
</tr>
<tr>
<td>13</td>
<td>How To: Paper Folding (Origami)</td>
<td>Poster, interactive demonstration</td>
</tr>
<tr>
<td>14</td>
<td>What Does it Take to Be an NFL Player?</td>
<td>Poster</td>
</tr>
<tr>
<td>15</td>
<td>Gabby Douglas</td>
<td>Poster</td>
</tr>
<tr>
<td>16</td>
<td>How to Make Electricity</td>
<td>Poster</td>
</tr>
<tr>
<td>17</td>
<td>Why Do Cakes Rise?</td>
<td>Poster; demonstration</td>
</tr>
<tr>
<td>18</td>
<td>How Cars are Made</td>
<td>Poster</td>
</tr>
<tr>
<td>19</td>
<td>Gymnastics</td>
<td>Google slideshow</td>
</tr>
</tbody>
</table>

Sabrina realized how intensely engaged students became in work that was personal and meaningful. On the day she introduced the inquiry project and told students they could choose their own topics, one student came up to Sabrina later and asked if she could have the class’ empty tissue box to build a balance beam for her study of gymnastics. Likewise, the
student who was studying origami went home over spring break and folded “at least a thousand” examples! Another student came in one day and begged Sabrina to read the resource she had found that explained how cakes rise. “She needed me to read it right then!” These examples reinforced what Sabrina suspected to be true about student interests: “I feel like it gives me insight into what drives them and excites them.” The students’ intense engagement excited each other and their teacher. Sabrina learned more about her students because she listened to their enchantments. Without opening the curriculum up to students’ interests in this way, Sabrina might have never seen that degree of dedication from her students.

**Sabrina wanted to “remain teachable”**

While the process of implementing student-initiated inquiry provided a window into knowing her students better, it provided a mirror for Sabrina to see herself as a learner, too. In terms of self-awareness, engaging in inquiry with her students had a metacognitive effect for Sabrina, especially about her philosophy of teaching and learning. As she began the journey, she wished that she could see how inquiry worked in other classrooms. “I think I’m a visual person, so seeing it happen would be helpful.” Unfortunately, there were no inquiry-based teachers at her school to observe, nor were there any opportunities to visit teachers at other schools. In effect, she experienced a philosophical shift from her lived experience of implementing inquiry. Her experiences moved her from believing that hands-on learning was valuable, to knowing that inquiry-based instruction was educationally sound. In a phrase, she wished she could do “that kind of stuff [inquiry] all the time.”

Her changing practice was most obvious in one specific cause/effect reading lesson I observed. Sabrina wanted the lesson to be engaging but had not consciously planned it to be
an inquiry lesson. In reviewing her lesson plan with me, she considered having students ask their own questions to enhance their engagement. To address cause/effect explicitly, she tentatively planned to use task cards with commercially prepared passages. We finished the pre-observation interview with Sabrina planning to have students fill out a worksheet, answering cause/effect questions about the passages.

However, when I observed the actual lesson, Sabrina began by encouraging each student “write down everything you know about cooking.” After a few minutes, she challenged them to “think of some questions you have, thick questions to ask. Questions stems like ‘why?’ and ‘how?’ ‘What would happen if?’ questions about cooking. Write as many as you can.” By having students ask ‘what if’ questions, Sabrina knew that she was prompting the cause/effect thinking she was aiming for.

To follow up, instead of using cause/effect passages, Sabrina chose real recipes from which students were to deduce cause/effect relationships. She asked them, in their tabletop groups, to write the cause/effect relationships they found in each recipe. They were then to exchange what they had written to see if others could determine what recipes they had analyzed.

While this lesson was not student-initiated in the way her class was studying their “enchantments,” it was an example of what Sabrina had learned about inquiry-based learning. “I think they still would have been engaged with a worksheet on cooking, but I think doing it that way took it up another level. I gave them a minute to kind of wonder about it.” Exchanging work also included an element of reflection. They received authentic feedback about their ability to identify cause/effect relationships by their classmates.
The most illuminating moment came when I asked Sabrina why she chose to use recipes instead of the pre-packaged, standardized passages. She realized that it was because one of her students was studying cooking for her student-initiated inquiry project. That student had shown her time-lapse videos of people cooking food, and Sabrina had reflexively incorporated the student’s inquiry into her lesson. She was enlightened how her teaching and professional decision-making had been inspired and informed by her student’s inquiry. The significance of this interaction could easily be overlooked. Sabrina often used standardized materials in her reading instruction. She thought that the activities and lessons would better prepare students for end-of-grade tests. However, in this instance, one student’s interests and her independent inquiry study led Sabrina to customize her teaching to connect it to students’ real world. The fascinating and revealing point is that when asked about her decision to focus on recipes and to include a video, Sabrina did not grasp what had happened. In the moments after I asked her the question, she realized the impact that her students inquiry project had on her as a teacher and curriculum decision-maker.

As a learner and as a teacher, Sabrina wanted to “remain teachable.” When she discussed how implementing inquiry affected her as a learner, she talked about how some other teachers became comfortable doing the same things year after year. She did not want to fall into that way of thinking. “Even in a couple of years I have been teaching in the classroom, I can see that my ideals are shifting a little bit, and to be okay with that. I know that as long as my motives are good and I am in the right space, just to take everything in and remain teachable with it.” Sabrina saw herself as a life-long learner and hoped that, as new opportunities to learn about teaching came along, she would take them. “I never want to become stagnant because things change all the time and you need to grow and adapt.”
Inquiry-based instruction requires knowing your learners

Indeed, Sabrina’s knowledge about student-initiated inquiry grew as the study progressed. She discovered what student-initiated inquiry is and could look like in her classroom. Along the way, she learned how engaged her students became with their “enchantments,” and she realized that though the inquiry process is non-linear, it develops students’ sense of ownership. She learned how to help students ask their own, well-developed questions, and she saw inquiry-based learning as a way for her students to feel “empowered to figure it out for themselves.” Sabrina’s content knowledge of inquiry grew, as did her pedagogy.

Overall, student-initiated inquiry gave Sabrina new insights into her learners. She learned that her students were persistent, engaged learners, if given the opportunity. “It’s all-encompassing…It lets me do it all at the same time instead of this piece and that piece. This project allows me to see what they love to do, what they want to know more about, what they are interested in on a different level.” She learned that they could ask and answer their own questions with proficiency and with enthusiasm. “Regardless of where they are at, they can always attain greatness.” In fact, she reaffirmed that her students could assess the quality of their work and that inquiry-based learning supported all learners. Sabrina’s desire to know her students better and support their self-sufficiency were met.

Perhaps most importantly, Sabrina learned that her students were willing and able to take responsibility for their own learning. Before this project, Sabrina found herself organizing and reorganizing her instruction with the intent to provide the strongest scaffolding for every learner. She individualized students’ reading assignments and, at times, their homework. In doing so, she thought she was giving them the support they needed to
learn and, ultimately, perform well on their end of grade testing. Having them choose their own topics to research and ask their own questions, instead of completing work she had planned, allowed Sabrina to see what each student could accomplish. “Inquiry allowed them to go big,” Sabrina explained. “I wanted them to have the opportunity to go bigger than sometimes I think they should.” Students’ opportunities to “go bigger” led to Sabrina’s stepping back, watching and helping instead of preplanning and choreographing each lesson. “I think it’s more intentional, like the questioning and the inquiring, getting them to buy into what we are doing, instead of just laying it out there. And they feel more invested in what they are doing.”

Towards the end of the study, students completed a reflective self-evaluation on their inquiry projects (Appendix I). They were asked what they had learned and if it was worth it. For Sabrina, the answers revealed the agency students felt about the projects. One student said, “I think it was worth it because it took a while to get all that research.” Another student said, “It was worth it because I put in a lot of effort!” Others noted how proud they were of themselves, of speaking out in front of the class, and of the expertise they had in their topics. One summed it up, “It was worth it because I had fun.” Sabrina knew from watching their work over six weeks that they asked really interesting questions, that most of them were more self-motivated than she thought they would be, and that they were learning to manage resources better. What surprised her was how very aware they were about the inquiry process, and how much they appreciated being trusted as learners. She was also surprised by how much the inquiry process allowed her to get to know her students and vice versa.
Finding 2: While implementing inquiry-based teaching, new social dynamics emerged

Even as Sabrina found that, in inquiry-based teaching, the learning and learners could not be separated, she also discovered how the communities in which she worked changed. Implementing student-initiated inquiry changed their classroom community as well as the way Sabrina was perceived by her peers. The community-centeredness dimension of the HPL framework helps outline the changes that Sabrina noticed through the process.

The classroom community changed

From my very first observations of her students’ interactions, I knew that Sabrina taught her students to be polite. Students were respectful of one another, knew what was expected of them, and understood that there were consequences to their actions, both positive and negative. She attributed part of her class’ success in cooperation to their small room. Sabrina was very patient when moving around their small classroom, making sure to give others space to move. She said “please” and “thank you” when she interacted with students. She made a special point to hold the door for them. Their cooperation was partly a result of the behaviors she modeled and, consequently, expected from her students. She was polite to her students because it was the right thing to do, and because she wanted to models for students what she expected them to do. “I want them to figure out how to do it on their own,” Sabrina said, referring to working well with each other.

“They are good kids. They really are,” Sabrina commented about their behavior. However, she also noted how they relied on her too often. “These kids are just so quick to let everybody else solve their problems.” For example, students came up to tell her the computer was not working. In another instance, one asked her to tell someone to move from her seat. “They need me to solve their problems,” she said with some exasperation. She knew her
students were capable of more empathy, patience and independence, but she was not sure how to encourage them to grow. It was in these conditions that she began the inquiry project with her students. She was not sure how this lack of self-discipline would impact the students’ ability to self-initiate inquiry.

The effects of engaging students in personally meaningful study was unexpected, though, particularly on their interactions with each other. Deep in their individual studies, Sabrina had noticed how much students wanted to tell her and each other about the topics they were studying. When asked how their classroom community had changed, she said, “I think they are more invested in other’s interests, sharing their interests. They are able to give each other, not really compliments, kind of compliments.” More than once, the class erupted in spontaneous applause for individual students when they shared something momentous. “I like it when they do that without prompt. When they feel like, ‘That deserves a clap.’ It probably unconsciously happens organically.” Though she may not have seen how much her instructional choices affected the “organic” nature of their interactions, Sabrina was keenly aware of the positive consequences the student-initiated projects had on their classroom community. “They were able to support each other and encourage each other, and it was genuine. It was genuine encouragement.”

To promote students’ collegiality and independence, Sabrina taught lessons on active listening and on asking good questions. “That’s our goal tomorrow,” she said, “to ask better questions and listen to each other.” In one lesson, they “got into a debate on ethnicity when we studied different countries.” Sabrina modeled how to cooperate and how to be a part of a vibrant community of learners. Just before lunch one day, she asked for a volunteer to sit in the middle of the circle with her. Together, they talked about the student’s topic - what topic
he had chosen, what questions he had asked, and what he had found out so far - while everyone else watched. She asked him questions about his topic that he might not have thought of. Using this “fishbowl technique,” she showed students how to listen and interact as co-learners. “When they got back from lunch, they couldn’t wait to get in there and do it some more and listen to each other’s ideas. They really wanted to participate.” Expanding her teaching to allow students to have a voice – to ask and answer their own questions - helped students take responsibility for their learning

**Sabrina’s professional relationships were affected**

Unfortunately, Sabrina did not experience the same kind of unequivocal positivity she saw in her classroom community within her professional community. While some of her colleagues were very supportive of the changes they saw in her teaching and in her students, others were not as encouraging.

To help her students do their research, Sabrina sought out the help of the school librarian and of the university student who was working in her room. Both were eager to help her students find resources, read and interpret their research. Her part-time instructional assistant also helped students as she much as she could. “When I doubt myself,” she said, “they tell me that they see the amazing things, and they know it’s with purpose. And they want me to share that with some of the other teachers that are resistant to change.” Sabrina was very appreciative that this team was building a support-base for the students, almost from scratch. She leaned on these professional colleagues for support.

Other teachers in her grade level team and across the school also knew that Sabrina was implementing inquiry-based strategies in her classroom. She reported several conversations with them about how it was going. “I have had some people say, ‘You’re
doing amazing things with our kids. It shows in them. It’s going to show in their growth.”

The comments lifted Sabrina’s spirit, and she was eager to share that her colleagues knew of and approved of her innovation. At the same time, she realized that her innovative practice could be seen as a challenge to the traditional teaching that was happening in the school. She hoped that the kind of engaged learning that inquiry represents would catch fire for her class, and for her own child who was in a different third grade class. Some of her colleagues hoped the same thing. Sabrina understood that she was leading the way, and she was proud of it.

However, not all of the feedback Sabrina encountered was as encouraging. “A teacher the other day pulled me aside and said, ‘I know what you’re doing. Other people see what you’re doing in there with your kids, but don’t forget about the other kids.’” Sabrina was unsure how to interpret the comment. Was her colleague encouraging her to lead the way or was she asking her to be quieter about what her class was doing? Even if other teachers were satisfied with the status quo and did not want to try anything new, Sabrina was intent on learning from the attempt. She had seen how it had positively affected her own learning, the students’ learning and the classroom climate. She was not willing to abandon that success because some other teachers were “skill and drill, drill and skill.”

The tension was most poignant in a grade-level meeting between Sabrina and the other third grade teachers. As a team, they had previously decided to place students in groups for end-of-grade test prep instruction. The EOG rotations took place several times each week, with each third grade teacher teaching a specific skills-based lesson to a class of students mixed from different classes. In this particular grade-level meeting, Sabrina said that she needed to step back from that arrangement. She wanted to reclaim two days of the week to “spend more time with my students.” When asked how this affected her relationship within
the grade level team, she replied, “Backlash…That’s what I got when I said I needed to step back and devote more time with my class.” Neither the negative reactions nor her concern for what it would mean for her professional standing discouraged Sabrina from making time for students to continue to engage in their own research.

In the end, Sabrina’s classroom community and professional community changed as a result of implementing student-initiated inquiry. Although she experienced and described progressive growth in the relationships that she had with her students and the relationships they had with each other, her interactions with colleagues was mixed. The uneven responses she described did not seem to be instrumental in Sabrina’s future commitment to inquiry-based teaching. The question remains how these interactions will play out in her future instructional decisions.

**Finding 3: Assessment became reflective feedback rather than approval/disapproval**

Students and teachers often seen assessment in terms of as how others judge their work, but Sabrina’s implementation of student-initiated inquiry opened new possibilities to understand the value of feedback. Within the *HPL framework*, assessment refers to the ways in which learners receive feedback on their learning and the values that are associated with that feedback, both extrinsic and intrinsic. In short, as Sabrina implemented inquiry-based instruction with her students, assessment came to mean authentic feedback, especially reflective feedback, to determine one’s own learning for both the students and for herself.

**Sabrina released responsibility for learning to students**

Grading is often seen as an important part of teaching (Marzano & Pickering, 2010). Teachers take on the role of inspector-in-chief, and let students know if their work meets expectations or not. Not to confuse grading with assessment, Sabrina wanted her students to
“ask and answer, to find the answers…to not rely on me to give them the answers.” She wanted students to be self-sufficient. She knew that if she held the reigns by grading all of her students’ work, they would never become independent. She understood, from experience, that students can and should take responsibility for their own learning.

Instead of setting students up to complete tasks and judging whether they met the criteria, Sabrina used students’ inquiry-based studies to facilitate their ownership in self-evaluation. Releasing responsibility to students to self-monitor was not easy for some of the students. While discussing the evaluation of their inquiry projects, Sabrina asked, “Do you want me to grade them?” About half of the students answered in unison, “Yeeessss!” while the other half responded, “Nooooo.” She expected the mixed answers because extrinsic assessment had become an important part of the students’ education so intensely in third grade. “They ask, ‘Is this for a grade?’ I said, ‘We’ll see.’ Because everything is for a grade this year. The grades. It’s the first year of EOG’s, first year for letter grades. It’s all grades, grades, grades.”

However, instead of giving grades, Sabrina taught students to self-assess and allowed them to take responsibility for doing so. She did this during their inquiry studies (formative) and at the end of the project (summative). She helped them brainstorm topics and decide on subjects that would not be too confining or too broad. Ultimately, she let them choose. The same was true as students asked their questions and set out to research the answers. She made resources available, and students were expected to spend the time necessary to engage in the research. She was a guide, but she expected students to do the work. She would end their inquiry sessions by asking the group self-assessment questions like “What obstacles did you
face today?” She wanted students to take responsibility for their own thinking and their commitment to learning.

Establishing a timeline to complete their research and to finish their product was an especially daunting self-evaluation task for the students. Instead of setting out the deadlines, Sabrina engaged the class in a discussion about how much time they needed and when they thought the class presentations should. Initially, she intended to teach students how to use a timeline. Instead, she projected a monthly calendar to help students see the actual days available. Sabrina led a discussion about what was left to do, how students could manage their time, and what dates they were going to aim for. She then required the students, as a group, to make the decisions on deadlines. The list of dates was posted in the classroom and sent home to parents to help hold students accountable. Involving them in the process taught time management and made students part of the formative assessment process.

**Students designed a reflective summative evaluation**

One of the most significant decisions Sabrina made regarding assessment was to have students design a reflective self-assessment to complete at the end of their studies. She wanted them to understand the term “criteria,” and she wanted them to decide which criteria were important to consider in evaluating their own work. With guidance from me and from Sabrina, students proposed five criteria and designed a 1-5 rating scale evaluation (Figure 4.3) (See also, Appendix I.). One criterion that students insisted upon including surprised her. “That one stunned me. I used that all the time, the ‘third grade work.’ It should look like third grade work.” She interpreted the students’ inclusion of that criterion as proof that her students held high expectations of themselves, and that that was a reflection of her high expectations. Sabrina also decided to add a sixth criterion, “Wow factor/Creativity” without
the students’ input or approval. Interestingly, this last criterion saw the lowest mean scores across the class at the end of the project.

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Searched deep</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Gave good effort</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Shows at least 3rd grade work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Taught me something new</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Spent time on it and didn’t give up</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Wow factor/Creativity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
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</table>

*Figure 4.3. Student-generated Self-evaluation Criteria Scale*

Parents who attended the presentations scored the same six criteria, and results were given back to students. They received a wealth of feedback from the anonymous scores, as well as from their teacher and classmates in the form of written notes and impromptu comments and questions. With all of this information, they filled out their own criteria scale and completed the second, narrative part of the reflective self-evaluation. The second part consisted of three questions: What did you do? What did you learn? And was it worth it? In responses to the first question, most students wrote about researching the answers to their questions and making their final products. Their answers to the questions “What did you learn?” and “Was it worth it?” were even more revealing (Table 4.2).
Table 4.2. Selected Student Responses to Self-assessment Questions

<table>
<thead>
<tr>
<th>What I learned?</th>
<th>Was it worth it? Why or why not?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I learned that there are multiple forms of cursive like Carolingian, script, rather than one</td>
<td>It was worth it because I learned a lot more about cursive than I thought</td>
</tr>
<tr>
<td>I learned that football was invented in the 1800’s</td>
<td>My project was worth it because I put in a lot of effort</td>
</tr>
<tr>
<td>I learned J.K. Rowling had a sister and that she had a daughter. I also learned that she worked on Harry Potter in a coffee shop. (There wasn't enough room to write more.)</td>
<td>Yes It was because I wouldn't have had a poster and it helped me speak out.</td>
</tr>
<tr>
<td>I learned that druz'ya means friends and ruskijalfavit is Russian for the Russian alphabet and sem'ya means family</td>
<td>Yes I think it was worth it because it took a while to get all that research provided the time</td>
</tr>
<tr>
<td>I learned it is really hard to make a Google slide and it is really hard to be an Olympic gymnast</td>
<td>It was worth it because I love gymnastics and I am really proud of myself for getting it done!</td>
</tr>
<tr>
<td>What I learned is that football is amazing. You just have to learn about it</td>
<td>Yes. It was worth it because I took a lot of time on it and because it was awesome</td>
</tr>
<tr>
<td>What I learned was you have 306 bones in your body and organ systems are formed when two or more work together to perform a larger task</td>
<td>It was worth it because I got to learn new stuff</td>
</tr>
<tr>
<td>I learned that when Gabby Douglas was eight she was signed up for gymnastics</td>
<td>Yes it was worth it because I took my time and did 3rd grade work</td>
</tr>
</tbody>
</table>

With regard to whether they thought the inquiry projects were worth it, class responses were overwhelmingly positive. They saw the value in being able to choose their own topics and in the time Sabrina gave them to research their topics. She was impressed that her students realized the value of their own investment, engagement and learning. “I think the higher-order thinking was evident there,” Sabrina remarked at the students’ evaluation of themselves. “I know with their ideas, they have surprised me. Some of the products I have
seen have been kind of awe-inspiring.” She was inspired by their work and, more importantly, they were aware of the high quality of their work. “I think they feel like their interests matter, that they are not just sitting and doing worksheets or doing a project. It’s meaningful. They feel like it’s meaningful to them…relevant!”

**Sabrina’s third-graders were honest self-evaluators**

Sabrina learned how honest students could be in evaluating their own work. “Third grade is all about grades, grades, grades,” Sabrina lamented. When she introduced the inquiry project, “They asked, ‘Is this for a grade?’” She answered, “We’ll see,” and she felt the pressure to fall in line with third grade, that is, a lot of extrinsic summative grade. Alternatively, Sabrina knew that her third graders could be reflective and honest about their own work. “They’ll tell me if they skimped or if they worked really hard or if they could have worked harder.”

After they designed the self-evaluation together, a student commented that “some people would give all 5, 5, 5’s.” Sabrina said, “Oh, the opposite is true.” In fact, only two students scored themselves ‘all 5’s,’ and Sabrina had already predicted that those two students were going to need special support to claim honest responsibility for their work. The other seventeen students ranged in their self-assessments from a mean score of 3.3 to 4.8 (out of a possible 5.0). Every student except one explained how they could and would improve the next time. Sabrina’s comment about one student exemplifies how she thought about the quality of the class’ work, in general: “The caliber of her work in something she has invested in was so much higher than some of the other work she has produced.” Sabrina was convinced that self-initiated inquiry helped her students show what they knew or had learned in ways different from more traditional, standardized means.
Sabrina reinforced for herself that the most important thing she could do was to teach students to think for themselves. “Knowing that if I give them the tools that they need to be problem solvers in life, they’re going to do that with their academics, as well. I’m kind of realizing that more this year.” She was eager to extend that level of student engagement and responsibility into all of her teaching. “I want them to connect what they’re learning and not just do it because they have to, but to do it because they want to.”

**Sabrina assessed her worth as a teacher differently**

Self-assessment was not only the purview of the students in Sabrina’s class. Through the inquiry process, she reinforced and, in some cases, redefined how she assessed herself as a teacher. Fundamentally, she saw how she enriched her students’ lives and her professional community.

At the forefront of Sabrina’s mind was whether or not she was “reaching” her students, both for this inquiry project and in general. She saw her ultimate responsibility as a teacher to be more than just maintaining order and achieving good test scores. “I want the kids to think they’re there because they want to be there and they’re doing something important that is going to help them be a decent human.” She admitted that some nights she stays up worrying about them. She knew that her job was to teach them, and she also saw herself as a caretaker, teaching about life beyond reading, writing and math.

Sabrina, however, was also keenly aware of the external expectations of her teaching. “With the pressure of legislation and administration and test scores and things like that, it does put that kind of mentality in your brain. But last year, my first year in the classroom, the growth that my kids had! I don’t worry so much on test scores, but I still have that in the back of my head.” To be sure, those pressures are real and pervasive, but she was adamant
about keeping the focus on her students. Even after having two peer observations in one day, she reminded herself, “It’s just the validation from the kids. That’s why I teach. I don’t teach so a principal thinks I’m good…the administration, observations. I don’t do anything different than I do any other day. I don’t worry about observations, I just don’t.”

Implementing inquiry-based teaching and learning in her classroom gave Sabrina the opportunity to see learning through the eyes of her children. She knew that their intense engagement in learning was validation of her good teaching. “I enjoyed this a lot, and I am excited to see where it goes…I’m excited to see where they take it…I know they’re going to take it to a whole other level.” She saw their love of learning every day. In addition, the data they provided on their reflections reinforced what she knew to be true. She honored their sense of wonder and, in doing so, honored her own reasons for becoming a teacher.

**Parallel Inquiry: Teacher and Students Inquiring Together**

The second aspect of this research has to do with Sabrina’s professional inquiry. Through the process of implementing inquiry with her student, Sabrina had a parallel experience as she learned about inquiry-based teaching. As her students discovered their “enchantments” and asked deep questions about the topics of interest, Sabrina interrogated her beliefs regarding the nature of learning. She and the class experimented with inquiry-based teaching strategies. By doing so, she released control of the curriculum and began listening to students’ voices in a different way.

**Finding 4: Sabrina studied her own teaching as she implemented inquiry**

The most valuable professional development calls for teachers to hold the locus of control in asking and answering questions about their own practice (Dana & Yendol-Hoppey, 2009). In this study, Sabrina began with an interest in engaging students beyond the
standardized curriculum and instructional methods she was expected to employ. She knew that her students had interests and capabilities that were unaddressed, and she wanted to encourage students to have a voice in what and how they learned. She remained aware that external testing would measure their academic growth, finding a way to balance student interest and external pressures became part of Sabrina’s self-initiated inquiry.

It is interesting to explore the parallels between the inquiry structure Sabrina was implementing with her students and the learning that she was experiencing about the very process she was teaching.

Figure 4.4. Inquiry: A Process of Change

**Sabrina and her students implemented inquiry in-step with each other**

As Sabrina’s students chose their individual “enchantments” to ask and answer questions about, Sabrina began asking questions about her “enchantment,” the inquiry process. One of her first questions was, “How do I inspire self-sufficiency?” Knowing that motivation was key, she wondered how to make sure students stick with a topic and to get students to ask questions beyond the basics, “Just the questioning. Depth of questions. I think that’s exactly what it is…the how? And the why?” She asked questions about having quality resources for students to use to answer their questions, how to help students manage their time, and how to help them share what they had learned.
Beyond helping students grow in their understanding of inquiry, she questioned her instructional time management and what to do with her grade level team’s expectations for test-prep grouping. Likewise, she was concerned about how to balance coverage of the required curriculum with students’ inquiry studies. Overall, she wanted to know how she could integrate all that she had learned about student ownership, voice and choice into the rest of her teaching. Sabrina’s questions ranged from the very practical to the most philosophical. Her questions sustained her interest and pushed her to improve her practice.

To investigate their questions, students read what other experts had written about their topics. They watched videos, and some consulted with experts to learn more. A few chose to conduct experiments. To answer her questions about inquiry, Sabrina did much the same as her students. She referred, albeit casually, to the resources I had provided her, but found other inquiry resources online on her own. She talked with students about where they were in their research and she spent a lot of time planning what her instruction about inquiry would look like. More than anything else, though, we investigated her questions in coaching conversations in which Sabrina shared her questions and concerns. For some of her concerns, we addressed them directly. For example, she shared her concerns about when students would finish their inquiry research. After problem solving together, she decided to have them complete a timeline, with her guidance. For other concerns, we took a more data-based approach. We discussed how we could collect objective, observational data during instruction to help inform her decision-making. Findings about the use of cognitive coaching to support Sabrina’s inquiry are discussed later in this chapter. For the purpose of Sabrina’s inquiry process, it is important to note that the data and conversations generated through our coaching cycles served as her investigation into the process of inquiry. As her students were
referring to books, videos and experts, Sabrina was analyzing data from her own teaching in order to grow.

Finally, students shared what they had learned about their topics in a morning of presentations in front of the class and parents. They were proud to share their posters, demonstrations, Google slideshows and models they had built. In the case of Sabrina’s inquiry, there were limited venues for her to share what she had learned about the process. Because she had experienced resistance from a few colleagues, she was hesitant to celebrate her successes too broadly. She found opportunities to talk with some colleagues and school leaders about how impactful the experience had been for her students, how engaged they were, and how much they learned. She also shared what she had learned, in depth, with me, which is documented in this study. However, she and I both wished there had been other ways to make public the successes she had in her classroom and for her, as a learner, to become the expert on inquiry-based teaching and learning. Even though she was not able to share what she had learned broadly, she was able to enact what she had learned. By doing so she was, in essence, sharing or transferring her new understandings of learning to new situations.

**Sabrina enacted what she learned more broadly**

The data I gathered in interviews and observations document only a small part of the thought processes and teaching Sabrina engaged in while implementing student-initiated inquiry. They suggest that Sabrina’s teaching developed in ways that will continue to unfold over time. What she learned about carefully watching students, about using questions to guide their thinking, and about releasing control demonstrate her openness to learning more about the nature of teaching.
In one example of the broader impact of inquiry on Sabrina’s teaching, I observed one of her more traditional lessons. In this reading lesson, she had students rotate to different stations, one of which she led. Students were to read a standardized reading passage but, beforehand, she had them write their own questions about the topic of the passage. She used what she knew about asking questions to have students engage before they started reading. While doing a similar activity “a few days later, one of the students turned and said, ‘Look!’ He had all these questions on the back before he even started doing it [reading the passage].” She had students do the same thing during a social studies lesson on influential women. There were questions she expected them to answer, but writing their own questions sparked curiosity. Taking into account her students’ input, Sabrina subtly changed the direction of that lesson, looking for answers to some of the students’ questions as they read. They sought out details about the influential women they were studying, details Sabrina had not planned to discuss. Using questions to “ignite their curiosity” was the dimension of inquiry where Sabrina found the most value. “I like the range of questions. It always surprises me.” By generating questions together and engaging in the conversations that arose, Sabrina set the conditions for students’ voices to be heard, and gave herself permission to hear them.

Through her students’ enthusiasm, Sabrina’s love of learning was sparked again. She expressed her regret that the standardized curriculum had influenced her teaching in so many ways. “I don’t worry so much on test scores, but I still have that in the back of my head.” Third grade was heavy with testing and grading, and she did not want assessments to be the focus of her teaching and students’ learning. She remembered how she wanted her students to learn “because they’re doing something important that is going to help them be decent humans.” She recognized, too, that some of her colleagues had become satisfied with the
status quo. Since one of her professional goals was to “remain teachable,” both her inquiry process and her students’ love of studying their individual topics helped her rediscover herself as a life-long learner.

As Sabrina implemented student-initiated inquiry with her students, she followed a very similar process in learning about the very initiative she was implementing. From “enchantments,” questioning, and exploring resources, to coalescing and sharing what she had learned, Sabrina certainly held the locus of control in asking and answering questions about her own practice.

Sabrina boldly put aside the standardized curriculum and the specter of end-of-grade testing, if only for a few hours a week, and saw her role change, as well as the role of her students. Remarkably, a love of learning emerged. Students became experts and the teacher became a catalyst to help students think in new and different ways. Sabrina took what she learned and applied inquiry-based strategies across her teaching. In the end, she was intent on advocating for more time for students to ask and answer their own questions in all of their learning experiences.

**Positioning for Success**

Positioning theory (Harré & Van Langenhove, 1999; Harré, Moghaddam, Cairnie, Rothbart and Sabat, 2009; Huisman, Singer & Catapano, 2010) concerns the actions a person takes to address perceived intrinsic and extrinsic pressures. The theory supposes that it is in our nature to act in ways that position us towards advantage and towards success. In essence, humans take action to accomplish what we want to accomplish by assessing the contexts in which action needs to be taken and, in the moment, predict which actions will result in a smoother path for ourselves.
Positioning theory places a high regard on the rights and duties we choose to assume, as well as those that are required of us. In this research, Sabrina viewed her actions and the consequences of those actions through an idiosyncratic lens of success and through her vision of what she deem ethical and just. As she evaluated issues which required pressing action, her moral stance informed the actions she took, and her moral compass told her if the results of her actions are acceptable.

The issues that arose were not ones that she anticipated ahead of time. Matters related to control of curriculum, lack of time, standardized testing and parent concerns required urgent responses in order to continue pursuing inquiry. Any one of these issues could have stopped the inquiry process, depending on how Sabrina chose to deal with it. By “fixing for the moment” (Harré, Moghaddam, Cairnie, Rothbart and Sabat, 2009) the issues that arose, Sabrina considered which ethical and just actions she needed to take to position herself and her students to successfully implement student-initiated inquiry.

![Figure 4.5. Positioning within One’s Rights and Duties](image-url)
Finding 5: Sabrina clarified her rights and duties as an inquiry teacher

Well into her third year of teaching, Sabrina was committed to the profession. She understood her responsibility to help students become college and career ready, and she was keenly aware of the standardized curriculum she was expected to teach and the state testing that was required. “There are a lot of demands, and I really don’t focus so much on it [testing].” However Sabrina wanted to better understand methods to make learning accessible to all children, and found herself searching for ways to teach that were also innovative and engaging. To that end, Sabrina also fostered a community of learners within her classroom who valued respect, kindness, patience and trust. It was a community that would support each other in individual inquiry studies. She had spent time teaching students what those values looked like in practice, so it was no surprise to see students and teacher interacting in respectful ways. Sabrina had worked to create an emotionally safe space so that students could take risks as they learned. In her eyes, it was her right to “take the plunge” to try something new, and it was her duty to “focus on the day-to-day and teaching things to get them there.”

While Sabrina felt empowered within her rights and duties, it is important to note that positioning theory is about more than setting oneself up for success. Teachers are often committed to their students’ success just as much as they are their own, and Sabrina exemplified this conviction. She was committed to her students’ success socially, academically and intra-personally. “Third graders are at the brink. They still loving school. They still want to learn. They’re still at this great space, but they’re starting to do things on their own, and they’re more independent.” As a learner with them, Sabrina wanted her
students to see themselves as part of a community of learners. As their teacher, she wanted them to understand that learning is a process.

At times, she talked about her class as a group, but more often, she focused to individual students. She described the home situation of James, a student who moved to the US from Asia just a year ago. She recounted how Ella regularly interacted with adults with distrust and uncertainty. At the same time, she honed in on students’ academic strengths and needs. Trevor was a good reader, but struggled in math. Cara needed specific praise so she would not give up, and Winston “acted like he just didn’t care. But I know he does.” Sabrina was dedicated to knowing her students as individuals because, in her eyes, they were the reason she taught. “My validation comes from the kids. That’s why I teach.” Her rights and duties involved the aspirations to be a good teacher and included her need to make a difference in the lives of the children she taught.

**Finding 6: As issues emerged, Sabrina positioned herself and her class for success**

Positioning theory provides a foundation to understand how Sabrina dealt with issues that arose while she implemented inquiry-based teaching. Issues around the control of curriculum, lack of time, specter of standardized testing and concerns of parents emerged, and Sabrina had to reconcile her professional decision-making with these intrinsic and extrinsic pressures. She viewed the struggles that she had to overcome as opportunities to make choices and to grow.

**Control of curriculum**

One issue Sabrina faced was control of the curriculum. She positioned herself to redefine the control she thought needed to have over what her students learned and over the inquiry process. In the beginning, she expressed her concern clearly. “I don’t want them to be
all over the place. I gave them some leeway with things to see how it goes, and I tried to relinquish some control when we did the science project a couple weeks ago and it was complete chaos. They need me to solve their problems for them. They need me to and I don’t want to do that.”

At the same time, she questioned what they would learn and if it aligned with standards. She was hesitant to give up control of the curriculum and worried they would be wasting time on topics that were not “third grade.” She was, however, eager to give it a try. “I want to keep it simple and let them navigate. To get them a ship and let them navigate it.” One parent questioned if the research project would change the way she teaches. Indeed, the pressure Sabrina felt to maintain control of the curriculum and her instructional style was palpable.

By mid-research, students had chosen their topics and Sabrina was reassured that what they wanted to study matched surprisingly well with what third graders are expected to know and do. “I feel like I have relinquished quite a bit of control and let them find their own happening, just by the vast variety of ideas and topics that they decided on. I think it is really neat to see their interests. I wanted it to be interest-based and not tell them exactly what they needed to do for this.” One student wanted to study how NFL players become famous. “I asked him what it takes to be an NFL player. I kind of guided his questions. There was a little control there, but helpful.” For him and for many of the other students, Sabrina found herself facilitating their thinking, not directing it. She pushed students to take more control and help make more of the decisions about the shape the inquiry process should take. “They are struggling a little bit with what the project is supposed to look like, and I said, ‘It can look
like anything.’ So they’re struggling with it a little bit.” By releasing control, she learned as much as her students learned.

By the end of the inquiry cycle, after students had become experts on their chosen topics and presented to the class, Sabrina was convinced that control was fleeting: “Control is sometimes an illusion with them.” Instead, she saw control as more about shared ownership. “I want them to have ownership. I want them to have leadership. I cultivate that type of community, but when it comes to their learning…I feel so responsible that they get all they can get. I worry that if I don’t have control, then it’s not going to happen.” Releasing control of the curriculum and, to a degree, her traditional instructional practices gave her a chance to see learning in a different light. “I think allowing them to have the opportunity to fail, I wanted to allow them to go bigger than sometimes I think they should.” Her definition of inquiry had changed and included a new perspective on control. “What is inquiry? Asking and answering their own questions, finding out what intrigues you and kind of not having control of it.”

In terms of control, the positioning Sabrina assumed was mostly internal. She realized to giving control to the learners was the right thing to do. She was not relinquishing control of learning goals; she was sharing the responsibility of curriculum with those who benefitted most, her students.

Lack of time

A second obstacle that emerged during Sabrina’s implementation of student-initiated inquiry was the use of time. In our initial interview, Sabrina was concerned about how much time she needed to commit to “doing” inquiry. She wondered if it would take an hour a day or an hour a week. She wanted to know how much time she needed to “carve out.”
She decided to dedicate technology class time and library time for students to use to do their inquiry research. Several times during the week, she added the half-hour before lunch to engage students in discussions about their topics, questions and final projects. It was during these times that Sabrina realized she was not “doing” inquiry. Rather, she was using time for students to direct their own learning. She found herself flexing between individual conferences with students who needed direction, group meetings to take the pulse of the group, and mini-lessons to teach structures and strategies that students could use in their own research.

Sabrina remarked at the end of one of their inquiry sessions: “They didn’t want to move on. They could have spent three more hours on this!” She wanted them to have more time with learning opportunities that engaged them at this level, so she redirected time from end-of-grade test preparation to student-initiated inquiry. She decided to cut back EOG rotation groups to two days a week to reclaim time for students to engage in inquiry projects. “I have carved that out for them for the next few weeks to really have the time.” With some resistance from the other teachers, she decided to pull back from their leveled-grouping approach to allow herself more time with her own class. She wanted to “keep it simple. That's why this EOG group…eight weeks…rotations…give me a break. I stepped back on that. Because it's what's best for my kids and best for me.” Reclaiming that time was a calculated reallocation of time that she could not gain elsewhere.

Demanding what would be best for her and for her class, she decided to reclaim time from a grade-level structure she had already agreed to. This act of positioning put Sabrina in a precarious situation with her colleagues. She decided to honor what she thought was her basic professional duty, to guard students’ time so they could engage in personal, meaningful
learning. Consequently, as she and her students delved further in the process, Sabrina saw her role regarding time change. She was no longer the “keeper of the clock,” making sure that student completed their assignments in a given timeframe. She became the “protector of time,” making sure students had enough time to do their own important work of thinking, making and constructing their own meaning.

**Specter of standardized testing**

The third obstacle was not one that actually emerged during Sabrina’s implementation of student-initiated inquiry, but was amplified in response to wanting students to have more choice and voice in their education. Her concerns with standardized testing were established well before she agreed her attempt to change her pedagogy. “It’s just my second year in the classroom and third grade is heavy, and with RTA [read to achieve] and EOG’s first year for them. There are a lot of demands on it, and I really don’t focus so much on them [tests]. I focus on the day-to-day and teaching them things to get them there. But I try to be learner focused.” At best, she saw the conflict between the demands of testing and what she considered “learner focused.” At worst, she knew that some of what she taught and how she taught was very much test-centered.

What emerged was the tension Sabrina felt between the pressure to raise student achievement and what she knew was effective, engaged learning. She worked with the school’s literacy coach and with her grade level colleagues to disaggregate formative testing data all year long. Students completed benchmark tests regularly, and the scores were analyzed to determine which students needed more intense academic interventions. Interventions often took the form of standardized curriculum and programmed instructional materials. The laudable goal of helping students grow and learn was overshadowed by the
need to make sure their end-of-year test scores would be proficient. It was a pervasive pressure on Sabrina’s conscience and on her instructional decisions. “I don’t worry so much on test scores, but I still have that in the back of my head.”

The act of implementing student-initiated inquiry was an act of positioning against “teaching to the test” for Sabrina. Engaging students in asking and answering their own questions inspired her teaching. “I think it’s not just the inspiration, but to want to know as much as they possibly can about that thing, to dig deep, to go as deep as you can.” Through implementing student-initiated inquiry, she saw all of her students’ love of learning. She wished that she could teach like that all the time. Unfortunately, her ambition for students to sustain their own learning was in opposition to the quick and shallow curriculum she felt like she had to cover. “I would like to incorporate some standards into that [their projects]. But not give them a lot of rules or limitations on what they can design.” The conflict became an obstacle that, even at the end of the project, she had not completely resolved. Two of her comments from our closing interview show that she was still trying to find the balance and overcome the obstacle of standardization: “Maybe next year, since the standards are changing, I want to really look at them and have a more focused project for each standard,” she said, thinking ahead to how she would change the inquiry experience with her next class. At the same time, she was determined that, “if I give them the tools that they need to be problem solvers in life, they’re going to do that with their academics, as well.” The theme of testing was persistent and, unfortunately, unsettled for her.

Concerns of parents

While parents were not obstacles to overcome, per se, Sabrina experienced some issues in helping them understand the purposes of the project. “I think parents were the
hardest part to explain the process to and have them be okay.” When requesting permission for students to participate in the study, one parent wanted to know if her teaching was going to change. Taking it as a vote of confidence in favor of the quality of her teaching to date, Sabrina reassured her that any changes would be good ones, and that the goal was to help students take responsibility for their own learning. That parent likely represented the concerns of several others, wanting to make sure that their students would not miss any important instruction and that they would be on track for third grade learning.

Sabrina was very comfortable with her relationships with parents. She took great satisfaction with the open and honest communication she had fostered with them. Through weekly newsletters and regular emails, Sabrina kept parents informed about assignments and special events. Individually, she communicated with them about particular students’ efforts or lack thereof, behavior problems and academic missteps. More importantly, Sabrina kept in close contact to tell parents how their students were growing and made sure to share celebrations of academic success.

Over the course of implementing student-initiated inquiry, Sabrina was somewhat surprised that parents had so many questions about what their child was supposed to do with their inquiry project. “I think it’s funny the parents are questioning. That’s funny to me. A lot of time, a lot of research. A lot of facts. It doesn’t have to be quantity. Quality over quantity.” The irony was not lost on her. Parents wanted to know what inquiry was, what their students were supposed to be doing, what the project needed to look like, and when it was due. She realized that the parents were learners, and needed permission to ask and answer their own questions!
Instead of usurping responsibility and answering all of the parents’ questions directly, she positioned her students by staying true to the goal of student ownership. She responded to parents: “Ask your students these questions and if you still need more clarification, I’ll be happy to give it to you. They have all the answers.” She had prepared students to be owners of their work, so to undercut that effort by talking over them to their parents seemed inconsistent. The ethical thing to do was to empower students to answer parents’ questions. Her encouragement succeeded, and students were able to explain to parents what they had been doing, what they had learned, and what they needed to accomplish to finish their projects.

In the end, parents were pleased with their children’s efforts. One parent helped her child make a Google slide presentation and then that same parent volunteered in class to teach other students how to do it. Several parents came for the inquiry project sharing and provided thoughtful feedback to students about their projects and their presentations. For parents who were not able to attend, Sabrina recorded each student’s presentation and sent it for parents to see what their children had accomplished. The support and affirmation she received from parents far outweighed the challenges they posed.

The Struggle to Position for Success

Positioning theory involves how individuals assess situations and issues over which they have some influence, and how they make decisions and take actions that move towards an end goal of success. Sabrina found that she had to navigate among the issues that arose by balancing external pressures like testing and parent expectations with her professional rights and duties. Doing so meant providing powerful learning experiences for her students while maintaining her moral stability.
The term that Sabrina used most often to represent her positioning was “struggle.”
“Struggle,” in some form, was repeated more than fifteen times in our conversations together. When Sabrina talked about individual students and their academic needs, she often used the word “struggle” to suggest that they were persevering through the challenge. She talked about one student who was completely engaged with his origami inquiry project, learning how to follow directions to fold hundreds of different designs. She was baffled because, as she explained, “I could see his brain working. He was unfolding, refolding. It takes a lot of brainpower, but I tell you what, he struggles with math, big time.” Another student was learning the English language. “He is learning the language really well, but it is still a struggle, because he just came last year.” He was researching Niagara Falls and was reading more non-fiction than he had before. A third student, whom she described as a struggling learner, was also particularly well-served by working in an inquiry-based format. She performed poorly on standardized assessments, but her mother had conferenced with Sabrina and showed her all of the things the child had built and created at home, like a catapult she had built with hair bands. “She can do so much, but the format of learning at school is not where she succeeds,” Sabrina noted. According to Sabrina, the students’ struggles were not addressed by the standardized teaching practices she was expected to use. She found that giving students freedom to ask and answer their own questions addressed their struggles. They persisted in ways she had not seen before.

Through distinctly identifying her struggles and her students’ struggles, Sabrina chose positions that she thought created the best educational experiences for her students. She addressed and transcended her own needs as a teacher by challenging the status quo and persevering through implementing a new pedagogy. With confirmation from her students,
their parents and some colleagues, Sabrina knew that the choices she made and the positions she assumed had been beneficial to her learning as well as her students’ learning.

Conclusion

This case study explored how a teacher implemented student-initiated inquiry in her classroom. The primary questions that guided this research center on how Sabrina changes her teaching to include student-initiated inquiry, how she, too, engages in inquiry, and how she positions herself and her class towards successful implementation of the new pedagogy. Data were analyzed to determine how her pedagogy changed, how she and her students engaged in inquiry together, and how she positioned herself for success.

Findings illuminate how Sabrina implemented student-initiated inquiry in her classroom and what happened as a result:

- By implementing inquiry, knowledge- and learner-centeredness became inextricably linked.
- While implementing inquiry-based teaching, new social dynamics emerged.
- Assessment became reflective feedback rather than approval/disapproval.

Another finding addresses how the process of teacher inquiry supported pedagogical change in the classroom:

- Sabrina studied her own teaching as she implemented inquiry with her students. Coaching was used to support and capture the process and is discussed in Chapter 5.

A final pair of findings explain more about how Sabrina positioned herself to succeed and persist, given the external pressures on teaching:

- Sabrina clarified her rights and duties as an inquiry teacher.
- As issues emerged, Sabrina positioned herself and her class for success.
Learning to teach differently is a complex task. By honing in on students’ interests and opening the curriculum to those interests, Sabrina found her students engaged on a deeper level. She examined her own thoughts and feelings about her interactions with students, as well as what she believed about good teaching and compelling learning opportunities. The findings from this study add to the body of literature about how teachers innovate, especially considering the outside pressures they face every day.
CHAPTER 5: DISCUSSION AND IMPLICATIONS

Inquiry is a process of discovery. This dissertation captures the change a teacher experienced as she added student-initiated inquiry to her instructional repertoire. It also presents the simultaneous inquiry that happened among the students, teacher and researcher. These perspectives illuminate the complex and dynamic tasks involved in teaching and learning, and highlights this teacher’s brave attempt at teaching in a new and progressive way.

Over the course of this study, findings revealed three themes centering on teacher learning, inquiry-based teaching and positioning. First, the research illuminated how Sabrina attempted significant changes in her pedagogy within the current climate of standardization. Second, findings revealed the importance of her own inquiry as she engaged with students in inquiry-based instruction. Third, the research provided insights into Sabrina’s ethical and pedagogical decision-making as she positioned herself and her students for success. Findings from the study help address the lack of theoretical and practical insights into how teachers change their teaching practices to make a significant pedagogical change. These findings provide a deeper understanding of how a teacher goes about improving her instruction and some of the thought processes behind her decision-making. This research highlights the value of inquiry-based learning, even as teachers face the forces of educational standardization.

Below I discuss how the study’s findings contribute to the knowledge base, potential implications of the findings, as well as recommendations for future work. This chapter emphasizes what we learned about one teacher’s persistence. Even as she taught within the conditions that emphasized standardized testing, curricula and instruction, Sabrina is an example of how hope and wonder prevail.
Research Questions

There were three main questions and two subordinate questions that framed this case study:

1) How does a third grade teacher change her pedagogy to implement student-initiated inquiry in her classroom?
   - Which teaching strategies and structures does she use to support students’ inquiry studies?
   - What obstacles does she face as she makes the pedagogical shift and what does she do to address those obstacles?

2) How does the process of teacher inquiry support pedagogical change in the classroom, specifically using cognitive coaching to support and capture the process?

3) Given the external pressures on teaching, in what ways does a teacher position herself to succeed and persist?

The findings from this study encourage us to rethink our understanding of teacher professional development. It also explains how inquiry-based can set community into action. Ultimately, this study describes how a teacher struggled against the current of standardization and maintained hope in the goal of providing personally meaningful learning for her students.

Rethinking Teacher Growth and Change

Pedagogical innovation is a complex, values-driven process

As I initiated this study, I assumed that, within the daily workings of her classroom, Sabrina would employ inquiry-based teaching strategies and adapt them with her teaching strengths. This growth model reflected the premise that teachers learn best in the contexts of their own classrooms (Dana & Yendol-Hoppey, 2009; Joyce & Showers, 1988; Stewart,
However, the model did not take into account the dissonance Sabrina felt between preparing students for proficiency on end-of-grade tests and the liberatory thinking she wanted them to experience through inquiry (Shor & Friere, 1987).

Through her reflections and instructional choices, Sabrina revealed that successfully transforming pedagogy requires more than simply attempting a change within her own classroom. She was committed to the ideals of inquiry-based teaching and wished she could “do it all the time.” She set aside time for students to explore their own topics of interest and designed instruction to support their efforts. On several occasions, Sabrina lamented the realities of having to teach standardized lessons and focus on end-of-grade testing. Without a doubt, those pressures limited what she had hoped to accomplish in terms of inquiry. Her commitment to her students and to what she thought was good teaching framed the changes she made more so than her obligation to a new method. In other words, she knew that students needed to pass the end-of-grade test, but she was determined to teach them how to think for themselves, assured that doing so was the greater good. Similar to findings in a report from the Center for Education Policy (Rentner, Kober, Frizzell & Ferguson, 2016), Sabrina’s experiences echo those of many other teachers. In that report, 46% of teachers report that district policies get in the way of teaching. The same report found that 81% of teachers believed they spent too much time on standardized testing. Moving towards inquiry-based teaching was much more complex than she anticipated. The change involved the ways in which she thought about teaching, her actual practice, and the discrepancies between what she wanted for her students and what was expected of her.
The learner is the epicenter of curriculum and instruction

In this study of inquiry-based teaching, we found that knowledge-centeredness and learner-centeredness are interdependent and indivisible. The HPL framework delineates these two dimensions as separate conditions (Bransford, Brown & Cocking, 2000). Knowledge-centered classrooms focus on what student learn and how they make sense of new ideas. Learner-centered classrooms focus how students construct meaning. These characteristics describe our traditional understanding of curriculum, instruction and learner profiles. However, the very nature of inquiry integrates these two facets of learning in a way that one cannot exist without the other.

Our experiences and findings suggest that the notion of pedagogical content knowledge (PCK) must change when teaching becomes inquiry-based (Shulman, 1986, 1987). Shulman’s notion of pedagogical content knowledge explains that good teachers understand effective teaching methods along with having expert knowledge of their discipline. Moreover, PCK proposes that effective teachers know and use content-specific strategies, that they understand student’s conceptions of the subjects and that the educational context is significant. Shulman’s description of PCK assumes that the learner is an important consideration for effective teaching. However, for learning to be truly inquiry based, each learner must figure intimately into the equation, transforming PCK into PCK+L.

PCK+L explicitly adds the learner as a critical consideration, especially when teaching and learning involves inquiry. The kind of personal knowledge that PCK+L requires goes beyond the traditional PCK framework. A teacher who engages students in inquiry must understand their interests, motivations, learning preferences and personalities. In inquiry-based studies, the learner is the originator of curriculum and the co-designer of instruction.
The teacher is a guide, and it is incumbent on the teacher to know whom she is guiding. Consistent with constructivist philosophy, each learner ultimately constructs his or her own learning, including the teacher. (Brooks & Brooks, 1999; Piaget & Cook, 1952; Piaget & Inhelder, 1969; Von Glasersfeld, 1995).

In the process of implementing student-initiated inquiry, Sabrina came to know her students’ abilities and motivations in ways she had not previously experienced. Her teaching changed because she knew more about inquiry, and even more so because she became more attuned to her students. Her motivation to teach students to think for themselves proved to be Sabrina’s key motivation and, therefore, her key decision-making criterion as she implemented inquiry (Fullan, 2006). When she changed her thinking from “What do I need to teach my students?” to “What do I need to help my students learn for themselves?” her goals were better realized and she was more committed to inquiry.

When Sabrina opened herself to knowing more about her students’ interests, learning preferences and strengths, her students seemed to be motivated to learn. This case study revealed that the teacher’s knowledge of content, understanding of effective teaching and a deep understanding of each individual learner’s interests and needs were all required to move towards a more inquiry-based classroom. Based on Sabrina’s reflective practice and students’ response to instruction, we realized that inquiry-based teaching could only happen when students were at the epicenter of the curriculum and instruction.
The simultaneity of teacher and student inquiry creates an extraordinary convergence of learning

Teacher and Students

The effective conditions for learning described in the *HPL framework* (Bransford, Brown & Cocking, 2000) can be applied to teacher learning as well as student learning. This dissertation research suggests that the overlap, or simultaneity, of students and teacher learning together under the conditions described in the *HPL framework* is dynamic and complimentary. Interestingly, the research conducted for this dissertation represent two viewpoints of inquiry. Third grade students were allowed and encouraged to initiate self-selected projects of study. At the same time, their teacher was engaged in inquiry of her own, investigating a new way of teaching and how her students were learning. The relationship between Sabrina’s reflective inquiry and that of her students was reciprocal rather than linear or causal. In other words, it seemed not to be the case that Sabrina’s inquiry into inquiry-based teaching necessarily preceded students’ inquiry studies. In fact, they happened in tandem and reinforced one another.

*Figure 5.1. The Reciprocal Relationship of Teacher and Student Inquiry*
Previous research recognized that learners are served best when a knowledgeable other guides the learning (Richardson, 2005). In the traditional sense, the teacher is the knowledgeable other, introducing concepts and skills and guiding students to mastery. Students typically function conversely as willing, interested and engaged participants in the teaching/learning exchange. This relationship can be seen as mostly transmissive: The teacher teaches and the students learn.

In the case of engaging her class in student-initiated inquiry, Sabrina interrupted the transmission format of learning. Up until the time she engaged her students in self-initiated inquiry studies, Sabrina saw herself as the originator of curriculum and instruction. Through inquiry, she gave up sole control of the curriculum and instructional methodology so that her students could explore. She allowed herself to explore, as well, and she learned alongside her students. As her students were researching topics like the Secret Service, origami and unicorns, she was systematically researching the best ways to facilitate inquiry (Manfra, in press). For example, as students naturally asked each other questions about their projects, Sabrina refined the fishbowl technique to help them hone their question-asking skills. She was, at once, the teacher and a learner, responding to the needs of the learners and transforming the learning environment. Each student was, at once, a learner and a co-teacher. Derek shared a video he found online with Marcus about the Secret Service. Lena gave the teacher some recipes she found in her studies that Sabrina later used in a lesson. Sabrina encouraged Derek to try out some of his paper folding instructions on his classmates. The community they created oriented itself towards authentic learning and members functioned as knowledgeable others for one another. Together, the community worked in unison to promote one another’s learning.
A Third Perspective: Coach Researcher

Of course, it is important to acknowledge my role as an outsider, conducting research and participating within Sabrina’s classroom. My research created a third viewpoint of inquiry at work. The questions that guided my research intermingled with Sabrina’s inquiry and, in turn, with her student’s learning. As a participant observer (Merriam, 2009; Patton, 1990), I asked questions in our pre- and post-observation interviews about concerns Sabrina posed during instruction. She also asked me questions, many of which became focus points for our pre-and post-observation interviews. In addition to these more formal points of concern, Sabrina and I had impromptu conversations that reflected the organic and emergent nature of the participant observer stance and of the third viewpoint of inquiry. I served as a resource for Sabrina’s inquiry in much the same way she served as a resource for her students. Instead of finite answers, she sought strategic coaching about how to move forward (Costa & Garmston, 2015; Edwards, 2015; Oja & Reiman, 1998). She wanted to make inquiry-based teaching in her classroom her own, just as students wanted to be the experts in the topics they chose themselves. Following the theme, I wanted to better understand the unfolding nature of student-initiated inquiry and how Sabrina created conditions for it to happen. The meta-simultaneity helped create a system of inquiry among the many learners involved.
Implications to the Field of Teacher Professional Development

This research emphasizes the importance of creating optimal conditions for teachers to grow and change. It also demonstrates how a teacher’s pedagogical innovation is a multifaceted process. At the core of both of these propositions is the idea that teachers remains learners throughout their teaching careers.

It is shortsighted to expect that teachers become experts in a new way of teaching by attending workshops or even by attempting implementation in their classrooms (Darling-Hammond, 2008; Joyce, Wolf & Calhoun, 2009; Stewart, 2014). It would serve the field of teacher professional development for leaders to recognize and honor how teachers and students learn together, simultaneously, and help teachers capitalize on the energy that comes from exploring, discovering, and learning together. Such professional development could take the form of practitioner research, co-created curricular studies, an emphasis on self-evaluation or schools in which students and teachers conduct studies and publish together. This is especially the case with inquiry-based learning because the very nature of the pedagogy is premised on personally meaningful learning for everyone involved.
PCK+L requires that the learner be not only considered, but put front-and-center in decisions about what and how to teach. Teachers who seek to understand inquiry must first seek to understand their students. Just as teachers must center on their students’ needs and interests, leaders of professional development must see teachers as learners and provide the most advantageous conditions for their growth. In such a system, learning becomes multidirectional among teachers, students and coaches, while self-evaluation pushes all learners involved forward to think new thoughts and to apply new skills. Inquiry becomes a process of discovery for all learners.

**Negotiating Learning Communities**

**Teachers work between two main communities**

The *HPL framework* highlights community-centeredness as one of the important conditions for effective learning. A strong community focus is important both for students and for teachers (Bransford, Brown & Cocking, 2000). As it is for most teachers, Sabrina was responsible to two communities: her classroom community and her professional community. During this case study, Sabrina had to adjust her expectations and interactions with both groups as she implemented self-initiated inquiry with her students.

Within her classroom, Sabrina capitalized on the strong sense of community she had already developed. As Charney (2015) and Noddings (2013) envision, Sabrina’s class represents conditions in which students have authentic reasons to practice the nurturing behaviors. They put community-building skills like respecting other’s space, actively listening as others talked, and using materials with care into practice. This experience is significant because it shows how inquiry-based learning and a vibrant community of learners are co-dependent (Brooks & Brooks, 1999; Daniels, 2017; Harste, 2001). Perhaps more
importantly, the community of learners in Sabrina’s classroom matured over the course of the semester. For example, Sabrina had not expected how deeply the students would become invested in each other’s work. They brought one another resources to read and use in their presentations. They asked each other questions because they were genuinely interested. Without prompting, they listened as their friends read their research aloud. As they moved forward with student-initiated inquiry, her students became independent and interdependent learners.

In terms of her professional community of colleagues and parents, Sabrina’s attempt to initiate a progressive teaching strategy met with different responses. Research suggests that teaching can be isolating and that the community teachers build in their classrooms is not always represented in their professional interactions (Conley & Cooper, 2013). In fact, that is what we found through this dissertation study, however, the support she did garner came with an interesting condition.

Sabrina reached out to other teachers for support and, indeed, most were supportive. Others were hesitant or even dismissive. Any support for implementing inquiry seemed to come with a condition: As long as the project did not hinder students’ preparation for testing, then it was acceptable. Grade-level colleagues and supervisors expressed this condition, as well. Parents were happy that their children were studying topics that were engaging; however, the test-preparation condition was much the same. At the very beginning of the research, when Sabrina requested permission for students to participate, one parent summed up the concern. The parent told Sabrina that she approved of her child participating, “as long as it doesn’t change the way you teach.”
Sabrina’s classroom and professional community interactions both changed in the course of her participation in this study. By implementing inquiry in her classroom, she opened her understanding of the value she placed in her students to support her and to support each other. She also realized the fine balance between acceptance and independence with regard to her professional community.

Coaching provides a conduit for teacher inquiry and support for reflective practice

In addition to negotiating her classroom community and professional community, Sabrina and I also constructed a new professional development relationship: teacher and coach. This relationship demonstrates a key understanding of professional reflective inquiry, that the same mechanism of “knowledgeable other” at work between teachers and students is also at work between teachers and their coaches (Manfra, in press; Richardson, 2005). In fact, coaches play a crucial role in helping teachers engage in reflective practice and in facilitating change. As a coach and a critical friend, I supported Sabrina’s examination of her own teaching (Costa & Kallick, 1993). During our coaching interviews, she asked herself rhetorical questions like, “Am I showing them or letting them figure it out for themselves?” and “Do I do it first or let the students do it first?” Dana and Yendol-Hoppey (2009) remind us that the teacher holds the ultimate locus of control in studying her own practice, and this study affirms Sabrina’s agency in utilizing reflective practice to achieve pedagogical changes in her own classroom.

As a trusted colleague, I became Sabrina’s critical friend and the person with whom she was willing to collaborate (Costa & Kallick, 1993; Marzano & Simms, 2013; Rowley, 1999; Sprinthall, Reiman & Theis-Sprinthall, 1996). Developing such relationships with teachers while in the course of their teaching helps them to re-conceptualize their teaching
identities as inquirers and innovators (Miller Marsh, 2002). They are able to own the level to which they are willing and able to commit, and might come to see themselves among peers as teachers who are willing to try new things. Those changes in identity, supported by confidential conversations move experts along in professional development and learning.

Despite our coaching relationship, Sabrina was mostly on her own in attempting to implement inquiry in her classroom and in studying her own thinking along the way. While I visited her classroom weekly, and served as her coach, Sabrina did not have consistent support from an immediate teaching colleague, nor from a cohort community, to collaborate with on a daily basis. Having that kind of support is not only helpful, but also crucial to teachers attempting change. Previous research suggests that trying new ways of teaching can be lonely (Pugh & Zhao, 2003). Considering the uneven responses from her professional colleagues, Sabrina would likely have been better served with a group of teaching partners as she attempted change (DeFour & Eaker, 1998; Ingersoll & Strong, 2011).

To encourage teacher growth and development, coaches should provide resources to advance pedagogical practice and encourage self-analysis. By simply engaging in active listening, a mentor or coach provides a mirror and a window for the teacher to see the possibilities of improved practice (Fleming, Catapano, Thompson & Carrillo, 2016; Uzat, 1998). What the teacher learns about good teaching practice, the curriculum of the profession, per se, becomes a dynamic negotiation of what he or she knows, what students know and what they learn together.

Edwards (2015) documented ways in which cognitive coaching benefitted teachers. Among these, a teacher’s growth in efficacy, her positive regard for teaching, and the positive impact on reflective and complex thinking were all confirmed by this research.
However, Edward’s contention that cognitive coaching has a positive impact on school culture and teacher collaboration was challenged. This may well have to do with how teacher learning is situated, that is, how teachers grow more by studying their practice in their own classrooms, examining their own teaching practices rather than hypothetical or theoretical methodology (Putnam and Borko, 2000). Sabrina’s work confirms that teachers should consider and change their practices within their classroom contexts, but also need community support from colleagues, supervisors and parents to make the change systemic and lasting. While cognitive coaching definitely impacts the community within the classroom, more research is needed to determine how coaches can help connect teachers to attempt change together.

Perhaps most significantly, the relationship between us - coach and teacher - paralleled the ways in which Sabrina wanted to interact with her students. Coaching encouraged her to take teaching risks in a respectful, learning-centered atmosphere. It was her reflections on experience that helped her determine what was effective in implementing a new practice, not what I told her was important. Through conversation, challenge, revelation and disagreement, we interrogated what she believed about teaching and learning. In turn, she challenged her students to think for themselves and to own their learning. She allowed and expected them to be integral in the learning venture. What Sabrina experienced in a trusting, learner-centered relationship, she wanted her students to experience, as well.

Implications to the Field of Teacher Professional Development

Perhaps it is because the word “community” has its roots in the Latin for “share,” that the discussion of this study lends itself to community in action. The students and teacher
shared in the growth of their classroom community, while Sabrina and I shared in reflective growth through cognitive coaching.

On a broad scale, teachers need their professional community’s encouragement to support innovative practices. A concerted effort to rally teachers to use new and engaging teaching methods can only happen with such community backing. Teachers need to know that their colleagues, administrators and classroom parents affirm their visions of what can be accomplished. The professional community must challenge the condition that such teaching is allowed only if it does not conflict with preparation for standardized testing. Classrooms can become places where personally meaningful learning is expected and, therefore, a caring and sharing among teacher and students is built (Noddings, 2013). Classrooms and schools where there is a focus on personally meaningful learning lifts the community and individuals within them. They are places where community is put into action.

**Struggling Against the Current of Standardization**

**Inquiry and standardization are opposing forces in educational change**

This study documented Sabrina’s struggle against standardization as she moved towards student-initiated inquiry in her classroom. While not surprising, her struggle represented the stress many teachers feel as external pressures change the way they teach (Kamenetz, 2015). Within standardized curricula, teachers’ instruction focuses on a common set of student outcomes and relies on summative testing as the key means to determine if students are learning what is prescribed (Goldstein, 2014; Kamenetz, 2015). A consequence of standardization is that connecting knowledge and skills to students’ lives is subordinated to the goal of proficiency on an assessment measure (Au, 2011).
The pressures of standardization were very real for Sabrina as she implemented inquiry-based instruction with her third graders, including the burdens of curriculum constriction, high-stakes testing, and standardized instructional methods (Au, 2007; Kamenetz, 2015). She was well aware of the expectations placed on her by parents, administrators, colleagues and even her students to make sure they were prepared for the end-of-grade tests.

Like Sabrina, most teachers enter the teaching profession because of a love of learning and the need to share that spark so others will love to learn, as well (Nieto, 2005, 2015). Sabrina thrived by helping her students reach their own potential. Just as so many other teachers do, she understood that learning is a life-long endeavor and that her purpose was to instill joy in learning and to teach enabling skills to help her students become confident, self-motivated thinkers. In the midst of engaging students in inquiry and in spite of outside pressures, Sabrina got a glimpse into what made each of her students tick. She saw them as individuals, with unique interests and with their own strengths and needs.

The external pressure to prepare them for end-of-grade summative testing was in direct competition with Sabrina’s internal drive to provide students with engaging learning. The irony that Elmore (2004) predicted, that teachers who have strong internal accountability also feel the most external pressure, was true for Sabrina, as well. She intended on accomplishing both, preparing them for the test and implementing inquiry. The result was a compartmentalization of inquiry and a valiant attempt to integrate inquiry-based strategies into otherwise standards-based lessons. Whereas, LeFevre (2014) suggests teachers may choose to give up, Sabrina did not abandon innovation. She found the resiliency to create a balance within her specific context. The pressures she felt, almost daily, were in direct
conflict with her desire to have her students engaged in interesting research, enjoyable instructional activities and joyful learning together.

**Resiliency is the foundation for teachers to position themselves for success**

An indication of her resiliency, Sabrina positioned herself and her students in ways that justified resistance against prevailing pressure: learning in order to pass a test. This type of positioning seems to indicate a fortitude that teachers develop, shaped by what they see as their rights and duties as educators (Harré & Van Langenhove, 1999; Harré, et al., 2009). By dedicating time and resources towards implementing inquiry, Sabrina put her resilience into action and struggled against competing goals. She frequently used the word “struggle” to describe her work and her students’ work throughout our conversations. Her perseverance reaffirmed what advocates of inquiry and she believed about teaching and learning: It is in children’s nature to be curious and to want to learn (Barell, 2007; Daniels, 2017; Harste, 2001).

Sabrina’s struggles and her positioning to ensure success for herself and her students could have an effect on her teaching for years to come. In the end, the goals Sabrina set for her students learning were more balanced. The externally imposed, hyper-focus on standardized test proficiency was tempered with genuine intrinsic interests and authentic assessment, both for her students’ and for herself. A two-way, mutually beneficial dimension of learning permeated the class’ learning and their teacher’s teaching. In short, it reaffirmed her commitment to make learning meaningful.

**Implementing inquiry develops teachers’ adaptive expertise**

According to Hursh (2008), innovative teachers adapt. While implementing inquiry-based teaching practices, Sabrina adapted in terms of the curriculum she chose to emphasize.
She used her students’ interests and their emerging expertise even as she planned lessons for whole-group, small-group and individual instruction. For example, she incorporated one student’s inquiry studies on cooking into a “test-prep” lesson on identifying main idea and details. Likewise, during students’ inquiry research time, her careful attention to students’ needs led her to choose to teach specific inquiry-enabling strategies like note taking and non-fiction reading skills. Sabrina also flexed her time management, choosing to take back time from standardized test-preparation to give students more time to conduct their research. These examples exemplify how one teacher adapted in order to provide space for her students to engage in innovative learning.

The instructional choices Sabrina made seemed to fall along a continuum of innovation versus efficiency (Darling-Hammond & Bransford, 2007; Schwartz, Bransford & Sears, 2005). She was committed to exploring inquiry, but also had accepted that preparing for standardized testing meant routine practice for her students. What she discovered for herself confirmed what researchers and theorists suggested: Teachers who reach a balance of innovation and efficiency become adaptive experts and find ways to make learning meaningful and ensure that students reach proficiency (Baroody, 2003; Hatano & Inagaki, 1986). Such teachers reach “optimal adaptability.” Unfortunately, we concluded that the standardized curriculum and end-of-grade tests were held in higher regard than innovation in our research. Consistent with LeFevre’s (2014) findings, Sabrina’s resulting dissonance caused Sabrina to limit her student inquiry experiences in ways she found disappointing. However, such experiences can certainly move teachers closer to becoming adaptive experts, seeing that the pressure of standardization is pervasive and that innovation is a duty worth pursuing anyway. Just as Sabrina saw the experiences of exploring inquiry and studying her
own practice as some of the most professional challenging and rewarding of her career, so too can teachers use inquiry to develop adaptive expertise, improve their practice and innovate.

**Implications to the Field of Teacher Professional Development**

Standardized curricula and testing permeate the contemporary educational landscape (Kamenetz, 2015), and there is reason to believe that the influences of standardization will continue into the future (Au, 2011; Darling-Hammond, 2010; Goldstein, 2014). Discussion of the findings of this case study can inform educational leaders about ways to help teachers clarify what they think is important about teaching and learning. Being clear and upfront about the institution’s requirements and the conflicts that might arise can open communication towards good decision-making and growth. Open discussions about positioning and teachers’ opinions about standardization would inform leaders about the often hidden attitudes that teachers harbor, attitudes that certainly affect their teaching and students’ learning.

Looking again at adaptive expertise as a goal for effective teachers (Baroody, 2006; Hatano & Inagaki, 1986), educational leaders would be wise to reconsider the “optimal adaptability corridor” (Darling-Hammond & Bransford, 2007). The corridor describes a relationship between seemingly competing goals: efficiency and innovation. However, just as Sabrina struggled to find a balance between these goals, so too do teachers seeking to provide meaningful learning opportunities for their students. The optimal adaptability corridor, i.e. moving from a novice towards expert, requires teachers to understand the routine expectations on their work. For beginning teachers, the daily schedule and orientation to the environment of the school are new. Soon, they become routine. In terms of instruction, the
pattern of setting an objective, instruction towards the objective and assessment of learning can be difficult for novice teachers. However, once mastered, these fundamental elements of teaching are second nature. The complication occurs when the goals of student learning becomes standardized and, therefore, teachers assume that their teaching should be routinized. Teaching using inquiry-based strategies is a way to disrupt the routine instruction that many teachers fall into and many attempt to resist. Since high-stakes standardized testing is a pervasive force in education today, teachers often find it difficult to move beyond efficiency. It is incumbent on leaders to help teachers navigate the expectations and to create space for them to innovate.

In conclusion, if student success and, ultimately, teacher success is based solely on students’ standardized measures, then the broader purpose of education is subverted. The goal of education to promote liberatory thinking is supplanted with a base goal of rudimentary competence. Students may learn basic skills and teachers may learn how to teach to the test, but George Washington Carver’s hope that “Education is the key to unlock the golden door of freedom,” cannot be realized. Curricula and teaching methods are in jeopardy of becoming homogenized and pressure from colleagues, supervisors and parents could influence even the most steadfast teachers to move away from personally meaningful teaching and learning to teach to the test (Au, 2011; LeFevre, 2014). It is prudent that learning leaders seek to understand the pressures that teachers are under and the far-reaching implications those pressures exert in shaping the citizens and leaders of tomorrow.

**Maintaining Hope**

Student-initiated inquiry begins with wonder, grows with questions and thrives when teachers show students how to find answers (Barell, 2007; Colburn, 2000; Daniels, 2017;
Harste, 2001). Duckworth (1987) sums up the purpose for teaching students how to carry out their own studies of topics interesting to them:

Certainly, the material world is too diverse and too complex for a child to become familiar with all of it in the course of an elementary school career. The best one can do is to make such knowledge, such familiarity, seem interesting and accessible to the child. That is, one can familiarize children with a few phenomena in such a way as to catch their interest to let them raise and answer their own questions, to let them realize that their ideas are significant – so that they have the interest, the ability, and the self-confidence to go on by themselves. (p. 8)

Inquiry ends, often as it began, with the learner knowing some, but not all, about what interests them. New discoveries lead to new questions and the cycle begins again. Having a classroom where these things happened was Sabrina’s hope as she launched into this research project. She did not know the details about how inquiry could or should look, but she did know that students were the center of the learning endeavor. That is what captivated her interest in studying a new way of teaching.


It is important to note that Sabrina had hoped and dreamed of her classroom as a place of engaged learning long before implementing student-initiated inquiry. She, and many teachers like her, are the brokers of hope in schools (Noddings, 2013). Her students and their parents looked to her to provide a safe, happy place for learning to happen. She carried that hope and that responsibility for as long as she has been a teacher. Experimenting with inquiry in her classroom, however, rekindled her fire for making sure learning was personal and
engaging for her students. “They’re just at that point now, where they just want to do it,” she explained, after her students had chosen their topics and were deep into their research. She found that the caliber of many students’ inquiry work was much higher than other work they had produced because it was theirs. As experts in inquiry would agree, Sabrina’s students claimed ownership of their ideas and of the process (Daniels, 2017; Short et al., 1996). Sabrina summed it up by saying, “And that makes me a very happy teacher.”

Sabrina also rediscovered that students’ thinking was much more sophisticated than she often expected (Ritchhart, 2011). Sabrina remarked, “That’s part of going deeper. They were able to see that [questions] could be related to any area. Those questions didn’t have to be, ‘Why did the author feel this way in paragraph three?’ It could be, ‘Why does electricity work?’” Her students chose topics and did research that they would not have done had she not provided this opportunity. It was the open-ended nature of learning that proved to be eye-opening for her. At the end of our closing interview, Sabrina made the point that inquiry was like nourishment for her students and for herself. She wished her son were in a class where they engaged the way her class had been.

**Inquiry provides a path to professional “wondering” for teachers**

For teachers, inquiry begins with what Dana and Yendol-Hoppey (2009) call “finding a wondering” (p. 19). Sabrina found a wondering in inquiry-based teaching and learning. She was keenly interested in how students learn when given the opportunity to freely explore their own curiosities and questions. She, too, appreciated the opportunity to find out more about her own teaching and about the prospect of a new way to think about her teaching. The co-research aspect of the dissertation lifted up her wondering to become a valuable part of her professional development. In the way that Dewey (1933) called for teachers to be
reflective in their work, and in the way that Schön (1988) differentiated reflection on action from reflection in action, Sabrina realized that her professional perspectives were more than intuition and were worth immeasurable merit. She was no longer a beginning teacher: She had something to say based on experience and a sense of agency.

With this developing expertise in mind, Sabrina looked towards her own future as an educator with hope. She, too, was on an inquiry journey with her students. She studied inquiry-based teaching, researched strategies she used with her students, explored resources and shared what she discovered with me. She wanted to end strong. To close out the school year, she would have students create games to pull together all they had learned during the year. Looking forward to the next school year, she wanted to improve upon she had learned about inquiry-based teaching. From re-teaching specific lessons with a more inquiry-based perspective to planning nine-week science unit plans around inquiry, Sabrina was eager to go forward. She even considered how this research project previewed what a Master’s degree or National Board Certification would be like.

Reflective practice is often discussed in terms of day-to-day instruction in a teacher’s classroom (Brinkley, 2015). In fact, reflective practice can help grow a teacher’s career, year after year. This case study gave us a glimpse into how one teacher’s inquiry journey over several months impacted her professional trajectory. Sabrina is now seen as a progressive teacher in her school and sees herself as an advocate for inquiry. Her inquiry experiences will affect her thinking for years to come and in ways we cannot predict. Having seen the value to herself and to her students, Sabrina said that she would continue using inquiry-based teaching and learning. Undoubtedly, she will take what she has learned and apply it to future instructional and professional decisions.
Implications to the Field of Teacher Professional Development

Hope comes in many forms for educators. This research poses a vision of the possible (Shulman, 2005) and a “consciousness of possibility” (Greene, 1988, p. 23). It opens a window into one teacher’s experience taking risks to try new, progressive methods in her teaching. It offers a model and a paradigm for others to see what is, indeed, possible. In fact, at the start of our research project, Sabrina wished that she could see inquiry in action in another teacher’s classroom. “I’m a visual learner,” she said, hoping to glimpse into the ways another teacher had realized their vision. Unfortunately, that did not happen for Sabrina during this research. Having a model might provide teachers aspiring to implement inquiry with a better vision of what they can make happen in their own classrooms.

Schools might learn from this and incorporate it into a larger idea of collaborative cultures, ones in which teachers work closely together to work towards the possible. Elmore cautious us, though: “Cultures do not change by mandate; they change by the specific displacement of existing norms, structures, and processes by others; the process of cultural change depends fundamentally on modeling the new values and behavior that you expect to displace the existing ones” (2004, p. 11). What Sabrina hoped for in seeing a model to begin her own inquiry journey, Elmore is suggesting at the system level. We have to consider the potential of what could be and then become the change we hope for in our classroom, our school and for education, in general.

Finally, a key implication of maintaining hope in our teaching ventures is to provide teachers with opportunities to remember why they chose education as a career. Sabrina often articulated her aspiration for her students to love learning. She hoped to be a catalyst for her students to find something they loved to explore. She wanted them to explore new ideas they
had never thought about before. Her happiness as a teacher came in their joyful learning. “I want the kids to think they’re there because they want to be there and they’re doing something important that is going to help them be a decent human.” It would serve all teachers to remember why becoming a teacher takes passion; the excitement of helping others reach for their own potential and learning with others to reach one’s own (Nieto, 2005, 2015).

**Recommendations for Future Research**

The purpose of this study was to capture and analyze the insights a teacher revealed as she implemented student-initiated inquiry with her class of third graders. The research intentionally focused on the teacher’s experiences and perceptions because little research has been done to document such a pedagogical change in real time. Sabrina’s efforts uncovered how inquiry requires attentively knowing one’s students, both their academic abilities and personal interests. Through her efforts, she found that being attuned to her students spurred her teaching to new levels. She also found that examining her rights and duties necessitated a broadening of her teaching beyond standards and testing. Finally, she found that inquiry, both her students and her own, reinvigorated her sense of wonder in teaching and learning.

A follow-up study of Sabrina’s class could explore data regarding the impact of the inquiry experience on students. While students did complete self-assessments, it would also be instructive to look at other dimensions of their achievement, both qualitative and quantitative. Such research might include student interviews and even standardized assessment measures. Likewise, it would be interesting to gather parent perspectives, colleague perspectives and supervisors’ perspectives about the inquiry experiment Sabrina organized for her class.
Another approach to continue this line of research would be to determine the lasting impact on Sabrina’s teaching. A longitudinal study could revisit Sabrina and her future classrooms to see if she continued using inquiry-based strategies. Such a study could seek to determine other issues Sabrina positioned herself to address or overcome. The simultaneity of Sabrina and her students’ research changed her inquiry stance (Cochran-Smith & Lytle, 2009). Following up on her continued use of the innovative pedagogy would be instructive.

Finally, it would be interesting to use this study to structure a more wide-scale implementation of inquiry-based teaching. Subsequent studies might look at a team, grade level or school that wanted to implement inquiry-based instruction. Knowing that inquiry requires a keen understanding of learners and that a teacher’s ethical stance causes her to take positions would give future researchers thought-provoking starting points for such a study. Alternatively, a study could look at teachers, grade levels or schools that have implemented or are in the process of implementing inquiry-based learning. Comparisons of findings from this study and others would be informative and helpful in predicting ways that we can support teachers who attempt innovative teaching.

**Significance and Limitations**

The results of this study are important to the field of teacher professional development in several ways. In the current educational climate, it is important to document the experiences teachers have while implementing a new, innovative method. This research attempted to capture the changes in a teacher’s practice, and capture how and why the practice changes in the participant’s own words. It helps us glimpse inside the black box and see the mechanisms that affect change as a teacher made instructional decisions that essentially changed her classroom.
The strength of this single case study is that it gives a rich, thick and detailed description of a complex educational context and how one teacher explores, explains, and adopts a new pedagogical approach over the course of several months. Further, the findings and discussion illustrates how a teacher thinks about her own thinking.

Therein also rests the central limitation of this study. Only one individual is represented, along with how she does and does not reflect the expectation of the HPL framework. By looking at the same case through multiple lenses (e.g. participant reflection, observations, artifacts), the research attempted to substantiate claims, but inevitably, other perspectives were not included, for example those of students, colleagues and parents. Nor did this research explore the long-term changes that the study only began to uncover.

The goal of this research is to describe this teacher’s experiences, not to explain or explicitly generalize to a population beyond the research. Moreover, there was no intent to predict causality, as might be expected, between student-initiated inquiry and learning outcomes for students. The research aimed to capture and describe events as they naturally unfold over the course of several months through the specific theoretical lens described. One limitation of that intensive examination was that the very nature of studying the events may have affected and influenced them. Because Sabrina was aware that effective implementation of student-initiated inquiry was her objective, and that her implementation was under study, perhaps she was swayed to give more impetus to the project than would have naturally or normally been the case. Even as these limitations existed as this case study was conducted, the in-depth description of change that occurred in Sabrina’s thinking and in her classroom positively add to the current knowledge base of teacher development.
Conclusion

Sabrina’s efforts to implement student-initiated inquiry with her students is indicative of the courage exhibited by teachers every day. They want the best for their students and hope their classrooms are places where learners become capable and confident. According to Cochran-Smith, “Teachers are decision makers and collaborators who must reclaim their roles in shaping of practice by taking a stand as both educators and activists” (1991, p. 280). In the current educational climate, one in which standardized assessment, curricula and instruction are valued, it is difficult for teachers to take risks in their teaching. However, the work that Sabrina and her students accomplished, as it is recorded in this dissertation research, suggests that the benefit may be a deeper understanding of what is required to be a brave, progressive teacher.
REFERENCES


Appendix A

North Carolina State University
INFORMED CONSENT FORM for RESEARCH - Participant
Title of Study: A Case Study of an Elementary School Teacher’s Implementation of Student-initiated Inquiry
Principal Investigator: Brian Brinkley  Faculty Sponsor: Dr. Meghan Manfra

What are some general things you should know about research studies?
You are being asked to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate or to stop participating at any time without penalty. The purpose of research studies is to gain a better understanding of a certain topic or issue.

You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form, you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form, it is your right to ask the researcher for clarification or more information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher(s) named above.

What is the purpose of this study?
The purpose of this study is to research how an elementary school teacher implements student-initiated inquiry. Research urges us to closely examine how, after so many years of educational reform, teaching remains largely unchanged. This study is important to the field of teacher development in that there is a need within the field to identify and describe the mechanisms by which practicing teachers make significant and fundamental changes to their teaching. While there are a number of studies that describe the characteristics engaging teaching practices and teacher learning, little is written about how teachers actually innovate their practice and become more progressive in their pedagogical methods. Secondly, this research will add to a growing body of knowledge about the impact of cognitive coaching as a means for teachers to make such significant changes.

What will happen if you take part in the study?
If you agree to participate in this study, you will be asked to implement student-initiated inquiry as a new pedagogy in your classroom. You will be asked to learn about this method and begin using the strategies as part of your teaching. You will be asked to participate in four cognitive coaching cycles in which the researcher will conduct pre-interviews for you to discuss upcoming instruction, observe instructional sessions, and conduct post-interviews to discuss the instructional session. You will also participate in initial and closing interviews at the beginning and end of the research, respectively. Likewise, you will participate in reflective interviews between coaching cycles.

Risks and Benefits
There are minimal risks associated with participation in this research. There are no direct benefits to your participation in the research. Indirect benefits include consultation and affiliation with a supportive research colleague to enhance your teaching. In concrete terms, you may receive print and digital resources to support learning and to use in the classroom. You may be asked to participate in professional presentation opportunities, as well.

Employment
Participation in this research not a requirement of your job, nor will participation be reported for evaluation purposes. If at any time during the research you wish to discontinue, you may do so at no risk of recrimination. Your participation is voluntary.

Confidentiality
The information in the study records will be kept confidential to the full extent allowed by law. Data will be stored securely in the researcher’s locked filing cabinets in a private office and/or on the researcher’s password and firewall protected university-owned computer. No reference will be made in oral or written reports which will directly link you to the study.
Compensation
There is no compensation offered for your participation in this study.

What if you have questions about this study?
If you have questions at any time about the study itself or the procedures implemented in this study, you may contact the researcher, Brian Brinkley, at brbrinkl@ncsu.edu or brinkleyb@uncw.edu, 910-962-3633.

What if you have questions about your rights as a research participant?
If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact the IRB Office via email at irb-coordinator@ncsu.edu or via phone at 1.919.515.8754.

Consent to Participate
“I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled.”

Subject's signature____________________________________    Date _________________
Investigator's signature_____________________________    Date _________________
Appendix B

North Carolina State University

INFORMED CONSENT FORM for RESEARCH – Parent/Guardian

Title of Study: A Case Study of an Elementary School Teacher’s Implementation of Student-initiated Inquiry

Principal Investigator: Brian Brinkley
Faculty Sponsor (if applicable): Dr. Meghan Manfra

What are some general things you should know about research studies?
This study is research that involves minors. Since minors are not legally able to consent to participate in research, your permission is required along with the minor’s agreement to participate. Detailed information about the research project is presented below in question and answer format. Please read this information and ensure your child understands the research activities before agreeing to participate. If you give permission, and if your child agrees, please sign in the appropriate places on the last page and return it to your child’s teacher. You may keep the second copy of the consent form for your records.

The person in charge of this study is Brian Brinkley who is completing this research as part of his doctoral program at North Carolina State University. Mr. Brinkley is also the Director of the Stike Education Laboratory at the University of North Carolina Wilmington. You can reach him at 910-962-3633 or at brinkleyb@uncw.edu. He will be responsible for gathering and analyzing the information for the study. Mr. Brinkley’s faculty sponsor is Dr. Meghan Manfra, professor at NC State University. You can reach her at 919-513-2590 or at mmmanfra@ncsu.edu.

Thank you for your consideration of this request.

What is the purpose of this study?
Your child is being invited to take part in a research study in which his or her teacher is learning about inquiry-based teaching and will work to implement it in your child’s classroom. Students will be taught how to ask and answer their own questions about topics that are interesting to them. By doing this study, I hope to learn about how a teacher works to implement inquiry-based learning in the classroom.

What will happen if your child takes part in the study?
The research procedures will be conducted at (school) in (teacher’s) classroom. The study will involve visits by the researcher to the classroom during which he will observe the teachers instruction and take notes. Each visit will be for approximately one hour. Your child’s participation in this study will not require any time away from instruction. Classroom visits will consist of the researcher observation instruction and observing students in their regular learning environment. As a part of the study, your child will be asked to participate in inquiry-based instruction provided by his or her regular classroom teacher. Participation may require that students identify topics of interest, ask and answer questions about the topic of interest, evaluate information resources and research answers to questions, present what is learned and reflect on the inquiry process. As part of the study, items your child produces may be collected, such as research projects or written reflections. If your child decides to take part in the study, he or she still has the right to decide at any time to stop. There will be no penalty and no loss of benefits or rights if your child stops participating in the study. No one on the research team will behave any differently toward your child if he or she decides to stop participating in the study.

Risks and Benefits
To the best of my knowledge, the things your child will be doing have no more risk of harm than he or she would experience in everyday life. If your child is uncomfortable with the expectations of the project, every effort will be made to explain the purposes and alleviate his or her stress. While your child will not receive any specific benefit or reward from participating in this project, he or she may enjoy taking part in inquiry-based instruction that focuses on a topic or area of interest. In other words, your child may benefit from the engaging and joyful nature of this learning project.
**Confidentiality**
The information in the study records will be kept confidential to the full extent allowed by law. No reference will be made in oral or written reports which could link your child to the study. Your child’s information will be combined with information from others taking part in the study. When I write up the study to share it with other researchers, I will write about the combined information. Your child will not be identified in these written materials. I will make every effort to prevent anyone who is not on the research team from knowing that your child gave us information or what that information is. Your child’s name will not be used in this research. I will keep all information about the study in a locked file cabinet and only those directly involved in the study will have access. However, there are some circumstances in which I may show your child’s information to other people. I may be required to show information that identifies your child to people who need to be sure that I have done the research correctly, such as my faculty sponsor and the NCSU Institutional Review Board.

**Compensation**
Your child will not receive any payment or reward for taking part in this study. As well, there are no costs associated with taking part in this study.

**What if you have questions about this study?**
Before you decide whether or not to give permission for your child to take part in the study, please ask any questions that come to mind now. Later, if you have questions about the study, you can contact the investigator, Brian Brinkley at 910-962-3633. If you have any questions about your child’s rights or your rights as a research participant, contact the IRB Office via email at irb-coordinator@ncsu.edu or via phone at 1.919.515.8754.

**What if you have questions about your rights as a research participant?**
If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact the IRB Office via email at irb-coordinator@ncsu.edu or via phone at 1.919.515.8754.

**Consent To Participate**
“I have read and understand the above information. I have received a copy of this form. I agree for my child to participate in this study with the understanding that he or she may choose not to participate or to stop participating at any time without penalty or loss of benefits to which he or she is otherwise entitled.”

I give permission for my child to participate in this research.

____________________________________
Child’s name

____________________________________
Signature of parent or legal guardian giving permission for the minor to take part in the study

Date

____________________________________
Printed name of parent or legal guardian giving permission for the minor to take part in the study

____________________________________
Name of person providing information to the parent and minor

Date
Appendix C
North Carolina State University

ASSENT SCRIPT

**Project Title:** Student-Initiated Inquiry  
**Principal Investigator:** Brian Brinkley, PhD Candidate, College of Education

Hi my name is Mr. Brinkley. If you have any questions about what I am telling you, you can ask me at any time.

I want to tell you about a research study I am doing. In this study, I want to find out more about how you learn about topics that are particularly interesting to you and about how teachers can teach you to do that better.

I am asking you to participate because you are in 3rd grade and are in Ms. XXXX’s classroom this year.

From now through April, Ms. XXXX will teach you how to ask and answer your own questions about your topic, how to use resources to answer questions, how to present what you learn, and how to reflect on what you learn. I will be in your classroom some of that time watching your class work and I might be taking notes. If it is okay with you, I may also ask to use some of the work you create in my study.

If you do not want me to use your work, it will be okay. It is totally up to you. You can say yes now and still change your mind later. All you have to do is tell me. No one will be mad at you if you change your mind.

Your parents/people taking care of you say it is okay for you to be in this study. If you have questions for me or for your parents/people who care for you you can ask them now or later.

Do you understand what I am saying and are you willing to allow me to use some of your work in my project?

*End of verbal script.*

To be completed by person obtaining verbal assent from the participant:

Child’s/Participant’s response:  
☐ Yes  
☐ No

Check which applies below:

☐ The child/participant is capable of understanding the study

☐ The child/participant is not capable of understanding the study

___________________________________________  
Child’s/Participant’s Name (printed)

_______________________________  
Name (printed) and Signature of Person Obtaining Consent  
Date
Appendix D

Initial Interview Protocol

Introduce teacher to research.

Aims of research

General researcher responsibilities

General participant responsibilities

Ask teacher what she would like to accomplish regarding this research (selection criteria entail participant interest in making curriculum/instructional change in her classroom).

Ask about experiences with inquiry-based or project-based instruction in her teaching career?

Have teacher talk about her own experience or learning about inquiry-based instruction, perhaps from her own school experiences.

Have teacher talk about her experiences with supervision, mentoring and coaching.

(Briefly describe Cognitive Coaching process) and ask for reaction.

Discuss co-researcher/practitioner inquiry stance. What our respective roles and responsibilities will be, specifically.

Logistics of communications, giving and receiving feedback

Decide on timeline. Decide on days/times for coaching cycles

Discuss next-step options: readings, talking with experts, visiting other teacher’s classrooms

Discuss confidentiality

Sign participant consent
Appendix E

Mid-study Interview Protocol

In reviewing the conversations we have had over the past couple of months, I have noticed a few themes I would like to ask you about…and get your insights.

1. One of the first things you have been thinking about in terms trying to implement student-initiated inquiry in your classroom is control. Tell me about how the issue of control has played out as you have worked through your first inquiry cycle with your students.

2. Another area you have been concerned about is making sure you were connecting to the 3rd grade curriculum. How has that worked?

   Follow up: Say more about testing and its impact on your decisions about implementing inquiry.

3. One of the issues most teachers face is how to help students get access to resources to answer their questions. How has that been an issue for your class?

   Follow up: What about the resource of time?

4. Finally, what has been the value of implementing student-initiated inquiry to your students?

   To you?

   How about to your class as a community of learners?

   Follow up: How have you seen inquiry affect other areas or times you teach, if at all?
Appendix F

Closing Interview Protocol

(subject to change with regard to path research takes during pre-/post-interviews, observations and researcher/participant communications)

Review the original aims of research and evaluate progress compared to those aims.

Talk about how you implemented inquiry-based learning in your classroom this semester.

What were the challenges to implementing this change in your classroom?

What surprised you about students’ response to teaching this way?

Overall, what did you notice about your students’ behavior through the inquiry-process?

What did you notice about your students’ learning processes?

Were there any changes in your students’ academic achievement? If so, what changes occurred?

What has changed the most about your teaching through this process?

What structures or strategies did you implement as you began to use inquiry-based teaching?

Which were most effective? Why? Which were least effective? Why?

Which strategies or activities helped you the most as you implemented this change in your classroom? (follow up about cognitive coaching, observations, collegial conversations/communication, etc.)

What did you learn about yourself as a teacher through this process?

What would you still like to change about your teaching?

Conclude by offering follow-up opportunity and plan for co-researcher member-checking.
Appendix G

Cognitive Coaching Pre-Interview Guide

_____ Greeting

_____ State purpose of interview

_____ Ask teacher to share thoughts and feelings about progress in inquiry-based teaching

_____ Discuss lesson plan & teaching strategies

_____ Discuss learning outcomes of students and standards

_____ Discuss how teacher will know outcomes have been reached

_____ Ask about concerns regarding specific student issues/participation/achievement

_____ Ask about an area that the teacher would like to improve upon (teacher behavior)

_____ Have teacher discuss reasons for selecting this focus area

_____ Discussion how I will collect data during this observation

_____ Discuss logistics (where to sit, time, etc.)

_____ Give opportunity for questions and closure

NOTES:
Appendix H

Cognitive Coaching Post-Interview Guide

____ Greeting

____ State purpose of interview

____ Ask teacher to share thoughts and feelings about lesson

____ Discuss learning outcomes of students based on teacher’s observations

____ Share data collected (highlight focus area discussed in pre-interview)
  *Encourage teacher to share thoughts first*

____ Ask teacher to discuss level of mastery of focus area and come to consensus about
  continuing focus or moving on to a new focus area.

____ Share “Do Agains” with teacher (What he/she did well.)

____ Opportunity for questions

____ Have teacher summarize interview and set goals for next observation

NOTES:
Appendix I

Student Initiated Inquiry Self-Evaluation/Reflection

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Inquiry Project Criteria Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Searched deep</td>
<td>1</td>
</tr>
<tr>
<td>Gave good effort</td>
<td>1</td>
</tr>
<tr>
<td>Shows at least 3rd grade work</td>
<td>1</td>
</tr>
<tr>
<td>Taught me something new</td>
<td>1</td>
</tr>
<tr>
<td>Spent time on it and didn’t give up</td>
<td>1</td>
</tr>
<tr>
<td>Wow factor/Creativity</td>
<td>1</td>
</tr>
</tbody>
</table>

For your inquiry project, tell what you DID, step-by-step.

________________________________________________________________________

________________________________________________________________________

What did you LEARN?

________________________________________________________________________

________________________________________________________________________

Was it WORTH IT? (why or why not?)

________________________________________________________________________

________________________________________________________________________

What would you do differently next time you do an inquiry project?

________________________________________________________________________