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An Investigation of the Interaction of Beliefs and Behaviors in the Classroom

JenneLyn Talbot
Utah State University

AN INVESTIGATION OF THE INTERACTION OF BELIEFS AND BEHAVIORS IN THE CLASSROOM

by

JenneLyn Talbot

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Approved:

J. Spencer Clark, Ph.D. Major Professor	Todd Campbell, Ph.D. Committee Member
Joseph Matthews, Ed.D Committee Member	Deborah Byrnes, Ph.D. Committee Member
Susan Turner, Ph.D. Committee Member	Mark R. McLellan, Ph.D. Vice President for Research and Dean of the School of Graduate Studies

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ABSTRACT

An Investigation of the Interaction of Beliefs and Behaviors in the Classroom

by

JenneLyn Talbot, Doctor of Philosophy

Utah State University, 2014

Major Professor: J. Spencer Clark, Ph.D.
Department: School of Teacher Education and Leadership

Previous researchers state connections exist between teacher beliefs and behaviors. However, broad, general constructs collected through surveys and observations lacked clarity and explanatory power between connected or disparate beliefs. This research examined teacher beliefs from researcher Speer's "collection of beliefs" perspective that acknowledged a multitude of beliefs coalesce together to shape behaviors. This study utilized qualitative research methods, including interviews and classroom observations, to examine a teacher's navigation through a variety of situations and gain understanding on beliefs and behaviors. Based on the methods employed, three findings emerge about the nature of beliefs. First, past experiences influence beliefs. In particular, the subject's nontraditional background influenced her experiences and behaviors in the class. Second, beliefs manifest themselves as multidimensional as clusters of beliefs interacting with varying levels of strengths and dominance. Finally, within reforms, dominant beliefs emerge influential when the individual experiences

disequilibrium. When generalizing the results, broad categories of beliefs failed to provide insight into connections between beliefs and behaviors. Instead, small-grained analysis and the construct “collection of beliefs” provided a useful unit of analysis in understanding the nature between beliefs and behaviors. Analysis of consistent and inconsistent behaviors provided greater understanding into specific behaviors and trends. Instead of extending the findings beyond this teacher, emphasis remained on the ability to gain understanding on the influence of beliefs on praxis of a single teacher, as well as how beliefs supported or competed in the teacher’s instruction.

(168 pages)

PUBLIC ABSTRACT

An Investigation of the Interaction of Beliefs and Behaviors in the Classroom

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This project emerged from previous research on beliefs, influences on behaviors, and beliefs interaction with reform. Previous research stated connections existed between teacher beliefs and teacher behaviors but criticized the use of broad, general constructs and traditional methodologies. This study challenged the portrayal of beliefs as isolated and static and attempted to understand connections between beliefs and behaviors. Utilizing qualitative methodologies, this study investigated the following research questions.

1. What insight can be gained on the nature of beliefs through analysis of consistent and inconsistent behaviors?
2. How do teacher's beliefs interact with behaviors?

This research adopted a methodology that connected interviews and instructional episodes as the informative data. The power of the examination of beliefs focused on (a) the teacher's beliefs, (b) actual practices, and (c) the connections between beliefs and observed behaviors. A more accurate collection of beliefs provided an understanding on how these beliefs actualized in practice. This allowed for an in-depth analysis of the

interaction of beliefs and behaviors that provided more explanatory power of the relationship, often lacking in other studies. Specifically, findings demonstrated that the beliefs emerge from previous experience, interact with each other, and influence the behaviors of the teacher.

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So many teachers influenced my life. From grade school to my graduate work, I must thank all the teachers who took time to engage and challenge me to become better than I even thought I could become.

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I was incredibly blessed with an amazing family who, without question, supported me. Early on, my parents showed the value of education and made sure I had everything I could ever desire to further my education. I always had their full support. Thank you!

To my boys, even though so little, I felt so much love from you. I always hope you have the ability to obtain whatever you desire.

To my husband, you sacrificed so much time, energy, and money to support my desires of furthering my education. You were my number one fan and always believed I could accomplish this. Now it is time for you and me to enjoy our labors! You are the love of my life and I love you more every day. Words cannot express enough what you mean to me!

JenneLyn Talbot

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CHAPTER I

INTRODUCTION

This project emerged from previous research on the nature of beliefs, influences on behaviors, and interactions with reforms. In particular, I examined moment-to-moment practices of a teacher. I viewed her beliefs as multidimensional and interactive and compared these beliefs with her behaviors. I designed this study to contribute to the research community's understanding of the nature of beliefs and their influence on teachers' behaviors.

Background and Origin of Research Questions

As a student, I found success in the U.S. public education system. Throughout my K-12 years, I received many awards for academic achievements. This helped me earn a scholarship for college where, once again, I found success. Along with experiences as a successful student, I came from a traditional background being "white, young, and female" (Witcher, Onwuegbuzie, & Minor, 2001). I encountered little difficulty in my schooling and programs aligned easily with my background.

Through my experiences, I developed a positivist worldview. As a teacher, I sought after "silver bullets" of truth. I believed traditional strategies and structures worked for any student, in any circumstance. When I entered the teaching profession, I embodied Pajares' (1992) description of an insider teacher resistant to change.

In my first few years of teaching, I kept thinking, *I experienced success in school. Why can't my students find success?* Trying to help my students become more successful,

I continued to seek “truths.” I participated in many school-, district-, and university-led trainings and reforms. I aligned and incorporated some reforms and disregarded others. I observed colleagues following a similar pattern of incorporating certain reforms and rejecting others. This led to my investigation into the influence of beliefs.

I observed the interplay of beliefs and reforms shortly after I entered the profession. After my first year, I desired to investigate praxis in-depth to achieve my goal of becoming the “perfect” teacher. I participated in a nine-week summer institute, which focused on incorporating research-driven instructional activities into the classroom. Eagerly, I incorporated the new strategies into my own practice. I observed others who viewed the same instructional strategies as ineffective. A few of the teachers believed the curriculum and instructional strategies were too “juvenile, simple, and inappropriate” for their circumstances. They found the historical information presented by college professors informative, but found the strategies ineffective. On one occasion, a heated debate over the strategies occurred between this group of teachers and the facilitator. As the institute progressed, these resistant teachers became more and more opposed to the strategies. At the time, I lacked understanding why these teachers resisted such changes.

I continued growing as a professional by interacting with many professional groups and furthering my education. My university studies introduced me to action research. I focused most of my early research on teachers’ resistance to change and the use of “effective” strategies. In my early research, I determined that knowledge of effective strategies could change any teachers’ behaviors.

Other experiences continued to influence my research, particularly my

participation in a reform I resisted. During my sixth year of teaching, my school incorporated the professional learning community (referred to as “PLC”) model where teachers of the same subject identify core concepts, collaborate with instructional practices, and utilize data to measure student learning (DuFour, DuFour, Eaker, & Many, 2010). During collaborative meetings with another teacher, I found my beliefs did not align with my partner and I struggled to find a balance in the reform.

This experience revealed that I had viewed other teachers as resisters, never myself. I analyzed reasons for my resistance and compared it with the literature on teacher beliefs. I realized my beliefs influenced my behavior, not the reform.

Through these experiences, I wondered, what role do beliefs play in our behaviors in the classroom? Can beliefs be changed? Do some beliefs lend themselves towards incorporating reforms and changes? Do certain beliefs dominate over others? I observed the powerful influence of beliefs in my own life and wanted to better understand the nature of beliefs and their influence on behaviors.

Nature of Beliefs

Understanding beliefs proved to be complex. Pajares (1992) described beliefs as internal constructs used by teachers to interpret experiences and guide their behaviors. He cautioned that the nature of research surrounding beliefs created a messy construct, lacking a single definition. He explained previous researchers utilized constructs often intertwining beliefs with knowledge and stated the intersection of these constructs created difficulty.

Besides difficulty with constructs, Pajares (1992) and Thompson (1992) cited

methodology as another reason why previous research provided little understanding. Both criticized surveys, self-reporting, and quantitative approaches that measured beliefs in broad, general constructs. Contemporary researchers criticized traditional constructs and methodologies that portrayed beliefs as broad, general, static and unchanging (Gill & Hoffman, 2009; Pajares, 1992; Speer, 2008; Thompson, 1992).

Researchers utilizing traditional constructs and methodologies did find some consistency in the relationship between beliefs and behaviors. In a study by Haney, Lumpe, Czerniak, and Egan (2002), they observed six teachers and found beliefs predicted most classroom behaviors. Other research found inconsistency between stated beliefs and behaviors. Palak and Walls' (2009) study on teachers' use of technology found inconsistency between stated technology beliefs and teachers' incorporation of the technology. In a study conducted by Speer (2008), a college math teacher stated his belief that the Socratic method effectively assisted in teaching mathematics. But during observable behavior, he employed low-level questions with little probing or follow up. These inconsistent results led me to wonder why some research cited consistency between stated beliefs and behaviors and others inconsistency.

I reviewed recent research (Speer, 2005, 2008) focused on creating new constructs of beliefs. Palak and Walls (2009) listed counter descriptions to traditional constructs of beliefs as "multiple and sometimes conflicting perspectives," "situationally determined," "context bound," "implicitly defined," and "ill-structured" (p. 418). Speer (2005, 2008) created a revised construct that viewed beliefs as multidimensional, dynamic, and interactive. I believed these new constructs held potential insight into the

nature of beliefs.

Influences of Beliefs

In my examination of belief constructs, I investigated influences on belief formation. Lortie (1975) stated individuals formed beliefs before they entered the teaching profession. He argued school experiences influenced preservice teachers' beliefs and described this phenomenon as the *apprenticeship of observation*. According to his theory, students observed behaviors from their teachers and formed beliefs of teaching. Murphy, Delli, and Edwards (2004) affirmed Lortie's (1975) theory by finding that beliefs about teaching formed in children as young as second graders. These beliefs proved influential as Chinn and Brewer (1993) argued the longer an individual held a belief, the more that belief became resistant to change. Pajares (1992) argued beliefs presented a difficulty within the profession as preformed beliefs created resistance to reforms.

If beliefs formed so early, I wanted to know the extent of their influence. While other factors influenced the teachers' behaviors and decisions, such as social environment, resources, and formal training, beliefs appeared as the primary influence (Gill & Hoffman, 2009; Pajares, 1992; Speer, 2005, 2008; Thompson, 1992). Caudle and Moran's (2012) study found the existence and influence of beliefs in preservice training. These beliefs developed further and became more influential as the teacher gained experience.

Unfortunately, the majority of research focused on determining the existence of the relationship between beliefs and behaviors, not necessarily the nature of the

connection. For example, Palak and Walls' (2009) study focused on the relationship between teachers' beliefs and use of technology, but failed to elaborate *why* beliefs affected their behavior. Speer (2005, 2008) described this phenomenon as a *lack of explanatory power* found in the literature.

Supported by my experiences and literature, I concluded beliefs influenced behaviors but little explanatory power existed to indicate the nature of teachers' beliefs and their influence on behavior.

Rationale for Study

Throughout my investigation, I discovered several weaknesses and gaps of knowledge in the research around beliefs. First, research lacked explanatory power of the nature of beliefs. Traditional methodologies, where beliefs informed behaviors, provided little insight into the interaction of beliefs and behaviors. Previous researchers (Lortie, 1971; Murphy et al., 2004) supported the early existence and influence of beliefs, but little explained the nature and influences of these beliefs.

Most researchers examined beliefs in broad categories utilizing traditional methodologies of surveys and observations. Pajares (1992) criticized these methodologies and stated "as a global construct, belief does not lend itself easily to empirical investigation" (Pajares, 1992, p. 308). He believed individuals' knowledge measured and acted differently than beliefs. Nespor (1987) described beliefs as episodic and emotionally stored, but surveys measured beliefs as constant and consistent. In fact, surveys more often measured an individual's knowledge rather than his or her beliefs.

Mixing the constructs of beliefs and knowledge created inconsistent results in the literature.

Some researchers provided counter constructs of beliefs as multidimensional and dynamic (Speer 2005, 2008) and did not align with traditional methodologies; Therefore, I utilized methodologies aligned with multidimensional, dynamic, and emotional belief constructs. I wanted further understanding of the relationship between beliefs and behaviors. Previous researchers cited consistency and inconsistency between beliefs and behaviors. I chose to focus my research on inconsistencies, as this appeared the most underexamined area.

In summary, previous research showed the necessity for a more comprehensive understanding of beliefs and their influence on behaviors. To increase understanding, I focused on two elements. First, the construct of belief needed to be reevaluated to portray beliefs as multidimensional and dynamic. Second, analysis of the interaction between beliefs and behaviors needed to provide explanatory power. Previous theories of teachers' beliefs seemed deficient in providing helpful and comprehensive explanations.

Purpose of the Study

I attempted to address gaps of knowledge around beliefs and the relationship between beliefs and behaviors. Therefore, I investigated the following research questions.

1. What insight can be gained on the nature of beliefs through analysis of consistent and inconsistent behaviors?
2. How do teachers' beliefs interact with behavior?

I believed these questions augmented previous research and provided understanding into the nature of beliefs and their interaction with behaviors.

Speer's (2005, 2008) "collection of beliefs" and Frederiksen, Sipusic, Sherin, and Wolfe's (1998) video portfolio influenced my methodology as I measured beliefs through behaviors. I allowed the behaviors to guide the identification and analysis of behaviors. Grounding beliefs in behaviors allowed for in-depth examination as consistent and inconsistent behaviors exhibited multiple beliefs. These observations provided insight into various beliefs held by the individual and how the beliefs influenced behaviors.

I selected an inservice teacher, Carol, to observe her beliefs and analyze how these beliefs interacted with her behaviors. By selecting an inservice teacher, I realized implicit beliefs might create challenges. To overcome this, I observed Carol in a variety of situations (for example, different classes and subjects). Following patterns of reform research, I observed her in novel situations created through reforms. During this study, Carol taught a new curriculum (honors eighth-grade U.S. history). In addition, the school recently incorporated netbooks in a one-to-one setting where students had access to a netbook in all core classes. These elements placed her in unfamiliar territory. This forced a negotiation within her multiple beliefs as to what behaviors should be enacted in various situations presented within the reforms. By eliciting beliefs across a variety of situations, I gained insight into her beliefs and their role.

Definitional and Operational Terms

Definitions

- **Belief clusters:** A group of beliefs that support and interact frequently with each other
- **Belief segregation:** Beliefs held by an individual that potentially conflict with each other. Often, the individual segregates the two beliefs in order to embrace them simultaneously
- **Collection of beliefs:** Occurs both as a description of a construct and a methodology.

  Construct: Small, grain-sized belief systems. Beliefs exist as interactive, clustered, and segregated. Beliefs emerge through behaviors and therefore are situational

  Methodology: Measured from inferences made from moment-to-moment practices with beliefs grounded in specific teaching practices.
- **Dominant beliefs:** Beliefs that influence frequent and consistent behaviors across a variety of situations
- **Explanatory power:** Investigations and explanations about how and why things work or occur. In this study, I focused on *how* beliefs interact with behaviors and the subsequent understanding on the relationship between the two.
- **Nontraditional constructs of beliefs**: View beliefs as interactive, dynamic, situational, and implicitly held

- **Shared understanding**: Occurs when the researcher and the teacher work together throughout the data collection and analysis to understand the behaviors and beliefs of the teacher. A lack of shared understanding occurs when the researchers misreads a teacher's behaviors or doesn't understand the logic and reasoning of beliefs utilized. The result of a lack of shared understanding is the data may not accurately represent the teacher's beliefs and practices.
- **Situational dominant belief:** A belief that most of the time is not dominant or influential. However, in a particular situation, the belief overrides a more dominant belief.
- **Situational methodology:** Analyzing beliefs and behaviors simultaneously and grounded in specific situations
- **Traditional constructs of beliefs:** View beliefs as categorical, static, unchanging, and explicitly held

Operational Terms

As the following are used in different situations, for my work, this is how I define and utilize the following words.

- **Reform:** An outside force (typically from administration) demanding a change in the classroom. Teachers have little input in the change and must adapt the reform in their classroom to meet the expectations of the outside forces.
- **Student-focused instruction:** Teacher analyzes both the curriculum and

students to evaluate the best method in presenting the knowledge. Allows the lesson to flow and change based upon student understanding. Adapts the lesson and method of transmission when students show difficulty in understanding

- **Teacher-focused instruction:** Teacher analyzes curriculum and evaluates the best methods in presenting the knowledge. Pre-determines examples and connections during preplanning of lesson. Determines the method of transmission and attempts to delineate as little as possible from the plan

Overview of Subsequent Chapters

Chapter II: Literature Review

This chapter contains two parts. The first section provides a summary and analysis of literature that informed my work. Previous researchers focused on several different aspects of beliefs. Many delineated between constructs of beliefs and knowledge. Along with demarcating differences of beliefs and knowledge, others focused on comparing traditional and newer constructs, such as Speer's (2005, 2008) "collection of beliefs." An in-depth analysis of constructs focused on issues of methodologies surrounding beliefs and sought recent researchers responses to these concerns.

The second section of the literature review investigates research that utilizes the dominant group found in studies, primarily preservice and inservice teachers. Studies of preservice teachers illustrated the influence of previously formed beliefs in their training. These beliefs appeared nascent and evolving. Inservice teachers internalized their beliefs

as they gained more experience. Utilizing traditional methodologies, these beliefs proved difficult to measure. Some researchers attempted to solve this difficulty by investigating inservice teachers in novel situations. They focused on teachers' negotiation through technology reforms and professional development.

Chapter III: Methodology

In this chapter, I discuss the rationale for my methodology. I describe data collection methods used to record observations, select videos, and implement procedures during interviews. I review the methods utilized to analyze the data. I explain the methods in creating belief and behavior profiles. Then, I detail the analysis surrounding the nature of beliefs and their influence on behaviors.

Chapter IV: Belief Results

In this chapter, I describe Carol's beliefs. I provide a top-level description of Carol's beliefs in a similar format used in traditional methodologies. Then, I offer further details through profiles of Carol's behaviors. I identify the dominant beliefs that emerged throughout the data collection. Utilizing Green's (1971) spatial organization and Speer's (2005, 2008) "collection of beliefs," I organize beliefs into hierarchical clusters surrounding teaching and learning. Finally, I summarize my analysis of Carol's beliefs.

Chapter V: Behavior Results

The second part of my results focus on Carol's behaviors. I organize Carol's behaviors around instructional practices. I provide a summary of her general behaviors. Then, I analyze moment-to-moment interactions and identify themes of consistent

behaviors. I examine the findings in relationship to Carol's beliefs and behaviors.

Chapter VI: Discussion

Throughout my analysis, I discovered Carol's beliefs affected her behaviors. Using Green (1971) and Speer's (2005, 2008) constructs. I discuss three patterns of beliefs found in Carol's belief profiles. First, previous experience affected the formation of Carol's beliefs, primarily her experiences as a wife and mother. Second, Carol's beliefs interacted with each other, sometimes creating tension. Analysis of these tensions allowed for identification and analysis of her dominant beliefs. Finally, I scrutinize implicit beliefs held by Carol, discovered only through her behaviors.

The second section analyzes the relationship between beliefs and behaviors. Carol exhibited many behaviors consistent with broad constructs of teacher-focused beliefs. However, Carol demonstrated small, inconsistent behaviors that did not align with teacher-focused beliefs. Portraying Carol's beliefs as teacher-focused provided an incomplete explanation of her behaviors. Analysis of her inconsistent behaviors provided tremendous insight into the connection between beliefs and behaviors. In particular, inconsistent behaviors allowed analysis of implicit beliefs unidentified by Carol. Using a methodology that incorporated shared understanding, explanatory power of the relationship between beliefs and behaviors emerged.

Chapter VII: Conclusion, Implications, and Limitations

This chapter contains a summary of my findings. I discuss the findings and implications in other areas. These implications include theoretical, methodological, and

practical contributions of reform movements. Finally, I conclude my results with several ideas for future study.

CHAPTER II

LITERATURE REVIEW

Introduction

Throughout history, many people have described their beliefs about teaching and teachers. For example, educational philosopher William James, in his 1899 book *Talk to Teachers*, defined teaching as applying the art and science of tapping a students' interest:

> You must simply work your pupil into such a state of interest in what you are going to teach him that every other object of attention is banished from his mind; then reveal it to him so impressively that he will remember the occasion to his dying day. (James, 1899, as cited in Cacioppo & Freberg, 2013, p. xxii)

In the political arena, Richard Riley (1998), former U.S. Secretary of Education, stated that he believed teachers appeared to be the critical factor in the classroom.

> Providing quality education means that we should invest in higher standards for all children, improved curricula, tests to measure student achievement, safe schools, and increased use of technology—*but the most critical investment we can make is in well-qualified, caring, and committed teachers*. Without good teachers to implement them, no educational reforms will succeed at helping all students learn to their full potential. (p. 18, italics added)

Educational psychologist Shulman (1987) stated an effective teacher "knows something not understood by others, presumably the students. The teacher can transform understanding, performance skills, or desired attitudes or values into pedagogical representations and actions" (p. 7).

Many others have formed opinions, descriptions, and beliefs about teaching. Teaching appears to be a unique profession where even non-teachers form concepts about teaching. In fact, everyone from those with a direct investment in education to the

everyday citizen develop some beliefs on teaching. These beliefs have affected how individuals view reforms, issues of funding, and even the purpose of education itself.

Many of these beliefs have been found to form early in an individual's life. Recent researchers demonstrated even elementary school students formulated beliefs about teachers and teaching. In Murphy and colleagues' (2004) study of second graders, students easily articulated their beliefs about teaching. They based their perceptions on the actions of their teacher, demonstrating the influence of the schooling process on belief formation.

An individual's beliefs about teaching can emerge from both successful and unsuccessful experiences in schooling (Lortie, 1975; Nespor, 1987; Pajares, 1992). Often, these experiences focused on the specific behaviors of the teacher. The behaviors, as found in Murphy and colleagues' (2004) study, influence the formation of the students' beliefs.

Along with personal experiences by individuals, quantitative and qualitative researchers cited the important influence of teachers. Haycock (1998) cited effective teachers observed achievement gains of 52% in students' learning as compared to only 14% with ineffective teachers. Another longitudinal study (Archer, 1998) noticed similar achievement gains. Students with effective teachers demonstrated greater gains than those with less effective teachers. More recently, in a qualitative analysis of effective teachers, Stronge, Ward, and Grant (2011) found students placed with effective teachers scored higher in achievement testing as compared to those placed with less effective teachers.

In a desire to improve teachers' educational behaviors, some researchers focused on understanding the influence of a teacher's educational knowledge on practice. "Advocates of professional reform base their arguments on the belief that there exists a 'knowledge base for teaching'" (Shulman, 1987, p. 4). Shulman explained teachers' knowledge contained several categories, such as content and curriculum, all of which interplayed and intersected in behaviors. He cited a source of teachers' knowledge as "wisdom of the practice itself" developed in teachers without their awareness. Shulman stated, "practitioners simply know a great deal that they have never even tried to articulate" (p. 12).

If an individual's educational beliefs can influence student achievement, what influences teachers' behaviors? Over the past several decades, researchers identified beliefs as the most important influence. While other factors influenced behavior, such as social environment, resources, and formal training, beliefs appeared as the primary influence (Gill & Hoffman, 2009; Pajares, 1992; Speer, 2005; Thompson, 1992). With beliefs being such a powerful force, I investigated the literature surrounding beliefs and identified gaps of knowledge. Specifically, I examined previous research on the nature of beliefs, their role and influence on preservice and inservice teachers, and beliefs' interactions with behaviors.

Nature of Beliefs

Influence of Beliefs

Many researchers portrayed beliefs as a messy construct and stated the

methodologies created limited understanding. However, most still asserted beliefs provided the best indicators of teachers' behaviors (Pajares, 1992). "Beliefs shape who teachers are as individuals and the types of decisions they make in the classroom" (Caudle & Moran, 2012, p. 38). Kraus's (1995) meta-analysis found beliefs significantly predicted future behavior. Palak and Walls' (2009) study reaffirmed Kraus' assertions. Palak and Walls analyzed how teachers incorporated technology into the classroom. They believed if technology led to student-centered learning, then teachers would use the technology with student-centered practices. They discovered teachers' personal beliefs influenced the behaviors, not the technology. In one case, a participant utilized technology teacher-focused strategies of drill-and-practice.

> Despite her positive attitudes, high comfort and confidence, and availability of computer hardware and software, she had limited her students' technology use to one type of technology because this technology supported her existing ways of teaching. (Palak & Walls, 2009, p. 427)

While many researchers stated beliefs influenced behaviors and actions, few focused on the nature of beliefs and their relationship with behaviors. To gain additional insight, I investigated research around different constructs of beliefs.

Construct of Teacher Beliefs

Researchers utilized various definitions of beliefs. Many cited Pajares' (1992) critique and evaluation surrounding belief research. He defined beliefs as internal constructs teachers utilized to interpret experiences. He described the construct of beliefs as "messy" without a single correct definition. He, and subsequent researchers, believed belief constructs needed to include additional components such as the individual's

"conceptions, personal ideologies, worldviews, and values" (Speer, 2005, p. 365) and argued for a revised construct that provided clarification (Gill & Hoffman, 2009; Pajares, 1992; Palak & Walls, 2009; Thompson, 1992).

One obstacle in creating a clearer construct existed in beliefs' relationship to knowledge. Often constructs of beliefs intertwined an individual's beliefs with an individual's knowledge (Nespor, 1987; Pajares, 1992; Thompson, 1992). Educational psychologist Shulman (1987) focused only on describing the *knowledge* base of teachers, making no mention of beliefs. Yet, in further analysis he cited the *wisdom* of teachers as a largely untapped research area. His description of wisdom aligned with others' descriptions of beliefs.

Several researchers provided direct comparisons and delineation between beliefs and knowledge. Pajares (1992) analyzed differences between knowledge and beliefs. He asserted that knowledge focused on decontextualized, generalized ideas. Knowledge emerged from cognitive attitudes and viewed facts as objectives. Individuals outwardly validated knowledge without consideration of personal alignment. An individual incorporated new knowledge into cognitive concepts rather than integration into a personal framework. Knowledge became open to evaluation and easily changed with reason and reflection (Nespor, 1987; Pajares, 1992; Speer, 2008).

In contrast to knowledge, Pajares (1992) stated beliefs focused on "evaluation and judgment whereas knowledge based itself on objective fact" (p. 313). Nespor (1987) stated beliefs focused on evaluating the surrounding environment. He clarified individual's stored knowledge semantically, but beliefs emerged from experience and

cultural sources. Consequently, beliefs formed from episodic memory and functioned less objectively. A belief's existence, as internal and emotional constructions, created little need of external validation. Beliefs existed without internal consistency between each other. They appeared inflexible and less dynamic than knowledge. Change occurred not through reason but rather from a "conversion or gestalt shift" (Pajares, 1992, p. 311).

According to Nespor (1987), beliefs existed emotionally and included different aspects of life. Teacher beliefs included a variety of influences such as the individual's view of the world, perspective on classroom experiences, personal values and opinion ranging from personal identity, pedagogical methods, subject content, student learning, and even belief in their efficacy (Malmberg & Haggar, 2009).

Beliefs viewed as multidimensional and emotional assumed a greater influence than knowledge on behavior (Speer, 2005, 2008). Gill and Hoffman's (2009) investigation into teacher discourse during shared planning time found the teachers' beliefs influenced the discussion. Throughout the discussion, their beliefs acted as intuitive screens that elicited opinions and judgments of the information discussed. Their beliefs influenced the nature and outcome of the discussion.

Those who criticized previous research (Gill & Hoffman, 2009; Pajares, 1992; Palak & Walls, 2009; Speer, 2005, 2008; Thompson, 1992) described the necessity of distinguishing between knowledge and beliefs (see Table 1). While knowledge interacted with cognitive elements, a person's beliefs were used to evaluate and judge the application of such knowledge. In a study of preservice teachers, Leonard, Barnes-Johnson, Dantley, and Kimber (2010) investigated college students' reaction to

Table 1

Comparison of Beliefs Versus Knowledge

Variable	Beliefs	Knowledge
What is its nature?	Evaluative and judgmental, stored in episodic memories, exists without internal consistency	Objective, decontextualized, stored semantically
Where does it emerge?	Emotional experiences	Cognitive reasoning
How does it react to change?	Inflexible and less dynamic; change occurs only in gestalt shifts	Open to evaluation; change occurs through reason

knowledge presented on inquiry-based lessons. In the end, students incorporated their beliefs into the lessons rather than knowledge from the class. The study's findings concluded that understanding students' beliefs could provide insight and explanatory power behind the students' behaviors.

Many researchers stated teachers' cognitive knowledge provided little insight into behaviors. They believed constructs must portray beliefs as judgmental and evaluative (Pajares, 1992; Palak & Walls, 2009; Speer, 2005, 2008).

Formation of Beliefs

I investigated research surrounding the formation of beliefs. Most literature asserted experience affected the development of an individual's beliefs. Pajares (1992) argued most individuals spent a minimum of 12 years exposed to teachers and developed beliefs from these experiences. Lortie (1975) described this as the *apprenticeship of observation*. Murphy and colleagues (2004) studied second graders and found young children developed intricate beliefs about teaching.

Caudle and Moran (2012) described beliefs as lay theories that develop outside formal instruction and occurred unconsciously and naturally over time. They believed individuals entered preservice training where beliefs acted as intuitive screens to the formalized knowledge. Tanase and Wang's (2010) study of preservice teachers found students' beliefs influenced how they interacted with the class. In a pre-survey, one student described knowledge as a set of right facts and that information "could only be transmitted from the expert to a learner" (p. 1,242). These beliefs persisted in his microteaching practices where he displayed teacher-focused behaviors. His beliefs filtered the preservice training to align with his beliefs.

Chinn and Brewer (1993) believed the longer the individual held a belief then more persistent and consistent behaviors appeared. In their study of college science students, students interpreted the data based on preconceived beliefs of science. These beliefs, formed years earlier, proved difficult to disprove. Pajares (1992) argued preservice teachers resisted changes because of their beliefs' early formation.

Other researchers cited additional sources of belief formation. Richardson (1996) claimed formal knowledge presented during preservice training and professional development affected beliefs. Caudle and Moran's (2012) longitudinal study supported Richardson's claims. In their study, preservice teachers' beliefs appeared unstable and nascent. Previous experiences with education placed them as only an observer of teaching. As they entered preservice training, their beliefs entered a transactional period as they interacted with new knowledge. In some cases, the knowledge interacted with their beliefs. Richardson believed professional experiences influenced beliefs. For

example, in Sherin's (2002) study, a teacher encountered a novel experience with her teaching that triggered a reevaluation of her beliefs about instruction content. Caudle and Moran's study found individual's beliefs evolved as they entered the professional field.

Some researchers provided insight in several components of beliefs. First, beliefs differed from knowledge as they utilized evaluation and judgment (Pajares, 1992). Because beliefs developed episodically, emotion influenced the development and storage of beliefs (Nespor, 1987). Beliefs of teaching developed at a young age during individuals' schooling experience. Most teachers experienced success in schooling and exhibited behaviors resistant to change (Chinn & Brewer, 1993; Lortie, 1975). A construct of beliefs needed to incorporate these various aspects (as noted in Table 1).

Defining a Construct

Some researchers have portrayed belief constructs as multidimensional. Green (1971) provided a framework by demarcating beliefs into three dimensions. The first dimension organized beliefs into premises and conclusions. This focused on the quasilogical organization of the individual's beliefs. The second dimension concentrated on the psychological strength of the belief. If the belief held greater psychological strength, Green classified them as core as opposed to those of lesser strength, termed peripheral. The third dimension described beliefs' interaction to include moments of clustering and segregation.

He asserted these dimensions provided insight into how individuals held conflicting beliefs. In particular, by segregating beliefs, some beliefs encountered little interaction with each other and coincided together without conflict. To support this claim,

Torff's (2011) study uncovered that many teachers cited the belief *all students could learn* in a survey. However, almost half the teachers later determined high-critical thinking activities inappropriate for low-achieving students. Interestingly, the teachers did not view these two beliefs as conflicting. Their findings demonstrated a teacher could hold two differing beliefs but cluster them separately to avoid conflict.

Furthering the idea of beliefs as multidimensional, Speer (2008) attempted to develop a new construct focused on small, grain-sized beliefs. Instead of measuring beliefs in global constructs and categories, she measured beliefs from inferences made of moment-to-moment practices. She stated these observations demonstrated various beliefs held by individuals and the interaction between them. Her construct "collection of beliefs" focused on the interplay between the different beliefs and the negotiation within beliefs. She specified the measurement of beliefs emerged from consistent, grain-sized behaviors.

Most literature maintained the difficulty in measuring beliefs with traditional constructs. In fact, Pajares (1992) and Thompson (1992) both argued for a more rigorous analysis of both constructs of beliefs and methodologies utilized. Specifically, Pajares stated constructs of beliefs must be separate from constructs of knowledge. Both claimed methodologies using observation and survey did not accurately measure the dynamic nature of beliefs. Therefore, I utilized Green's (1971) hierarchical structure and created a framework to investigate the interaction of beliefs. I employed Speer's (2005, 2008) "collection of beliefs" to strengthen the investigation by allowing analysis of the dynamic, interplaying relationship between beliefs and behaviors. Utilizing these

frameworks, I desired a methodology that provided insight into the nature of beliefs and their relationship with behaviors.

Beliefs and Methodology

Thompson (1992) and Pajares (1992) argued for a more rigorous analysis of beliefs. Along with "messy" constructs, they criticized the methodologies of survey and observation traditionally utilized. In theirs and other researchers' views (Palak & Walls, 2009; Speer, 2005, 2008), the use of broad constructs lacked the ability to exhibit the multidimensional, interconnected, and complex nature of beliefs. Even after Pajares and Thompson's "call to arms" almost 20 years ago, most researchers still used global constructs and methods previously criticized (Speer, 2005).

"As a global construct, belief does not lend itself easily to empirical investigation" (Pajares, 1992, p. 308). A global construct portrayed beliefs in broad categories, static, and delineated from each other. Identification of beliefs occurred only through inference. For example, traditional measurements of beliefs relied primarily upon surveys and observations. These instruments lacked stringent analysis of the inferences made between the belief and the behavior (Speer, 2005, 2008). Inferences made between belief and practice emerged as weak at best. In response, recent researchers focused on developing instrumentations that investigated beliefs and behaviors simultaneously (Gill & Hoffman, 2009; Pajares, 1992; Speer, 2008).

Researchers criticizing the use of surveys and observations challenged two assumptions of traditional methods. They challenged that teachers often acted without rational awareness of their surroundings. In fact, some researchers found individuals

lacked the ability to clearly or concretely define their beliefs (Caudle & Moran, 2012; Tanase & Wang, 2010). Behaviors often appeared inconsistent with the identified beliefs (Gill & Hoffman, 2009). Albarracin and Vargas (2010) explained some of these findings through implicit beliefs. They stated that implicit beliefs occurred "more or less within the respondent's perimeter of conscious awareness" (p. 361).

The dual-processing model supported the challenging of the assumption teachers are aware of the actions (Gill & Hoffman, 2009). The model stated, "implicit beliefs are equated with automatic decision rules that promote goal-directed actions" (p. 1243). Most of teachers' decisions occurred automatically and lacked a conscious, rational decision process. In Malmberg and Hagger's (2009) study of student teachers, the student teachers' agency beliefs (whether they believed in their ability of success) influenced their behaviors. However, the student teachers behaved without cognitive awareness of this belief.

Along with individuals' rational awareness of all behaviors, surveys and observations lacked the ability to measure beliefs without the subjects' input. For example, in Speer's (2005) study of teacher assistants, inconsistency emerged between participants' stated beliefs and behaviors. Consistency between beliefs and behavior emerged as she utilized a situational methodology where the individual reflected on the actual behaviors. As the subject actively participated in the process of data collection, greater insight and consistency emerged. Researchers that utilized different methodologies, such as Speer's (2005, 2008) situational methodology, provided new insight into beliefs and behaviors as the subjects actively participated in the process.

Recent researchers challenged the traditional construct of beliefs as static, well-defined, consistent, and context independent (Speer, 2008). Recent constructs, such as Speer's "collection of beliefs," described beliefs as multidimensional, implicit, and transactional. Beliefs held various psychological strengths with some existing as core and others peripheral (Green, 1971). General constructs of beliefs and traditional methodologies lacked the ability to investigate these interactions.

Speer (2008) argued that general descriptions and categories of beliefs appeared helpful in conveying general trends, but such classifications provided little in-depth analysis. In fact, utilizing broad, static constructs aligned more with knowledge rather than belief constructs (Nespor, 1987; Pajares, 1992). Speer concluded traditional constructs provided little ability to analyze the dynamic nature of beliefs as "multiple and sometimes conflicting perspectives," "situational determined," "context bound," "implicitly defined," and "ill-structured" (p. 418).

Setting aside the methodical constraints of measuring beliefs, researchers that viewed beliefs from global constructs provided little explanatory power about the nature of beliefs and their interaction with behaviors. Speer (2008) described explanatory power as "a characteristic that requires more than just describing what people can or will do and instead explains how and why things work in particular ways" (p. 219).

Her research provided explanatory power between beliefs and practices as she analyzed the connections at a fine-grained level. Specifically, by gathering data through behaviors, insight emerged on beliefs. One participant described himself as a *guide* but his behaviors reflected more teacher-focused behaviors. By focusing on the inconsistent

behaviors, evaluation redefined his belief to align with his behaviors. The behavior informed the belief and additional insight emerged. By identifying and investigating consistent and inconsistent behavior, a larger picture of the relationship of beliefs and behaviors appeared (see Table 2).

Along with analysis of consistent and inconsistent behaviors, Speer (2005) also argued beliefs likely emerged in individuals new to the teaching environment. She claimed awareness of decision and behaviors occurred more in preservice teachers because of the new environment. Ng, Nicholas, and Williams' (2010) research supported this claim and argued preservice and novice teachers were more apt to demonstrate and be aware of their beliefs because they actively negotiate in unfamiliar territory.

Limiting research to preservice teachers also limited the scope of research (Caudle & Moran, 2012; Swan, 2007; Torff, 2011). A key argument in using preservice

Table 2

Speer's "Collection of Beliefs" Construct Versus Traditional Constructs

Variable	"Collection of beliefs"	Traditional, global constructs of beliefs
Description of beliefs	Dynamic, flexible, context specific, ill-defined, implicit	Static, well-defined, consistent, context independent, explicit
Methodology	Qualitative observations of grain-sized behaviors analyze consistency; Behavior lends itself to measurement of beliefs	Self-reporting, surveys, observations; Beliefs are decontextualized identified and then measured with behaviors
Insight gained through construct	By analyzing connection between behaviors and beliefs, nature of the relationship can be analyzed through grounded examples	Can convey general trends of the teacher's views; Does not give insight into relationship between beliefs and behaviors

teachers focused on the ability to make beliefs explicit because their awareness of beliefs emerged throughout their negotiation into the profession. Reform researchers demonstrated (as discussed later in this chapter) that experienced, inservice teacher beliefs emerged when teachers interacted with novel situations. The teachers encountered new ideas, behaviors, and even different expectations held by supervisors or administration. They negotiated themselves to find coherence between their beliefs and the demands of the reform. Sherin's (2002) study found a mathematics teacher negotiated and adjusted her lessons because of her engagement with a specific reform. The teacher adjusted and modified both her lesson plans and her instruction to align with elements of the reform. Interestingly, she included elements of reforms but still used more familiar behaviors even if they conflicted with the reform. The findings in this study illustrated that consistency and negotiation occurs in reforms. Therefore, analysis of consistent behaviors and the negotiation in novel situations could allow implicit beliefs to emerge.

Influence of Beliefs in Preservice and Inservice Teachers

Preservice Teachers

Researchers on teachers' beliefs and behaviors focused on two groups: preservice and inservice. Researchers described preservice teachers as individuals in teacher preparation programs located in universities. Pajares (1992) and Lortie (1975) claimed, unlike other professions, preservice teachers utilized preformed beliefs in their interaction with training. Previous exposure in schooling provided vivid experiences that influenced how they formulated their beliefs about teaching.

Pajares (1992) portrayed preservice teachers as “insiders” who developed beliefs as students. He elaborated that most students who became teachers created a positive identification with schooling and most beliefs aligned with conventional practices. They became “teachers unable, and subconsciously unwilling, to affect a system in need of reform” (p. 323). He argued that because most preservice teachers found success in schooling, they often subconsciously enacted barriers to reform-based approaches.

Recent researchers argued against the viewpoint that all preservice teachers held traditional concepts of teaching. Tanase and Wang (2010), in their study of four urban teachers, argued that previous research of preservice teachers focused on samples that reflected the viewpoints of the traditional preservice teacher: white, young, and female. They stated, “Such a sample may not accurately reflect the situation found in urban university programs, which tend to have a more diversified preservice teachers program” (p. 1238). They concluded some teachers might hold beliefs that need strengthening and support rather than change.

Many others asserted the need to challenge the traditional concept of preservice teachers as a homogenous group. In a survey by Witcher and colleagues (2001), women and minority students stated good teachers exhibited characteristics of ethical behavior and effective teaching methodology. In contrast, white men cited other characteristics. In another survey (Minor, Onwuegbuzie, Witcher, & James, 2002) men were more likely to support knowledge of content as good teaching as opposed to women. Also, minority teachers cited enthusiasm for teaching to a statistically significant higher degree than white, preservice teachers.

Experience proved a powerful influence in the development of beliefs. These experiences often created persistent behaviors in preservice teachers that continued in their training. In Parker and Brindley's (2008) study of graduate preservice teachers, they analyzed the strength of beliefs and how their beliefs interacted with the program. Many of these students encountered backgrounds different from the traditional, preservice teacher. For example, some worked in other professions before beginning their preservice training. These experiences proved vivid and influential. The graduate preservice teachers provided a clearer description of their beliefs, citing examples and non-examples of good teaching. Consequentially, these beliefs influenced their interaction with knowledge presented about classroom management.

In their study of preservice teachers' beliefs about classroom motivation, Mansfield and Volet (2010) stated:

> There was evidence that extensive past experience in parenting, teaching, or coaching led to entering beliefs about classroom motivation that tended to be stronger, or deeply entrenched and more resistant to change, in comparison to those of preservice teachers who had emerging, or vague and fragmented. (p. 1413)

Even nontraditional students' beliefs proved unstable and unknown to the individual. Caudle and Moran's (2010) study found that during preservice training, individuals' beliefs emerged nascent. As teachers gained experience, beliefs became more concrete. The teachers "grew from being uncertain about their beliefs to understanding how their beliefs informed their practice" (p. 42).

Because of the influence of beliefs, many researchers argued one could not effectively train preservice teachers without reflecting, identifying, and addressing his or

her own beliefs. Ertmer and Ottenbrelt-Leftwich (2010) stated, “To change these established beliefs, teacher educators need to engage preservice teachers in activities that explicate and challenge these beliefs” (p. 269). Many attempted to facilitate change using personal and collaborative reflections on non-classroom and out-of-context case studies. Some researchers cited the inability to create sustainable change through these activities as later experiences outweighed the reflections (Tanase & Wang, 2010). Consequently, beliefs held prior to preservice training emerged as the greater influence over the preservice training.

Other researchers challenged the assumption that change rarely occurred because of preservice activities. DiCamillo (2010) investigated a social studies teacher’s classroom and found the teacher frequently incorporated elements of a framework he learned during his preservice training. Training influenced the behaviors of the individual. Caudle and Moran (2010) asserted, “While beliefs are often rooted in childhood events, preservice and inservice teachers’ experiences have also been shown to affect their beliefs” (p. 39).

Two themes emerged from research of preservice teachers. First, additional research on beliefs of nontraditional preservice teachers could provide further insight. Most researchers focused on traditional groups of preservice teachers who dominated the programs. These samples did not include diverse groups of students and how their diversity affected their beliefs. The second theme focused on a lack of studies dealing with sustained change. Most studies only provided small snapshots of the change process that occurred in preservice training. Very few studies focused on the transition from

preservice to inservice teacher. These areas hold potential insight in the influence and interaction of beliefs.

Many researchers stated that investigating beliefs with preservice teachers provided great potential in understanding the nature of beliefs and also the relationship between beliefs and behaviors (Ng et al., 2010; Speer, 2008). Shulman (1987) believed preservice teachers held a great resource as they participated in the transition between observation and practice of the profession. “The neophyte’s stumble becomes the scholar’s window” (p. 4). The transition between the role of student and teacher created a negotiation within their beliefs, providing an opportunity for observation and analysis.

Inservice Teachers

Experienced teachers also displayed behaviors influenced by beliefs. Kagan (1992) stated that for experienced teachers, “most of a teacher’s professional knowledge can be regarded more accurately as belief.” According to Kagan, teachers’ beliefs often create consistent behaviors. The beliefs influence teachers’ negotiation in novel situations. Several studies found that experienced teachers incorporated reforms and practices aligned with their beliefs (Palak & Walls, 2009; Speer, 2005). Palak and Walls stated that “any inquiry into teachers’ practices should involve a concurrent investigation into teachers’ educational beliefs” (p. 417).

Several studies showed inservice teachers held rich, coherent beliefs that influenced their perception, judgment, and behavior (Evans, 1996; Gill & Hoffman, 2009; Mouza, 2006;). Kagan (1992) stated, “A teacher’s knowledge of his or her profession is situated in three important ways: in context (it is related to specific groups

of students), in content (it is related to particular academic material taught), and in person (it is embedded within the teacher's unique belief system)" (p. 74). He claimed as the teacher became more "expert" in his or her profession, beliefs held greater influence. Understanding the relationship between beliefs and behaviors appeared necessary for inservice teachers. Beliefs influenced inservice teachers by acting as a filter of information and experience and affecting behaviors. In a study by Haney and colleagues (2002), their observation of different teachers found beliefs predicted several teachers' behaviors.

Understanding the relationship between beliefs and behaviors in inservice teachers has presented more difficulties than preservice teachers. For example, often these beliefs became implicit and automatic making it difficult to measure through surveys and observation (Gill & Hoffman, 2009). This creates difficulty in measuring beliefs and understanding the relationship between beliefs and behaviors. Two main foci of research attempted to overcome these barriers by analyzing how new information or skills brought implicitly held teachers' beliefs to an observable manner.

Inservice beliefs and technology. One focus of research concentrated on teachers' behaviors as they integrated new technology into the classroom. Technology has been found to provide a rich research base as it places the teacher in a position of negotiation.

Hannafin and Land (1997) claimed using technology created more opportunities for student-centered instruction. Palak and Walls (2009) tested this relationship and found beliefs, not technology, dominated the interaction. Another study (CDW-G, 2006, as

cited in Ertmer & Ottenbreit-Leftwich, 2010, p. 256) found that even though most teachers accessed technology regularly, most incorporated technology in teacher-focused tasks. In fact, 88% of teachers surveyed cited they used technology for administrative tasks only, such as grading and taking attendance.

Other studies found that teachers incorporated technology to support traditional, teacher-directed instruction such as "using PowerPoint to present a lesson, searching the Web for information resources, or that focused on the development of students' technical skill…such as drill and practice software" (Ertmer & Ottenbreit-Leftwich, 2010, pp. 256-257). Fisher (2006) cautioned against ignoring the interaction of teacher beliefs and technology. He viewed beliefs as the agent of change rather than technology.

Some researchers did find examples of technology creating change. In a study investigating how eight grade school teachers integrated technology throughout a yearlong training, Mouza (2006) found two types of learning occurred. The first type of learning--additive learning--occurred when teachers integrated the new technology with previous knowledge and experienced little transformation of their beliefs. For example, two teachers incorporated the computers for ordinary instructional tasks, such as word processing and Internet research, and exhibited little change in the core of their practice. Other teachers experienced transformative learning by restructuring their beliefs about technology and teaching because of their experiences with the technology.

In summary, the dynamic of teachers' integration of technology provided insight between teachers' beliefs and behaviors. In most studies, the teachers filtered the technology through their beliefs. The negotiation with the technology provided a forum

to observe beliefs of the individuals.

Inservice teachers and professional development. Cochran-Smith and Lytle (1993) argued "the main objective of a professional teacher should be to constantly learn from teaching" (pp. 48-49). Often, formal learning occurred with professional development as structured learning is presented to the teachers. Desimone (2011) defined professional development as informal or formal training focused on improving teacher effectiveness and increasing student learning.

Some studies found professional development interacted with teacher's beliefs. In a 10-year longitudinal study of the Apple Classrooms of Tomorrow (ACOT) program, teachers reflected and changed their beliefs through observation of students' interaction with the technology. In Caudle and Moran's (2010) study, a transactional relationship emerged between teachers' beliefs and experiences, including professional development.

Some professional development interacted with teachers and behaviors differently. Swan's (2007) study of mathematics teachers discovered different results from teachers. After the training, only one-half of the teachers, exhibited change in their beliefs. "The more extreme transmission (teacher-centered) teachers appeared to believe that students were incapable of learning other than by imitation" (p. 226). In contrast, student-centered teachers found their beliefs reinforced and felt empowered to employ other student-centered strategies. The teachers' beliefs interacted with the professional development, producing different results.

Understanding teachers' beliefs within the context of professional development presented difficulties. Few studies focused on long-term implications of the teachers'

behaviors. Mouza (2006) described the key objective of professional development as altering “professional knowledge and classroom practice in order to produce higher student achievement” (p. 406) and yet, most evaluations have focused on initial reactions of the workshop rather than long-term effects.

Richardson (1996) stated, “The beliefs that practicing teachers hold about subject matter, learning, and teaching [will] influence the way they approach staff development, what they learn from it, and how they change” (p. 105). Guskey (2003) stated current research did not investigate in-depth the participants utilization of the professional development. He stated beliefs interacted with reforms and should be studied.

Implications for Further Research

Literature surrounding teachers’ beliefs and behaviors cited several findings. First, beliefs about teaching form early as individuals engage in the schooling process. Personal experiences as a student, training, and daily experiences interact with individual beliefs. Beliefs are multidimensional and transactional. They often occur without an individual’s concrete awareness. Lastly, beliefs are used to evaluate the various situations presented to teachers.

Several areas require further research. First, the construct of beliefs emerged as messy and portrayed beliefs as broad and static. These constructs provided little insight into the relationship between beliefs and behaviors. Green (1971) provided a framework to analyze by portraying beliefs as dynamic, multidimensional, and interactive.

Traditional methodologies, measuring beliefs with surveys and observations,

provided little explanatory power. Speer's (2008) "collection of beliefs" provided a novel way to measure beliefs. By allowing small-grained behaviors to inform beliefs, connections and understanding emerged. Situational methodologies provided new methods to investigate the nature of beliefs and their interaction with behaviors.

Research on preservice teachers transition from student to teacher provided situations to measure beliefs as preservice teachers negotiated from the role of student to teacher. Inservice teachers' beliefs appeared more influential than preservice teachers' beliefs on behaviors, as inservice teacher's beliefs became more engrained and influential with experience. However, inservice teachers beliefs became more difficult to measure as their beliefs became more implicit and automatic. Some researchers attempted to use novel situations to make implicit beliefs more observable. These novel situations, in particular technology and professional development, found teachers negotiating within his or her beliefs. Analysis of the teacher's negotiation provided a forum to measure and study beliefs.

By building on these findings, I utilized novel situations from reforms to measure how an inservice teacher's beliefs interacted with her behaviors.

Theoretical Framework

Since I designed this study inductively, no testing occurred of a theory or hypothesis. To gain perspective and direction, I utilized a theoretical framework to provide coherence and direction into my inquiries on beliefs. I utilized the epistemological lens of constructivism to give insight into the nature of beliefs. I

employed the constructs of Speer's (2005, 2008) "collection of beliefs" and Green's (1971) framework to analyze beliefs and behaviors.

My use of constructivism focused on belief formation and evolution. Constructivism argues experiences create and influence beliefs. Through this lens, beliefs developed before an individual joined the profession because of their experiences through the schooling process. The constructing of beliefs about teaching emerged as the individual socialized through the educational system. These beliefs formed through episodic, emotional experiences. Later, these beliefs interacted with preservice training and reform movements imposed on the teacher.

Traditional constructs of beliefs provided little explanatory power behind beliefs and behaviors. The lack of explanatory power led to little in-depth understanding (Pajares, 1992; Palak & Walls, 2009; Speer, 2005, 2008; Thompson, 1992). Traditional constructs of beliefs conflicted with the theoretical foundation of constructivism. By viewing beliefs through the lens of constructivism, beliefs emerged as multidimensional and interactive.

> In this worldview, individuals seek understanding of the world in which they live and work. They develop subjective meanings of their experiences…. These meanings are varied and multiple, leading the researchers to look for the complexity of views.... Often these subjective meanings are negotiated socially and historically. In other words, they are not simply imprinted on individuals but are formed through interaction with others and through historical and cultural norms that operate in individuals' lives. (Cresswell, 2007, pp. 20-21)

I utilized constructivism as my theoretical foundation into how I viewed beliefs. I viewed the formation of beliefs as occurring through experiences and as exhibiting highly emotional, context-sensitive, dynamic, and judgmental characteristics.

With constructivism as the foundation, I utilized other theories and constructs that aligned with each other. Speer (2008) developed a methodology that measured beliefs from inferences made from moment-to-moment practices. Grounding beliefs in grain-sized teaching practices provided in-depth examination of beliefs' multidimensional and interactive nature. The behaviors became the vehicle for measuring beliefs. Consistent and inconsistent behavior gave insight into the nature of beliefs, as the behaviors illustrated the beliefs.

Green (1971) provided a framework to analyze the specific nature of beliefs. He categorized beliefs into three specific dimensions. The first focused on the quasi-logical structure of beliefs as premises and conclusions. The second analyzed the psychological strength, with stronger beliefs emerging as core and containing greater influence. Finally, analysis of beliefs focused on how beliefs cluster (interact and support each other) and segregate (act in isolation of each other).

I framed my belief analysis within these three dimensions. I viewed beliefs as multidimensional and analyzed the logic and reason for the beliefs. I assumed multiple beliefs influenced behaviors with some exhibiting greater influences. Finally, I analyzed how multiple beliefs interacted with each other.

CHAPTER III

METHODOLOGY

Problem Statement

Teaching is a unique profession where even those outside the profession develop beliefs about teaching (Caudle & Moran, 2012; Lortie, 1975). These beliefs affect how individuals interact with educational ideas and settings. For those who become teachers, they enter the profession as "insiders" with pre-established beliefs. These beliefs filter knowledge and experiences encountered in both preservice and inservice training (Pajares, 1992; Speer, 2005; Thompson, 1992).

Researchers have cited many definitions of beliefs. Pajares' (1992) described beliefs as internal constructs utilized to understand experiences and guide specific teaching practices. He stated the construct of beliefs lacked a single definition and created confusion as belief constructs often intertwined with knowledge. Beliefs proved difficult to define and understand in depth.

As noted in the literature review, connections exist between beliefs and behaviors (Pajares, 1992; Palak & Walls, 2009; Speer, 2008). Yet, conflicting research has led to little explanatory power between beliefs and behaviors. Thompson (1992) and Pajares criticized constructs and methodologies used previously and argued for a more rigorous analysis of beliefs. Even after Pajares (1992) and Thompson's (1992) "call to arms" almost 20 years ago, most researchers still investigated beliefs with traditional constructs and methodologies (Palak & Walls, 2009; Speer, 2005, 2008). As a consequence, no clear

connections appeared between beliefs and behaviors, or explanatory power of connected and disparate beliefs.

I attempted to address gaps of knowledge found in previous research. By implementing Speer's (2005, 2008) construct of "collection of beliefs," I measured beliefs through small, grain-sized behaviors. Utilizing qualitative methods, I grounded beliefs in actual behaviors. Consequently, insight emerged into beliefs and how they interacted with behaviors. I studied an inservice teacher, Carol, and her rich set of beliefs. To observe implicit beliefs, I observed Carol as she participated in new situations and negotiated through her beliefs.

I desired to investigate the nature of beliefs and how they interacted with teachers' behaviors. The following research questions guided this investigation.

1. What insight can be gained on the nature of beliefs through analysis of consistent and inconsistent behaviors?

2. How do teacher's beliefs interact with behavior?

Study Design

To answer these research questions, I selected a qualitative study. By definition, "Qualitative research is a situated activity that locates the observer in the world. Qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 2000, p. 3). I focused on Carol's interpretation of experiences, her world constructions, and meaning she attributed to experiences (Merriam, 2009). I concentrated

on gaining understanding of her beliefs and how they interacted with each other by situating the data and myself in the natural setting of the classroom.

I utilized key elements of qualitative research. As previous research lacked explanatory power about beliefs and as investigations into how beliefs affect behavior presented varied results, I chose not to generalize the results to beliefs but instead focused on measuring beliefs and the relationship with behaviors of a single individual. I hoped to gain insight into beliefs rather than generalize findings to the general population. The first research question sought insight into the nature of beliefs through analysis of consistent and inconsistent behaviors. In particular, I viewed beliefs through dynamic, multidimensional constructs grounded in situations and contexts of the classroom. After investigating the first question, I analyzed the connections between beliefs and behaviors.

Regarding data collection, I acted as the primary instrument. This provided additional awareness throughout the process of data collection. By placing myself in the classroom, I expanded understanding by analyzing Carol's verbal and nonverbal behaviors. I clarified and summarized, but more importantly, explored unusual and unanticipated responses. While my methodology presented opportunities for my biases to influence the data, I implemented several safeguards to protect the validity of the study, discussed later in this chapter.

Previous qualitative studies involved inductive processes. I utilized inductive process in my research questions because previous understanding between beliefs and behaviors proved murky at best. Inductive processes allowed me to gather data, build concepts and hypothesis, theorize from observations, and utilize theoretical frameworks

to gain understanding. In particular, I utilized grounded theory (Glaser & Strauss, 1967). The core idea in grounded theory is that the theory is explicitly emergent. I did not begin with predetermined categorizations and use them to code data; the categories emerged and evolved from the data.

In my study, I utilized both interview and observation transcripts. The coding of the data occurred in a cyclic, repetitive manner. In the beginning, I examined the data to identify and classify initial beliefs. As collection of data occurred, I coded and compared the new data with the previously established beliefs. As I coded more data, certain beliefs appeared to be more frequent than others. This led to revision of the beliefs. The aim was to locate data that had the potential to confirm, elaborate, and refine the limits and scope of the beliefs. This created an accurate framework in analyzing the relationship between beliefs and behaviors.

Finally, I utilized qualitative research's defining characteristic of rich-description data. By focusing on words and pictures rather than numbers, I achieved a detailed look at the nature of beliefs and the relationship between beliefs and behaviors.

Sample Selection

I utilized purposeful sampling because I did not need "to answer questions like 'how much' and 'how often' but instead solve qualitative problems such as discovering what occurs, the implications of what occurs, and the relationships linking occurrences" (Merriam, 2009, p. 77). I selected a single sample. A single sample allowed me to investigate my research questions in-depth and provide rich descriptions of the

phenomenon. By utilizing a singular sample, I focused interviews and observations on multiple situations, and held the participant constant.

I employed several criteria to select a sample that provided rich content and description. First, I selected a typical sample that was not "in any major way atypical, extreme, deviant, or intensely unusual" (Merriam, 2009, p. 78). I felt a typical sample presented the ability to observe more general findings. The school selected held "average" statistics in relationship to student body size, social economics, and curriculum focus. Specifically, the school was located in a suburb of a western state, and held a student population around 1,000 with 28% on free and reduced lunch.

After choosing the school, I selected someone with experience of teaching, defined as an inservice teacher. (At the school selected, a teacher remained provisional until year three and afterwards became inservice.) An inservice teacher allowed for the observation of established beliefs enacted in everyday behaviors and practices. Kagan (1992) cited that for inservice, experienced teachers most "knowledge could be regarded more accurately as belief." Researchers (Palak & Walls, 2009; Speer, 2005) have found that experienced teachers' beliefs affected the incorporation of reforms. These beliefs influenced perception, judgment, and behavior. Therefore, I wanted to observe highly influential beliefs.

A weakness of using an inservice teacher emerged in the ability to measure beliefs. Often, beliefs influenced behavior without the awareness of the individual. Therefore, I utilized one final criterion for this study: the teacher must negotiate through a reform. The reforms created novel settings that required navigation within new context

or terrain. These reforms provided a platform for greater awareness of beliefs.

Before marriage and children, Carol attended a local university and majored in history and government with the desire to become a lawyer. After graduation, she married, worked, and saved for law school. Over time, she focused instead on raising her children. She worked part-time as a teacher assistant at several different schools. One summer, she worked with a PE teacher and questioned his ability to teach. This became a pinnacle moment as she thought, “I could be a better teacher than that.” She went back to school, received a master’s degree in education and her teaching license. For five years, she worked at a high school as a history teacher and cheerleading coach. One and a half years ago she transferred to her current school.

In her first year at the new school, Carol taught the social studies curriculum of regular ninth-grade geography and regular eighth-grade U.S. history. (At her school, students registered for either regular social studies classes or they self-selected an honors track.) Administration allowed individual teachers to design the curriculum variation between the regular and honor classes.

This year many reforms (outside influences demanding change) occurred. First, the administration assigned Carol to teach honors U.S. history. The administration desired the honors classes to engage students in an accelerated, deeper learning. They changed teachers for this course as they felt the previous teacher did not adapt the curriculum adequately. They requested Carol follow their guidelines for a rigorous curriculum. In addition, the school implemented a modified one-to-one netbook program where all core classes contained classroom sets of netbooks. In both of these reforms, the

mandated change came from outside forces, the administration, and Carol attempted to negotiate her beliefs through these reforms.

Overall, she experienced less stress with the change in curriculum. “I felt that honors wasn’t as dramatic of a change as the netbooks. I came from the high school, so I felt more prepared.” She stated teaching honors varied drastically from her previous school. She felt her negotiation focused more on meeting the needs of the students in a new school culture and community.

Netbooks presented greater difficulty in her negotiation. She viewed the netbooks positively but “because I’m older, I don’t come from the technology generation. One night I was trying to get Latin America music and literally spent two to three hours trying to get it to do what I wanted to do.” She felt many barriers (lack of expertise, internet connectivity issues, etc.) existed in implementing the netbooks. As she viewed the netbooks as a more dramatic change, she often felt moments of disequilibrium where she negotiated the experiences through her beliefs.

Data Collection

In this study, I gathered and analyzed the following types of data.

- Classroom videotapes
- Transcripts of selected video clips from observations
- Transcripts of audiotaped interviews where video clips are discussed and analyzed
- Observation field notes from all class observations

- Analysis notes of developing beliefs and behaviors classifications

Data collection occurred by observing Carol in a variety of situations over the course of five weeks. Classroom observations transpired where she engaged in familiar curriculum (geography), new curriculum (honors U.S. History), and the netbooks. The variety of situations created a mechanism to observe Carol's negotiation and observe potentially implicit beliefs. By analyzing consistent and inconsistent behaviors, understanding emerged on the nature of beliefs and their interaction with behaviors. I utilized qualitative methods to collect data, primarily field-study observations and semistructured interviews. After data collection occurred, Carol and I worked together to create a shared understanding of the findings. Further details of my data collection are discussed below.

Establishing Initial Framework for Beliefs

Traditional methodologies focused on establishing beliefs and then measuring behaviors. In contrast, Speer (2005, 2008) reversed the order and focused data collection on behaviors and used the behaviors to inform beliefs. I incorporated Speer's (2005, 2008) construct and aspects of her methodology, but needed some order and structure in the initial data collection. During the initial interview, Carol and I discussed a range of general topics of education: student learning, instruction, school environment, and the two reforms (netbooks and honors curriculum).

I recorded and transcribed the initial interview. Table 3 showed the questions discussed in the initial interview. Some additional questions occurred as I gathered further explanation or examples.

Table 3

Interview Questions

Information gathered	Question
Student learning	• What do you believe is necessary for a student to learn? • How do you create instructional activities to help promote student learning? • What are some universal tools students can use in all classes in order learn? • Are there any situations or elements that can prevent a student from learning no matter the effectiveness of the instruction?
Instruction	• What forms of instruction do you believe are the most effective form in the classroom? • What forms of instruction do you find least effective in the classroom? • Think back on your last two lessons, what types of instruction did you implement in your classroom? Why did you select them? • Do you believe your content has unique instruction that is more effective? Why/Why not?
School environment	• What do you believe is the purpose of school? • Do you believe the environment at your school is effective for learning? Why or why not? • What is the role of administration? • What do you think about the changes that are occurring in the school?
Reform (one-to-one netbooks and honors curriculum)	• Do you belief this reform is an effective reform? Why or why not? • Does this reform support greater student learning? • Do you feel that you have been given enough support and training for the implementation of this reform? • Do you believe this reform supports the school goals? • Do you belief this reform supports your goals for the classroom? • How do you think this reform should be applied in the classroom?

After transcribing the interview, I categorized statements from the interview into basic beliefs about teaching and learning. Ideas and phrases that Carol mentioned across several topics of discussion became the beginning framework for her beliefs. For example, when asked the question “How do you create instructional activities to help promote student learning?” Carol discussed reading strategies and the use of historical documents. When asked, “How do you think the reform should be applied in the classroom?” she discussed how students could access historical documents online. Both her answers supported the belief *readings help students learn*. This became an

overarching belief incorporated into the initial framework. Afterwards, I took these phrases back to Carol and we refined the belief framework to guide the data collection before observations occurred.

These initial beliefs (see Figure 1) guided the data collection only in the realm of providing general trends for the first observations. “While such descriptions might be very helpful in conveying general trends of teachers’ views, such classifications are not very descriptive of particular beliefs” (Speer, 2008, p. 223).

Procedures for Video Recordings

After the initial interview, Carol and I determined what classes would be videotaped. We established the first four lessons to be observed. Three of the lessons were regular geography and one lesson for U.S. history. The class period remained the same for each subject throughout the observations. I observed Carol’s fourth-period regular geography and sixth-period honors U.S. history. These first four lessons occurred mid-year, 2 weeks into the second semester. They transpired within a 2-week time period. After the fourth lesson, we scheduled the final four lessons. Two regular geography and

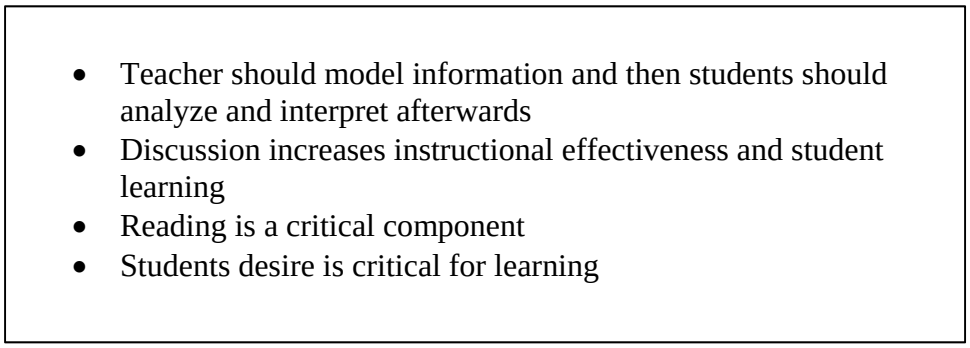

Figure 1. Initial beliefs established in initial interview.

two U.S. history classes were observed with the same class periods (fourth and sixth period). These lessons began 5 weeks into the second semester and occurred over a 3-week period.

Each recording lasted the full class period, 50 minutes each. During the eight recordings, I set up a camera in the back of the classroom. In most video clips, the students worked at their desks. Whenever possible, I positioned the camera so Carol and all students remained visible. The camera remained on Carol throughout the class. She wore an audio-enhanced microphone that captured her voice.

I sat in the back of the room, listened to the lesson, and took notes. The notes contained a running log of events (instructional techniques employed, behaviors exhibited by Carol) and my personal comments on the observations (how she interacted with students, how students responded to the activity). I used these notes to write my observation summaries. At the conclusion of class, I asked questions for clarification on behaviors found during that lesson. I wrote these notes underneath the observations. Table 4 shows the different classes observed.

Data Collection From Observation

Data collection of observations followed an interpretive framework outlined by Frederiksen and colleagues (1998). The first structured interview created a lens of teacher-identified beliefs to guide the observations (as discussed previously). Then, classroom observations focused on behaviors of noteworthy episodes of teaching. I defined noteworthy episodes as behaviors either consistent with beliefs established in the framework or behaviors that appeared inconsistent with beliefs.

Table 4

Description of Lessons in Observations

Class	Topic	Items of note	Date
First set of lessons			
Geography	Balkanization		Week 1, 50 Minutes
U.S. History & Geography	Martin Luther King "I Have a Dream"	This is the only lesson similar between the two curriculums and allowed observations directly between each other	Week 2, 50 Minutes (each)
Geography	Communism and Capitalism		Week 2, 50 Minutes
Second set of lessons			
U.S. History	Electoral College		Week 1, 50 Minutes
U.S. History	George Washington's Presidency	Netbooks used in this lesson	Week 2, 50 Minutes
Geography	Aral Sea		Week 2, 50 Minutes
Geography	Trans-Siberian Railroad	Netbooks used in this lesson	Week 3, 50 Minutes

I identified these noteworthy episodes through my observation notes and during analysis of video recordings after the observation. The episodes influenced and created an evolving framework of Carol's beliefs. Episodes of consistent behaviors reinforced beliefs established in the framework. For example, Carol incorporated many discussions into her lessons. This reinforced her initial belief that *discussion increases learning*. Episodes of inconsistent behaviors led to reevaluation of belief framework. For example, Carol stated students needed to analyze and interpret information in order to learn. However, she often exhibited teacher-led explanations with little time given for

interpretation. This behavior did not reinforce the belief of interpretation but instead aligned with the belief students learned from teacher-led explanations. This created a revision of her belief framework to include the belief *teacher-led explanations increase understanding*.

I reviewed the videotape after the recording as soon as possible. I constructed a list of episodes that demonstrated consistency and inconsistency within the belief framework (further details how I selected episodes is discussed below). The episodes ranged from 30 seconds to 4 minutes in length. I utilized small clips to concentrate the conversation on a particular behavior. It limited the emergence of outside factors that appeared in longer clips. I narrowed down my list of episodes to approximately half a dozen (the number reasonably able to discuss during one interview session).

I hypothesized that interviewing with episodes of consistent and inconsistent behaviors would clarify her beliefs. I categorized episodes into two categories. The first category showed consistent behaviors across a variety of situations. The second category contradicted previous behaviors or outlined beliefs. These proved powerful as the behaviors often exhibited a belief not identified or known by the participant (see Figure 2).

Consistent examples. In early interviews, I utilized one guiding principle for selecting consistent episodes: I chose behaviors that seemed consistent with either stated beliefs or other behaviors. For example, early on in the observations Carol directed students' notes. This appeared in both geography and U.S. History. So, I selected an episode from each class to show during the interview. The consistent behaviors illustrated

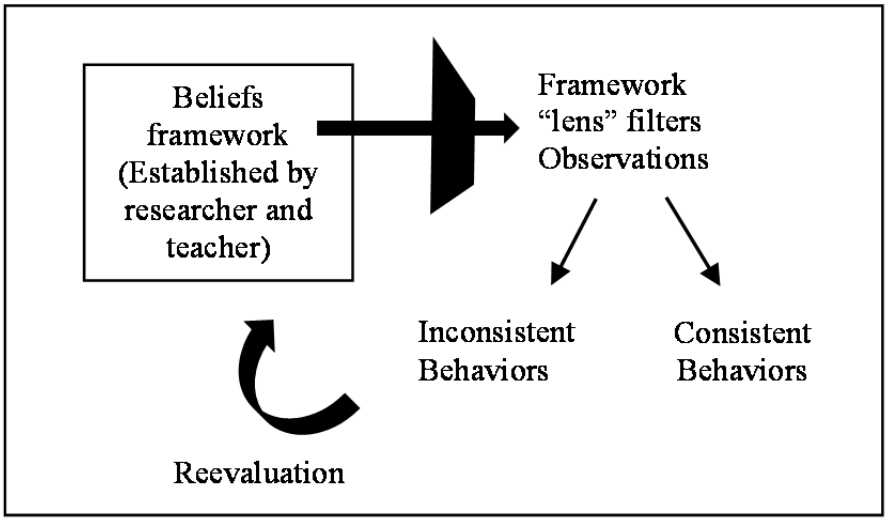

Figure 2. Shared interpretive framework.

the dominance and influence of a particular belief on this behavior.

Inconsistent examples. As I conducted interviews and observed classes, Carol's practices and beliefs became more familiar to me. So, I looked for episodes that demonstrated inconsistent behaviors. When I came across an episode that seemed an "outlier," it indicated an aspect of the belief or practice unfamiliar to me.

These clips allowed discussion on a behavior found in the particular situation, leading to understanding its influence by beliefs.

Conducting Subsequent Interviews

Using identified noteworthy instructional episodes (i.e., those episodes that demonstrated consistent or inconsistent behavior from the teacher) as a shared interpretive framework, I engaged Carol in a discussion about each episode "for perceiving and communicating about teaching" (Fredericksen et al., 1998, p. 230). These

interviews focused on episodes of behavior from Carol's class, selected prior to the interview (using guidelines discussed previously). In order to help develop the evolving framework, we met after two or three lessons to discuss the consistent and inconsistent behavior (see Table 5). Each interview lasted approximately 1 hour.

When necessary, I discussed past interviews and episodes to clarify or elaborate on some instance of behavior or belief. I kept an informal log of the beliefs that emerged in the interviews. I allowed beliefs to surface in the conversations, but I ensured discussion included all beliefs found in the framework.

Prior to each interview, I selected video clips for discussion according to the criteria for consistent and inconsistent behaviors. The interviews rarely followed a prescribed script. Instead, they occurred opportunistically and allowed flexibility to pursue issues raised in the teaching episodes. I recorded and transcribed these interviews. I desired an unfiltered perspective to help me understand events in the episode. So after I played a video clip, Carol narrated the interaction. After she narrated, I asked

Table 5

Subsequent Interviews Grounded in Observation Data

Lessons discussed	Date of interview
• Geography's Balkanization • U.S. History and Geography's Martin Luther King's "I Have a Dream"	Week 2
• Geography' Communism and Capitalism • U.S. History's Electoral College	Week 4
• U.S. History's George Washington's Presidency • Geography's Aral Sea • Geography's Trans-Siberian Railroad	Week 6

additional questions to probe and clarify her behavior. I followed subsequent questioning on understanding the reasons for her choices and connecting her responses to her instructional decisions.

The general layout for discussions of each behavior clip addressed the following questions, among others.

- What factors affected the goal of the activity (goal)?
- What happened in this episode (from her perspective)?
- What affected your behavior?

In addition, I asked if the class observed was typical and if not, how and why it was different. The conversations varied tremendously. In some interviews, we discussed specific things that occurred in the video recordings. In others, we talked about broader things related to the course of teaching. Sometimes I posed other questions and conversations that strayed from the particular episodes to more general issues of teaching and learning. This occurred when I noticed an area of beliefs had yet to surface in the conversations. I asked more direct questions to get at that information.

After each interview, I reevaluated the transcription. I categorized discussions of beliefs into the different categories established in the framework. Then, I analyzed if the discussion supported predetermined beliefs or if new beliefs emerged in the data. For example, in the initial framework, Carol described her belief *discussions helped students learn*. However, throughout the first set of observations, Carol utilized different strategies of discussion in her history class as compared to her geography class. As we watched video clips of the differences in discussion methods, Carol explained she believed that

history curriculum created more natural discussions than geography. In this case, a new belief emerged through discussion of the video clip. In subsequent observations, Carol demonstrated consistent behaviors with this new belief. Therefore, the belief *history naturally lends towards discussion* was added to the framework.

Strength of Grounding Beliefs in Behaviors

Utilizing instructional episodes offered several strengths in investigating Carol's beliefs. It created data about beliefs, practices, and connections grounded in specific examples. This allowed for the (a) emergence of beliefs not previously articulated or recognized by Carol, (b) recognition of the specific ways beliefs manifested themselves in the decision-making process, and (c) greater understanding of the interaction between one belief and another. The instructional episodes assisted in building shared understanding and discourse between Carol and me. Viewing clips of consistent and inconsistent behavior facilitated shared understanding. In particular, the inconsistent clips elicited discussion on beliefs held more implicitly by Carol. This proved critical as critiques of traditional methodologies criticized the lack of shared understanding between researchers and subjects (Pajares, 1992; Thompson, 1992).

At the conclusion of a set of observations, Carol and I utilized the video clips of both consistent and inconsistent behavior to reevaluate previously outlined beliefs. The reevaluation of the outlined framework allowed further beliefs to emerge and relate it back to her behavior. The revised, outlined set of beliefs became the new point of reference in the next subsequent classroom observations.

Transcription and Coding of Data

I transcribed all the interviews and also the episodes of noteworthy behaviors. I followed a set of basic transcription conventions (Ochs, 1979). Occasionally, I edited a few excerpts for clarity. Repeated words or phrases were sometimes deleted. These omissions were indicted with ellipses (…). Additional information included to clarify were bracketed [ ].

Upon completion of the observations and interviews, I reevaluated the evolving framework with all of the data. The first belief framework began after the initial interview with the establishment of four key beliefs. Throughout the data collection, Carol and I reviewed these beliefs and used "constant comparison" (Glaser & Strauss, 1967) with the data presented from the observations and video recordings. During the interviews, Carol and I discovered that the initial framework did not accurately represent all beliefs. So, we modified the belief framework to revise previously stated beliefs and add new beliefs that emerged through the data.

After the final interview and revision of the belief framework, I reviewed all interview and observation transcripts and coded that data into beliefs they supported or illustrated. Any sections that could not be easily classified, I took back to Carol and together we determined what belief the data supported. This process allowed me to check the validity of the beliefs and to demonstrate a relationship between beliefs and behaviors. I utilized this process of coding and refined the codes as I worked through the transcripts and saturated the beliefs with supporting data.

Throughout this process, I kept track of the origin of the data with a reference

back to the transcript, page, and line numbers. For example, a data source found in third interview, on page 3 of the transcript, in lines 4-10 was indicated as 3.3.4-10.

Data Analysis

Three general units of data analysis occurred: beliefs, practices, and connections between beliefs and practices

Analysis of Beliefs

In my analysis of beliefs, I focused on data from the interviews. I used the data to create a top-level description of Carol's beliefs as well as more substantially, detailed belief "profiles." The interview data included the first interview, episode interviews, and the final interview, including comparisons across situations. Grounded theory (Glaser & Strauss, 1967) influenced the cyclic analysis of the interview and transcripts. As the name implied, I constantly compared data collected along the way (through interviews and observations). The first set of beliefs, as determined from the first semistructured interview, created a tentative framework. I compared it with subsequent observations and continually revised the framework of beliefs. I compared these beliefs with interview data found in the episode discussions, ensuring the beliefs consistently grounded themselves in behaviors.

In the final semistructured interview, noteworthy episodes, showing both consistent and inconsistent behaviors, guided both Carol and me in creating a shared set of beliefs. This led to final revision of the belief framework and an evaluation of their dominance. After the creation of the final framework, I reevaluated all previous interview

data to inform and give explanatory power to the nature of beliefs by analysis of consistent and inconsistent behaviors.

After reevaluating the interview data with the final framework of beliefs, further analysis of the data occurred at two levels: belief summaries and belief profiles. Top-level analysis created belief summaries while fine-grained analysis of the interview data led to belief profiles.

Belief summaries. Belief summaries provided a short, relatively broad summation of Carol's beliefs. They captured, at a top-level of detail, Carol beliefs about teaching and learning. The level of description in these summaries could be compared to broad constructs commonly found in studies of beliefs where only traditional interview and/or questionnaire based methods transpired (Cohen & Ball, 1990). These broad, coarse, general descriptions introduced readers to basic beliefs of Carol, creating an organization for further analysis.

Belief profiles. Along with belief summaries, I constructed belief profiles to provide background and context for the detailed analysis of classroom episodes. These profiles captured Carol's beliefs of teaching and learning, grounded in the interview data.

I created belief profiles from the analysis of interview transcripts, with comparison from episode transcriptions. In evaluating the representativeness and significance of beliefs, two items occurred. First, I checked variation of beliefs across contexts. If beliefs occurred across multiple contexts, I presumed the belief significant. Second, examination of the interview data focused on Carol's explanation of behaviors found in the video clips.

I designed these rich, detailed belief profiles to give the reader information about Carol's beliefs at a fine-grained level of detail. These descriptions served two purposes. First, they examined and expanded top-level descriptions found in the belief summaries. Second, descriptions contextualized information for subsequent analysis where I presented detailed examinations on the nature of beliefs and the connections between beliefs and behaviors.

Since the belief profile provided context for subsequent analysis of specific teaching episodes, I included only some beliefs in the profile. I selected beliefs based on two criteria: the frequency Carol expressed the belief and variety of contexts in which the beliefs emerged. After selecting the beliefs that appeared the most important (based on the analyses previously described), I arranged them into a hierarchy. To create these hierarchies, I identified the most general belief statements as its own category. Then I selected other beliefs as either logical consequence of the general belief or examples of instantiations of the general beliefs.

I created a pictorial representation of the set of beliefs and used it to help the reader follow the narrative. I based my methods for organizing the beliefs and creating the pictorial representations on the work of Green (1971) and Speer's (2005, 2008) "collection of beliefs." Analysis of beliefs followed the structure of Green's framework of beliefs into hierarchies based on psychological strength of the beliefs. If certain beliefs appeared dominant across the situations, I assumed the existence of dominant, or core, beliefs as compared to less consistent, peripheral, beliefs.

The clustering of beliefs followed Speer's "collection of beliefs" where beliefs

occurred as multidimensional and interdependent. These beliefs included several subsequent beliefs that occur simultaneous and interactive (see Figure 3). For example, Carol believed discussions helped students learn but she held other beliefs about discussion that influenced how she enacted this belief in her classroom. She believed honors students came to class better prepared for discussion and this affected her use of discussion in her honors class as compared to her regular geography class.

Analysis of Behaviors

Data found in the interviews informed the creation of belief summaries and belief profiles. Analysis of behaviors focused on data grounded in moment-to-moment

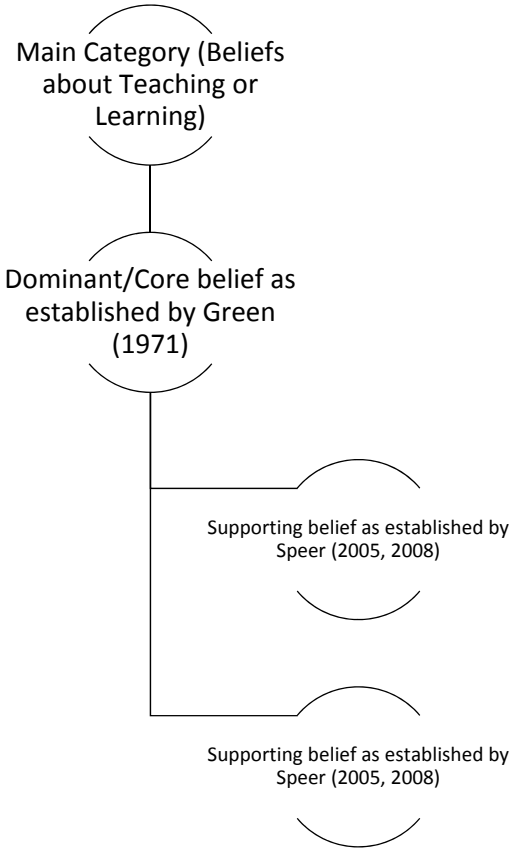

Figure 3. Pictorial structure of beliefs.

observations. The analysis of behaviors focused only on instructional behaviors. I chose to narrow the scope only on instructional behaviors because I desired to analyze the multidimensional nature of beliefs interacting with only one type of behavior. In essence, I held one element constant (instructional strategies) and viewed it in relationship with the dynamic variable of beliefs. Similar to beliefs, I analyzed the instructional behaviors in broad categories, termed behavior summaries. I then created more detailed themes of behavior constructed from consistent behaviors.

Behavior summaries. Behavior summaries portrayed Carol's practices in top-level detail. These descriptions served two purposes. First, they provided an introduction to Carol's teaching. This served as background to the subsequent, detailed discussion of teaching practices. Second, I used these descriptions as part of the argument that top-level characterizations of behaviors lacked the ability to fully capture the phenomenon. My descriptions began with the first observation. Over the course of the subsequent observations and evaluations, I constantly compared additional behaviors and added these behaviors into a broad categorization of beliefs.

I attempted to convey basic characteristics the reader would notice if they visited Carol's classroom. I presented the information in a manner similar to other traditional studies of beliefs and practices. I characterized broad descriptions of the teaching style of Carol, interaction between Carol and the students, and daily classroom routine.

Consistent themes of behaviors. Analysis of beliefs occurred at the grain-sized level with behaviors grounded in moment-to-moment interactions. I categorized instructional behaviors based on similarity and then analyzed the variety of methods and

contexts. This led to the formation of themes found across a variety of situations. For example, in multiple situations, Carol utilized lecture to teach new concepts to students. Throughout the lectures, she employed different ways to help explain knowledge. From her use of lectures, I created a theme of behavior.

Relationship Between Beliefs and Behaviors

I analyzed both beliefs and behaviors into broad, general summaries and then analyzed further into fine-grained analysis of the profiles. Beliefs' fine grained analysis focused on collections of beliefs whereas behaviors' fine-grained analysis analyzed moment-to-moment behaviors of instructional practice. The clustering of beliefs led to analysis of instructional practices in a larger realm where different beliefs intersected in the behaviors. In analyzing the intersection of beliefs and behaviors, I categorized behaviors into two categories: consistent and inconsistent. Consistent behaviors occurred in multiple situations. I compared these behaviors with Carol's beliefs. Inconsistent behaviors occurred less frequently but I also compared inconsistent behaviors with Carol's beliefs (see Figure 4).

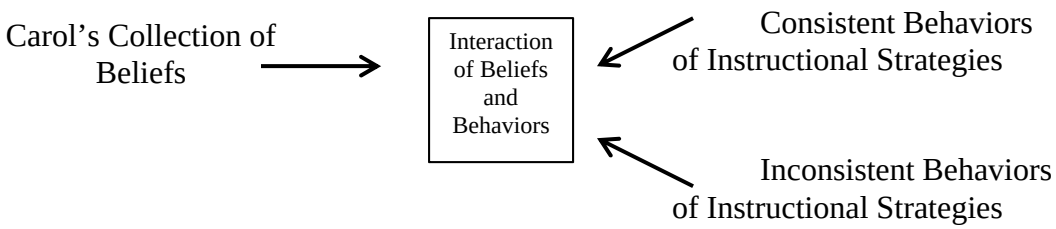

Figure 4. Analysis of beliefs and behaviors.

My Positionality

I am, as a researcher, a product of my life experiences that shaped my own world-view. My life experiences shaped not only myself but my research as well. What I believed about research cannot be separated from who I am (Harding, 1987). I identified my biases for two main reasons: first, to help the reader understand the environment and dynamics of where my research emerged; second, to demonstrate how I attempted to minimize the impact of my positionality on the data analysis to limit the corruption of the findings.

I am white, female, and have been teaching social studies for 10 years. During this time, I taught in a variety of situations, schools, and curriculums. I developed my own set of beliefs towards teaching. In particular, I value both teacher-focused strategies and student-focused strategies. In my classroom, I typically employ both strategies. I often predetermine content and knowledge for students to learn and then engage them in teacher-focused lectures. In addition, I create student-focused activities allowing students to engage and question the material on their level. In regards to technology, I utilize strategies of blended instruction where students utilize both my classroom and technology to learn.

Prior to this research, Carol and I existed as professional colleagues at the same school. As Carol and I taught different curriculums, our relationship only occurred as colleagues within the same department. Neither of us supervised or evaluated each other in any formal manner. When I approached Carol about my study, she agreed readily but expressed concerns on potential evaluation of her effectiveness and ability. I presented

her with the purpose of the study and methodology. She agreed to the study.

A preestablished relationship presented both strengths and weaknesses. Because we taught at the same school, I held additional insight into the dynamic of the school and the reforms. When analyzing videos, this shared understanding of the environment provided additional insight into the observations. Because a previous relationship existed, Carol readily shared positive and negative dynamics.

Becoming the researcher and Carol, the subject, provided some initial friction in the beginning, particularly because Carol feared evaluation on her teaching methods. To combat this, I ensured that my comments focused only on the "what" and "why" of her beliefs and behaviors. During the video analysis, I asked Carol to describe what she saw in the clip before any discussion occurred about my own observations. This ensured Carol's perspective emerged with priority over my own viewpoint. I utilized other methodological "checks" to ensure the data best represented the events. These are discussed more fully in the following section.

Validity

I focused on ensuring the research findings matched Carol's reality. In essence, my overarching concern focused on capturing the phenomenon of Carol's beliefs influencing her behavior. In the case of this study, internal validity concentrated on understanding the reality of identification and categorization of beliefs and behaviors. This allowed accurate analysis into the interaction of beliefs and behaviors. In particular, since I utilized constructivism in my epistemological framework, I ensured the

observations and inferences matched Carol's construction of reality. I employed two techniques for this. First, the constant comparison of data analysis allowed for data triangulation. Triangulation occurred by using the multiple sources of data of the numerous interviews and episodes from observations to confirm emerging findings.

Second, I utilized member check throughout the data collection and analysis. Carol actively assisted in creating categories of beliefs and provided insight into their interaction with her behaviors. After each set of observations, I analyzed the data and tentatively created my own findings. Then I took my analysis back to Carol and together we developed a shared understanding of the phenomena.

I focused on ensuring the general resides in the particular. For this to occur, I provided descriptive data to make transferability possible. I employed rich, thick description to provide enough description for the reader to understand the extent in which the data collected matched my analysis. Data collected from interviews and observation included "highly, descriptive, detailed presentation of the setting and in particular, the findings of the study" (Merriam, 2009, p. 227).

Limitation of the Study

This study presented several delimitations and limitations. First, I selected a singular sample, Carol, for her ability to provide rich descriptions, but this limited the findings as well. The investigation of beliefs focused only on Carol. I selected Carol because of her participation in a reform. This occurred to make beliefs more explicit as she negotiated within the two reforms. I focused less on the actual reforms and instead,

utilized reforms as a mechanism to observe potentially implicit beliefs. No analysis occurred into Carol's level of support towards the reforms.

CHAPTER IV

BELIEF RESULTS

In this chapter, I describe Carol's beliefs. First, I provide a top-level description of Carol's beliefs. This follows a similar format found in traditional methodologies. Then, I create profiles of Carol's beliefs with detailed explanations of each belief with subsequent examples. After identification of beliefs held by Carol, I identify the dominant beliefs that emerged throughout the data collection. Utilizing Green's (1971) spatial organization and Speer's (2005, 2008) "collection of beliefs" I identify and analyze the hierarchical clusters surrounding her beliefs on teaching and learning. Finally, I summarize the main findings of Carol's beliefs.

Belief Summary

Carol viewed social studies not only as important facts, concepts, and dates but also as the critical lens to understand the world. She believed teaching should provide students with the ability to apply the knowledge now and in the future. Her views of social studies guided her beliefs about teaching and learning. She viewed herself as the bridge between the content and students' ability. She needed to ensure the accessibility of knowledge. She believed students influenced learning as their desire influenced the final outcome. Without their participation, little learning occurred. Table 6 outlined Carol's two main beliefs.

Table 6

Carol's Belief Summaries

Teaching	Learning
Purpose of teaching is to help the students to not only understand content but to apply the learning to the world around them	Learning occurs when students willingly participate in the process

Belief Profiles

Overarching Belief of Teaching: Purpose of Teaching is to Assist Students in "Understanding"

Throughout multiple discussions on the purpose of schooling, Carol consistently used the word *understanding*. She viewed understanding as students' application of knowledge in various situations they encountered.

> **CS:** It's [social studies] to get an understanding of different concepts. I really think social studies is more an understanding on how to live in the real world.
>
> **JT:** With that understanding and different concepts, what do you see them doing with those concepts in the future?
>
> **CS:** So it's the idea that you can understand someone else's culture or understand why historically someone hated someone else [by understanding concepts in social studies]. Why did someone historically make someone else a slave? Then, maybe you cannot do those things yourself. If you can maybe understand your co-worker, maybe that comes from one of those historical situations, then you can understand that person professionally.

She believed students learned the information when they could apply the content in situations today and in the future.

Carol stressed on applying concepts into their personal lives rather than employing skills of the social studies' discipline.

> **CS**: It's not that they are going to go out and make charts or maps, or even go and see Antarctica. Understanding is more like relating the information to what they know in their life or how it relates to them in the future.

As a teacher, she attempted to help students learn the content and apply their learning to future situations. In this balancing act, Carol described three main beliefs about teaching. First, students required scaffolding of the information. Second, discussions increased understanding by allowing students to apply the information. Finally, connections helped students relate to the content. Each of these beliefs contained other beliefs as well (see Figure 5).

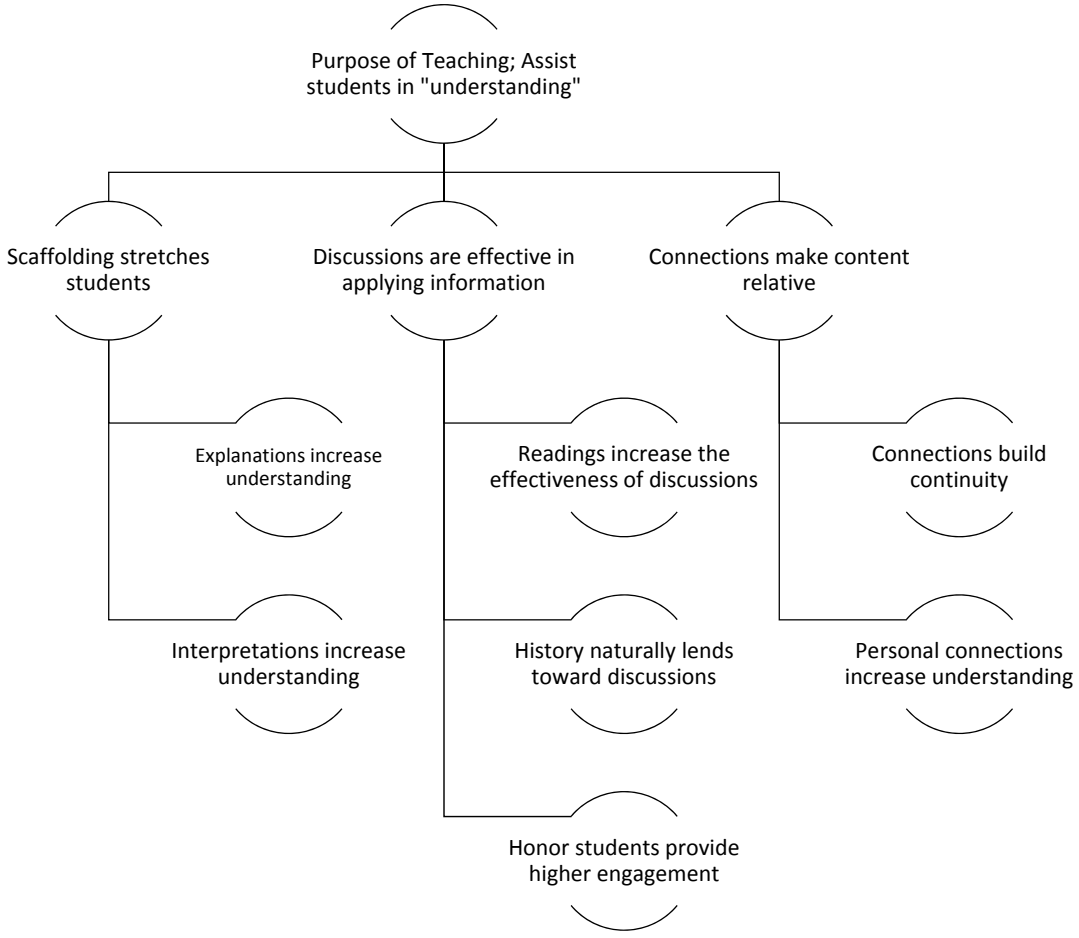

Figure 5. Carol's belief profile on teaching.

Scaffolding stretches students. Carol felt students needed to be challenged but cautioned against making things too difficult. When she developed curriculum, "I try and look at what the students are capable of doing. I try and not make it too hard but not too easy. It needs to be something they can stretch themselves to learn." She tried to scaffold learning to make it accessible. She believed explanations and interpretations increased understanding.

Explanations increase understanding. Carol believed explanations identified and clarified critical information. She employed multiple instructional strategies that explained content. She utilized explanations as she felt students lacked the ability to understand by themselves.

> **JT:** Before showing the video, you discuss in detail the questions they [the students] are to fill out. Why did you choose to go through the questions prior to showing the video?
>
> **CS:** I feel like that they [the students] can't pick it out of the video, unless they know what I am looking for or what the question is looking for. One of the questions had the word "rooted" in it so I wanted to make sure they understood what rooted meant.
>
> **JT:** Do you pick those vocabulary words like "rooted" beforehand or do you pick them out as you are teaching?
>
> **CS**: Mostly beforehand.

Carol often clarified words to scaffold instruction. She identified, explained, and placed words in context to increase learning. She adapted explanations in order to remove barriers. In the following example, she reflected on the previous class and modified her explanations. She rationalized the change as necessary in order to explain the information and ensure students learned.

> **CS:** After that [previous] class, I thought I needed to ***explain*** a little bit better what I am looking for and that would help them. Because the speech was quick, a lot of times they [the students] were trying to write down the sentence and then they missed the whole next thing. So I thought if they knew what they were looking for or heard that word ["rooted"], then it would make things easier for them.

She visualized herself as a bridge between the content and students' ability to access it. She utilized explanations to build the bridge.

In several lessons, she paused and explained content in videos. She believed the explanations clarified and situated the content.

> **CS:** Sometimes I stop the video and make comments just because I think it will help them understand [things] better. Even yesterday I was showing a documentary on a Russian icebreaker and I would pause it and say, "See all the ice chunks in the water?" I just feel like that some might watch the video clips but it won't mean anything to them. But, if I stop it [the video] and point out how thick the ice is then maybe I can get them what I want out of it.

She reinforced her belief in explanations. She stopped the video to make key ideas explicit for the students.

Her belief of explanations affected note taking as well. When students took notes, she directed what students wrote. She felt teacher-led notes increased understanding by focusing on key ideas. In one situation, she directed students in what to write and also what to not write in their notes. She reflected on this behavior through her belief that she needed the students to focus on the critical information.

> **JT:** Why did you detail to students what they should write in their notes?
>
> **CS:** I didn't have them write down "Adam Smith" because I wanted to introduce him [as the father of capitalism] but my kids don't need to know more than that. This isn't a[n] economics class. So we can mention that he was behind the idea of it, but the word "capitalism" is what they need to know.
>
> **JT:** Under capitalism you picked "supply and demand" and "laissez-faire" as

what they needed to know. Why these words?

CS: So the main idea on "laissez-faire" is that the government leaves them [citizens] alone. So I wanted them [the students] to understand that with capitalism you have little government control and for communism you have greater government control. That is why I picked that one [laissez-faire]. And then, I picked 'supply and demand" because that is something they [the students] could relate to.

Carol often explained and reinforced key ideas by selecting the notes for students.

In each of these examples, Carol predetermined information students needed to understand and provided explanations. Her explanations created a bridge for students to access the learning. Her belief *explanations increase understanding* affected how she presented knowledge to the students.

***Interpretations increase understanding*.** In her first interview, Carol stated students needed time to engage and interpret content. At first she described this technique as *modeling* but later clarified it as *interpretation*.

JT: What do you think is the most effective method of teaching in the classroom?

CS: I do feel like it's when you model something and then have them do something right after you model it. For example, we've been doing maps and mapping. We've got the map on the board and I tell them to find Italy. They find it and then they [the students] all color it together [on the worksheet].

JT: Can you think of what modeling would look like, besides mapping?

CS: For example, we had been doing something about the amendments and I had them put a description about each amendment. Then, I had them draw a picture. To show them this, I drew a picture of an example of what I would have put in it [the amendment's picture].

JT: So is modeling a process of when you show it and then they do their own interpretation? Or do they do it exactly the way you do it?

CS: No, their own interpretation.

As she redefined *modeling* into *interpretation*, she explained her perspective of interpretation.

> **CS:** I think, when I say interpret, what I mean [is] having a kid put it in their own words. If I tell them this is what it [the word] means, or this is what you are to get from this chart, then they are taking it [my definition] and they don't absorb it. But when they really look at a pie chart and really see it, then that probably sticks with them better for the rest of their lives.

She believed interpretation helped students internalize the information and create deeper learning. Her belief in *interpretations* lessened as her belief in *explanations* dominated her instructional behaviors.

Discussions are effective in applying information. Early in the interviews, Carol described the useful nature of discussions. She believed discussions augmented weaker strategies. During an interview, Carol described worksheets as an ineffective technique, but then clarified by stating, "I think everything has a place, even worksheets, as long as you do a *discussion* on them." Even though she viewed worksheets as ineffective, she believed discussion counteracted these weaknesses. Despite her belief in discussions' effectiveness, Carol held other beliefs that affected the implementation of discussions in her classes.

Readings increase the effectiveness of discussions. Although Carol believed discussions helped students apply information, she asserted discussions did not naturally occur. Several factors interplayed. Students needed knowledge for discussion and Carol believed readings prepared the students. She utilized readings before discussions as preparation for applying the knowledge in discussions.

> **CS:** Well, for example, in my history class we read a poem. Each group had to do [read] each of the stanzas, and then they discussed the stanzas.

JT: How did they discuss the stanza?

CS: They had to tell what they thought it [the stanza] meant, then we had each of the partners read their part and then we read it all the way through [as a class]. They [the students] had better understanding what the poem meant and was all about.

JT: What do you think gave them [the students] further understanding?

CS I think it was the reading out-loud and then discussing it [the reading].

In this example, Carol believed discussions helped students understand, but she also believed reading out-loud as a critical component for learning. She believed both increased students' understanding. By describing reading before discussion, she outlined the structure for readings and discussions. She explained readings before discussion provided students the necessary knowledge to participate. Without reading, she believed discussions struggled.

JT: Do you think readings are necessary for your discussions or do you think the discussion can exist without it [the reading] sometimes?

CS: I think it [the discussion] needs to go with readings.

JT: Why do you believe discussion and reading go together?

CS: I think you have to read or gain knowledge first before you can discuss it.

JT: So the purpose of reading is to gain knowledge?

CS: Yes.

JT: So do you read for a first exposure?

CS: I would think so

Her structuring of readings before discussion displayed how she believed in the core belief *discussions are effective in applying information* but also held an additional,

supporting belief *readings increased effectiveness of discussion.*

Content and students affect effectiveness of discussion. Other beliefs surrounded and interplayed with discussion. Along with utilizing readings, Carol believed content and students affected discussions. She intertwined her beliefs that *history naturally leads to discussion* and *honor students provide higher engagement* when she incorporated discussions into the curriculum. For example, she taught the same lesson of Martin Luther King's "I Have a Dream" speech to both her history and geography classes. However, she engaged in follow up discussion only with her history class. She believed the discussion applied more to history and honor students made discussions more effective.

> **CS:** Usually, in history, part because it's history and part because it's honors we have more discussions. My geography kids, I don't know if it is because they are regular students or because they are 9th graders, but most of them are not that interested. So, you don't get those better discussions.
>
> **JT:** Is discussion something you value in your classroom?
>
> **CS:** I think it is common. I believe we do a lot more discussion in history than we do in geography.
>
> **JT:** What do you think makes the difference in that?
>
> **CS:** Well, I just think the subject is one. But they are also the honors kids so they are more interested in it. For example, they wonder how does this [history content] fit in today?

She justified the differences in curriculum between history and geography by applying both beliefs that *history naturally leads to discussion* and *honor students provide higher engagement*.

Carol not only utilized discussions more in history but differences in the types of

questions appeared. In geography, discussion focused on teacher-led questions and single responses. In history, she asked a question and students discussed amongst themselves with little intervention from her. She grounded the differences in her questioning through her beliefs that content and students affected discussions.

> **CS:** The makeup of the class is different, they are smaller and I think they [honors students] are used to making those individual comments and discussing one-on-one with each other.

This statement illustrated an interaction of Carol's beliefs. As she explained her beliefs about discussion, her explanations utilized multiple beliefs (*history naturally lends itself to discussion* and *honor students provide higher engagement*) simultaneously. She did not differentiate among beliefs, but incorporated the different beliefs to support one another.

Connections make content relevant. Along with scaffolding and discussions, Carol built understanding through connections. Specifically, she utilized two types of connections: connections with learning (past and future) and personal experiences.

Connections build continuity. Carol believed new knowledge must be explicitly placed into a greater context. She applied this belief by connecting knowledge to past learning and future learning. In one example, she reviewed the word *barter* (a vocabulary word from 7th grade curriculum) in her explanation of the new vocabulary word *economy*.

> **JT:** You mentioned the historical example of ancient China in your lecture, is there a reason you picked a historical example?
>
> **CS:** I wanted an example that connected it back to the concept of "barter."
>
> **JT:** Is there a reason for picking that word?
>
> **CS:** Just because I knew they were taught that [the word 'barter'] in 7th grade, because it's part of the core, I know Ken [another teacher] teaches that to them. So, I wanted them [the students] to go back to that word so that they would

> understand that today we produce stuff and you have to have money to buy the product.

She guided the explanation to refer back to previous learning of the students. She then explicitly connected previous learning with the new knowledge.

She often utilized historical examples in her geography classes. She rationalized the behavior through her belief *connections build continuity.* This belief even influenced mapping. She explained that she taught and assessed the map of Europe because "I think Europe is everything in understanding what they will learn going forward in schooling. So, they need to learn Europe." In some cases, she utilized past experiences to build on new knowledge. Other times she designed curriculum to help students with future knowledge. In either circumstance, she utilized connections to build continuity of learning.

Personal connections increase understanding. Besides connecting within content, Carol believed personal connections helped students master difficult information.

> **JT:** Do you believe there is anything that can bridge the gap of learning?
>
> **CS:** I think you can bridge the gap with some personal attention and by making it [learning] personal.

She utilized personal attention by connecting the content with elements in the students' lives. For example, Carol called on one student several times in multiple lessons. She explained she called on "Sam" because she easily made connections with him to build understanding.

> **CS:** I know Sam and he actually played on my son's football team. So he knows my son and he is into football. I knew he knew what I meant with "brotherhood"

> [a phrase found in Martin Luther King Jr.'s "I Have a Dream" speech) because two or three years ago the high school's football team theme was "a band of brothers." I knew he [Sam] knew what I meant and so I could connect his experience with the idea you have to work together for a common goal.

She utilized personal experiences familiar to Sam to increase his and other classmates' understanding.

Overarching Belief of Learning: Learning Occurs When Students Willingly Participate in the Process

Despite Carol's beliefs that scaffolding, discussion, and connections increased students' understanding, she believed students' level of engagement influenced their ability to learn. This overarching belief incorporated other beliefs around student learning. First, Carol believed students must desire to learn. Support systems could increase students' desire and consequential success. Finally, some elements outside of her control affected learning. Figure 6 outlined Carol's basic beliefs with learning.

Desire for learning is critical. Carol believed a student's participation included

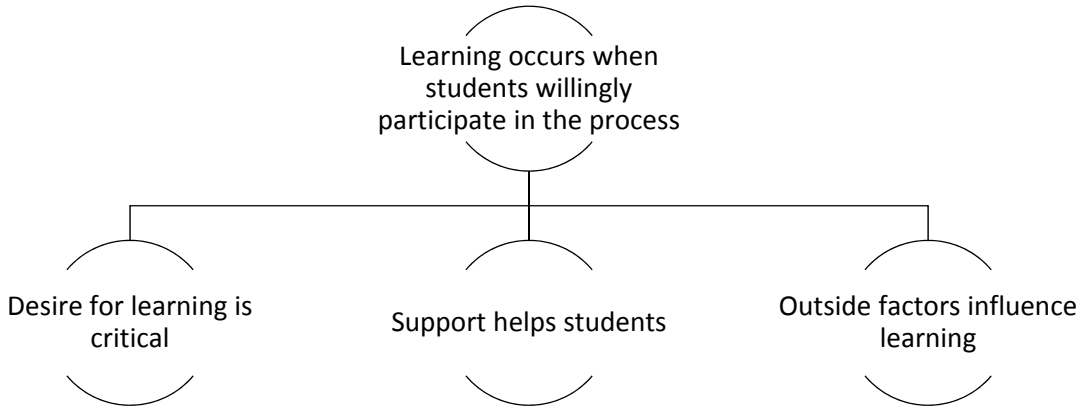

Figure 6. Carol's belief profile of learning.

engagement throughout the schooling process rather than the singular participation in her class.

> **CS**: It's not like you have to have a desire to love history. It's just you have a desire to be a participant in school.
>
> **JT**: What do you mean by participating in school?
>
> **CS**: Doing the things every day that helps students be successful. For example, am I going to turn in my homework? Or they think, "I had assignments due today, am I responsible?

Carol connected the schooling process with everyday behaviors she expected students to exhibit, such as paying attention, completing homework, and punctual attendance. She believed a student's level of interaction affected his or her ability to learn.

> **CS:** I believe students can learn. There is no reason why, even if you can't read, you can't understand that we are talking about the Balkans. So I think every student can learn. I just believe there are students who don't want to [learn]. I think that they have to be engaged and want to learn themselves.
>
> **JT:** Do you think there are any situations that no matter how effective the instruction is the student can't learn?
>
> **CS:** I think it isn't that they can't learn, I think they choose not to learn. I think if you have a will to learn, then you can. I have students that I ask to open the book, get out a paper, and instead, they are fidgeting with their backpack or look at their phone. They're not focused on what they are trying to learn.
>
> **JT:** So the issue is focus?
>
> **CS:** You can walk up to them and say, "this is Italy, let's color it" and walk away to check on someone else and they've gone back to combing their hair. I had a student this term that I had last year. He got a couple F's a couple D's. He's the one that was fiddling with his backpack today. Talked to his parents, parent teacher conference, all that. He just, doesn't have the big picture in mind that he needs an education and so he failed last semester and he's failing now.

Carol clarified desires needed to be intrinsically motivated. She rationalized this belief through the example of grades.

> **CS:** I don't know how to solve it, bot here the students aren't really made accountable. You can make them accountable for their grade, but that doesn't mean anything to them.
>
> **JT:** So the grade doesn't seem to be a motivator?
>
> **CS:** I mean you will always have kids that it [grades] are important to them, but overall, grades doesn't seem to motivate. For example, you can work really hard to make every kid not have an F and every kid turn in late work, but they are not learning how to have an internal desire for the education themselves.

Carol believed grades could not increase learning unless the student internalized the desire for good grades.

In each of these examples, Carol emphasized that a student's participation and desire affected learning. Students became the deciding factor as their behavior and motivation interacted with Carol's classroom.

Support helps students. If desire acted as the primary filter, Carol believed some support systems helped students if it increased students' desire. In her rationale for this belief, she cited personal experiences as antidotal evidence.

> **CS:** I think, by far, they need support from other places. Even if your parents don't support you, you can still have a successful education.
>
> **JT:** So what would be some other places one could get support.
>
> **CS:** I think sometimes teachers can be a good resource for that, like to just encourage. My husband came from a really dysfunctional family. He had neighbors and extended family that helped him out. He had teachers he felt encouraged him to have an education.

As found in her beliefs of teaching, Carol intertwined multiple beliefs to support and clarify each other. In this case, she utilized the personal example of her husband to reinforce her belief that *support helps students*, but reaffirmed students' desire could negate the support system offered.

> **CS:** So we have a good administration and school that has a lot of programs that help and encourage. The Flex program can be helpful, the ESL, and the extended after school programs. I think all those [the programs] can help kids that want to learn but doesn't for the kid that doesn't want to learn.
>
> **JT:** What can help with support systems in the school?
>
> **CS:** Possibly in giving us more resources when a student doesn't want to learn. I know they have those programs and I'm sure they work. I just don't see it [here] as there are so many students I refer. I don't know**.** If there is a way he [an unmotivated students] could go to another program that maybe would spark his desire to learn.
>
> **JT:** So what do you think the administration should do in that situation ideally?
>
> **CS:** They need to have a place where they [unmotivated students] could go and get help. I do feel like junior high is a place where there is still hope for kids but by the time they get to high school, that hope is smaller. I don't think they know they are going to need their education. A program could maybe help with accountability or show them why they need a desire for education.

Even though she believed students' desire affected learning, she believed support could help if it focused on increasing students desire.

Outside factors influence learning. Carol believed various outside factors influenced students' ability to learn. These factors occurred both in and out of the classroom. In one instance, she described a specific student with a reading difficulty and stated it limited the students' learning.

> **CS:** I would think there are things out there that make it so a student can't learn, especially if they don't understand or can't read. We did a read-aloud [during the lesson on balkanization] and one student struggled so much to read the thing [his passage]. Obviously, I feel like that is out of my control. If they come to me in 9th grade and they're on a 2nd grade reading level, I don't know. At least I'm not sure how to figure that out when I have 30 other kids in the room.

She listed small distractions as other influences affecting learning.

> **CS:** Just like, when you have people come in your room, or people walking in the halls, things that can distract them. Even announcements, it can take a minute or

two for the students to refocus.

In each of these instances, she lacked control over these factors. She felt these outweighed instructional techniques she employed. Carol believed these small and large factors influenced students' ability to learn. In particular, she found a lack of time to be the greatest barrier in affecting students' ability to learn.

> **CS:** I feel like for me the class time is not enough time. I feel like I can only do one thing during class and sometimes that one thing doesn't even happen in its full form in the class period. I feel like if I had some extended time, I could do some background, then the activity, and then come back and make sure they really learned the concepts. I feel like every day here the bell rings and we never get back to the concept and why we did what we did.
>
> **JT:** So you feel the review is missing because of time?
>
> **CS:** I do.
>
> **JT:** How do you think this affects their learning?
>
> **CS:** You come back and review the next day and it doesn't mean as much to them as reviewing the same day.

Carol believed time interfered with her ability to effectively teach in a manner where students could learn. When Carol reflected on various activities, she often referred back to how they interacted with time. She often changed and adapted curriculum and instructional activities because of time.

Analysis of Belief Profile

In my analysis of Carol's beliefs, three findings emerged. First, Carol often rationalized her beliefs through personal experiences. Second, even though the belief profile separated beliefs into clusters, Carol utilized multiple beliefs in her explanations

of behaviors. Finally, Carol employed certain beliefs more than others, demonstrating a hierarchy in her beliefs. To analyze and generalize these findings, I utilized Green's (1971) and Speer's (2005, 2008) constructs as a lens in order to gain understanding on the nature of Carol's beliefs.

Influence of Personal Experience

Lortie (1975) and Richardson (1996) cited the influence of experiences in belief formation. Carol grounded many of her beliefs in personal experiences. Prior to teaching full time, Carol raised six children. Her role as a wife and mother influenced her beliefs. In an in-depth discussion on student motivation and learning, Carol reasoned her belief *desire affects learning* through experiences with her children.

> **CS**: Anytime it's yours and you own something, you take better care of it. I've seen that in my kids. Just the other day, my senior asked me for money to go to the movies. I asked him where his own money was. He said in his checking account. I told him he would have to decide if he wanted to spend it. He had to decide if the movie was worth it.

In this example, Carol connected the personal experience with her child to her belief that students needed to have an intrinsic desire and responsibility for their learning. Carol's role as a parent often intertwined with her beliefs of teaching. She referenced past experiences with her children, and then applied these beliefs to her students.

Along with her experiences as being a mother, Carol also described past experiences teaching high school as her reasoning for beliefs. In the following example, she cited both teaching high school and being a mother as the rationalization for making sure connections are made with learning.

JT: You talked a lot about building connections with prior and future learning.

Why do you think connecting learning is effective?

> **CS:** I don't think I would have had that perception if I hadn't come from the high school where I have seen where they are going. I know what they need here [at the junior high] in order to get there [learning at the high school]. I wonder sometimes if I would do things the way I do without that information. Maybe it just comes from my life such as being a mom and seeing my kids go to college, seeing what things they need. I think I perceive it more because I taught at the high school.

Carol described two types of experiences to justify her beliefs. In particular, her roles as parent and high school teacher influenced her beliefs in connections. She applied these beliefs in her interaction with students and the design of her curriculum.

She justified her belief *support helps students* with personal experiences as she described the influence of support systems with her husband. She used this experience as rationale for building personal connections with her students.

> **JT:** So what would be some other places you would need support.
>
> **CS:** I think sometimes teachers can be a good resource for that [support]. Like to just encourage. My husband came from a really dysfunctional family. But he had teachers he felt like encouraged them to have an education.

She applied her husband's experience into her own beliefs and explained she supported students by *encouraging* them. She utilized the word *encourage* both in her justification and application of the belief.

> **CS:** My support is pretty basic in that I *encourage* them in doing something.
>
> **JT:** So does it go back with the belief that connections can bridge the gap?
>
> **CS:** I do. I really, really do. I see that I make success with some kids when I notice what they wear. Or what their Jerseys are. Or that they play in the Orchestra.
>
> **JT:** So your support is informal, more personal?

CS: I just try to make a personal connection.

Carol's use of the word "encourage" in both her rationale and in her description of the belief illustrated the influence of personal experiences on belief formation.

In all these examples, Carol cited previous experiences as the rationale for her beliefs. In particular, she focused on experiences as a wife and mother. She did not describe any formal knowledge received in preservice training or professional development.

Green (1971) described several dimensions of beliefs. In looking at the first dimension of the framework, Carol presented her beliefs as premises and conclusions. Her personal experiences framed the premises for her beliefs. For example, as a mother, Carol taught responsibility to her children. She believed if her children owned the situation, the results meant more. She applied the premise *ownership creates value* to her students and concluded they needed to *own* the schooling process. Her belief became that *students' desire affected learning.* As beliefs emerged, a quasi-logical organization formed with personal beliefs grounding the premises.

Beliefs Interaction

Carol rarely utilized a single belief in describing behaviors. Often, she employed multiple beliefs within her rationalizations. Green's (1971) third dimension of beliefs considered how beliefs interacted by clustering and segregating amongst themselves. In Carol's case, several clusters appeared of consistent and complementary beliefs. For example, Carol believed discussions could be used more effectively in history. She connected this belief with two others: *honor students provide higher engagement* and

readings increase the effectiveness of discussions.

> **JT**: Why do you think discussion is more effective in history?
>
> **CS**: I feel like geography is more about maps and charts and analyzing "where". I feel like history is more like primary source documents where you can look at something, like Washington's Farewell Address. So it's more text, I would think, in history. It's easier to find readings in history in geography and think it's because geography and history lend themselves in different ways.

She believed honors students had better discussions because they read more, connecting with another of her beliefs, *readings increased effectiveness.*

> **CS:** As an honors student, you probably read more. You are probably that bookworm that reads novels in your spare time; I've seen that in my own kids how much reading is important. So I think they [honors students] come to me better prepared. It's not that I prepare the class better for discussions; they just come better prepared as students because they read more.

In this example, She enacted two different beliefs to support the belief *discussions are effective in applying information* and viewed beliefs in the clusters as compatible and complimentary with each other.

Along with clustering, Green (1971) argued some beliefs segregated from each other. This allowed for conflicting beliefs to coexist together. With Carol, she believed students should be stretched in their learning. Within this overarching belief, two conflicting beliefs emerged. Carol believed if students interpreted the learning, they achieved greater understanding. However, she felt because some information needed scaffolding, she needed to explain critical information. These two beliefs fundamentally differed, especially in behavior. Generally, interpreting led to student-focused behaviors and explaining led to teacher-focused behaviors. Yet, Carol held both views and did not describe conflict between them. Carol demonstrated segregation of beliefs often allowed

conflicting beliefs to exist simultaneous.

Green's (1971) second dimension provided structure into the psychological strength of her beliefs. Green stated some beliefs held more influence than others. He categorized them as core or dominant beliefs. In Carol's case, her dominant beliefs influenced her behaviors with greater force and appeared more frequently. For example, Carol's belief *outside factors affect learning* influenced her behavior across a variety of situations, especially in relationship to time. She felt time influenced, often negatively, her teaching more than anything else. In one instance, she stated reviews helped students learn but felt time took away her ability.

> CS: I do feel like, for me, the class hour is not enough time. I feel like I can only do one thing and that one thing doesn't even happen in the class period. Where I feel like if I had some extended time, I could do some background, then the activity, and then come back and make sure they really understand and review the concept. I feel like every day here the bell rings and we never get back to the concept and why we did what we did.

Review strategies connected with Carol's less dominant belief *interpretations increase understanding*. However, her dominant belief *outside factors affect learning* led to her limited use of review. The stronger belief influenced her final behavior.

Green (1971) argued a key element of dominant beliefs focused on the frequency of its use. Carol's belief *outside factors affect* learning, in particular, that time influenced her teaching, occurred in multiple situations. For example, after her lesson on the Aral Sea, she expressed frustration with time.

> **CS:** If I would have had 10 or 15 more minutes, I could have had some really good discussion. Whereas, I was just trying to hurry through so much and also give a better comparison of the two (the Aral Sea and Lake Powell).
>
> **JT:** Will you include a review on Monday when you come back?

> **CS:** Probably not because I don't think it would be effective. By Monday they'd come back and won't get it.

Again, Carol stated time interfered with learning and affected her inability to discuss.

Green (1971) believed various psychological strengths of beliefs affected the final behaviors of the individual. In the examples described, Carol's dominant beliefs held greater psychological strength and influenced her behaviors. Her dominant belief *outside factors affects learning* influenced her behavior instead of her beliefs of interpreting and discussion. Consistent use of a particular belief demonstrated Carol's hierarchy of core beliefs and led to the identification of dominant beliefs. The teaching and learning beliefs that Carol enacted more consistently than others are summarized in Table 7.

Beliefs and Reforms

Carol experienced two reforms, both mandated from outside forces. As she engaged in these reforms, certain beliefs appeared more often. The reform of honors held greater flexibility and allowed her to change and adapt the curriculum according to her own personal beliefs. Equilibrium existed between her beliefs and the reform

> **CS:** Honors [as a reform] was not a big deal because I don't feel like I changed anything because whoever had honors before didn't challenge their kids enough. So I felt like [previously] I was running an honors class and I didn't know it. It probably was because I came from the high school.

Table 7

Carol's Dominant Beliefs

Teaching	Learning
Students need help in identifying critical information	Outside factors can influence learning

Because she encountered equilibrium, she utilized *multiple* beliefs in her instructional techniques. During the interviews, she used many of her different beliefs to rationalize and explain her behaviors from her history class. She utilized the full spectrum of her "collection of beliefs" (Speer, 2005, 2008) rather than only a small grouping of beliefs. With this reform, her beliefs appeared both clustered and interactive.

The second reform placed her in novel situations where she negotiated more within her beliefs. During this disequilibrium, her *dominant* beliefs emerged as the greater influence as they filtered her interaction with the netbooks. For example, in the Trans-Siberian Railroad netbook assignment, the students individually investigated different sites through a guided worksheet. As she reflected on the activity, she believed the lesson to be unsuccessful. Her justification focused on the dominant belief *explanations increase understanding*.

> **CS:** After yesterday [the lesson on the Trans-Siberian Railroad], I wondered [that] instead of them doing that assignment individually, we should have done it all together and gone through question through question as a class.
>
> **JT:** So they would go through the assignment with the netbook but you would be involved in the process?
>
> **CS:** Yes. I guess it would be more of a guided study rather than just letting them use the netbooks.
>
> **JT:** Why do you think that would have been more effective?
>
> CS: I could help explain what the different sites meant and help them understand what it showed them about the railroad, not just filling out a worksheet. We really should have done that as a class. There really wasn't any reason we couldn't have. I have a couple of other activities where I just have them look up stuff. I can't decide if it would be more successful if I did it that way.

She found the activity unsuccessful and evaluated it by using her dominant belief

explanations help students learn as a possible explanation for the lack of success.

Her other dominant belief *outside factors affect learning* interplayed with her incorporation of the netbooks in the class. When asked why she utilized the netbooks rarely (only twice in a 6-week period), she reflected on the many issues surrounding the netbooks.

> **CS:** So I like them [the netbooks] and they [the administration] give me some support or help. But we have too many students and ineffective servers. What they gave us doesn't work that great. I can't control that. I am not against them [the netbooks] in anyway. I'm sure I will learn to use them, but right now I'm only envisioning a very limited way of using them, for example, with my testing, my documents, and looking at maps online. For me, that's all I know how to do unless someone teaches me.

She felt limited in their use because outside factors (her lack of training) interfered.

Carol's use of the netbooks engaged her belief that the difficulty rested on forces outside her control. She limited her incorporation of the technology. Instead of enacting various different clusters of beliefs, she limited herself to beliefs she held with greater psychological strength, her dominant (or core) beliefs. Other beliefs remained on the periphery and influenced less (Green, 1971).

Summary of Belief Results

These findings illustrate that Carol's beliefs exhibited several characteristics listed in more recent constructs of beliefs. Carol always utilized past experiences to describe her beliefs. These episodes emerged from very personal experiences in her life, which led to evidence of an emotional component of the beliefs. Richardson (1996) described this influence and stated teachers negotiated through experience and thereby incorporated their experiences into their beliefs. These experiences affected the structure of beliefs.

Carol utilized experiences as the premise for the belief. She then formed a quasi-logical organization, as outlined in Green (1971), to connect the experience with formalized beliefs.

Carol beliefs often occurred in clusters with each other. Carol's clustered beliefs appeared compatible and complimentary of each other. Speer (2005, 2008) "collection of beliefs" explained clustering of beliefs occurred as the individual negotiated within instances of behavior. Because beliefs interacted with situational moments, Carol incorporated multiple beliefs to evaluate the moment.

Occasionally, beliefs from different clusters interacted within a particular situation. These interactions created tensions and led to the utilization of dominant beliefs. In particular, two dominant beliefs emerged: *explanations increase understanding* and *outside forces affect learning*. The categorization of beliefs based on psychological strength of the belief emerged from Green's (1971) construct that focused on dominant and less dominant beliefs.

Conflict emerged through specific moments and Carol evaluated which belief assisted in the situation. When Carol felt disequilibrium from the reform of netbooks, she enacted her dominant belief *outside forces affect learning*. Carol's reliance of her dominant beliefs in certain situations illustrated she held certain beliefs with greater influence and favorability.

CHAPTER V

BEHAVIOR RESULTS

The second part of my results focuses on Carol's behaviors. Specifically, I organize Carol's behaviors around instructional practices. I provide a summary of her general behaviors. Then, I analyze moment-to-moment interactions and identified themes of consistent behaviors. I examine the findings in relationship to Carol's beliefs and behaviors.

Behavior Summaries

Carol engaged students in a teacher-focused classroom. In this environment, she became the main source of information and knowledge. This style influenced her teaching behaviors. She utilized mostly lecture-based teaching. In her discussions, she generated most of the questions asked. The following dialogue demonstrates examples of questions generated by Carol. In developing background knowledge on Martin Luther King's "I Have a Dream" speech, the following interaction occurred between Carol and one student (italics added to teacher-generated questions).

> **CS:** Let's look at the first statement. This speech was given in a certain city. *Does anyone know*?
>
> **Student**: Washington.
>
> **CS:** Oooh, Washington DC, so let's write that in. *And Eric, why is Washington DC so important?*
>
> **Student**: Because that is where the government is established
>
> **CS:** *Who lives in Washington DC?*

Student: The President.

CS: The President. *Who else lives there?*

Student: The government

CS: The Government, right. Congress. It's the capital of the whole country. It's kind of a hustle and bustle of politics. So think about Martin Luther King. Now he was black and he was a minister. That was his occupation. *So if you were a religious person would you want to do things peaceful?*

Student: Yes

CS: *Can you see why the whole idea was peaceful?*

Carol prompted all questions and followed up student's answers with additional questions to guide to a specific point she desired.

Carol controlled the information taught to the students. The main source of information presented itself in teacher-generated notes. The format varied slightly, but in each case, she directed how students should write their notes. In one type of notes, students filled in a paragraph with certain words missing. During the lecture, she controlled what words went into the blanks. In other instances, she wrote on the board terms students copied in their notes. Then, she explained the terms and listed additional words to be written down.

The general flow of Carol's class followed a similar format with class beginning with an opening question that connected a concept with the day's lesson. Then, she lectured or built background knowledge of a concept. Students processed the learning through a guided reading or worksheet.

General Themes of Behavior

Throughout the observations and identification of consistent behaviors, two main themes of behavior emerged. First, she used teacher-focused explanations to convey content and information. In this general trend of behavior, Carol utilized three main instructional techniques. First, she identified key vocabulary and gave detailed explanations. Second, she predetermined important content and guided the students through note taking. Finally, when she used outside sources (i.e. videos, readings) she directed the class discussions in order to explained the content from these sources.

In the second theme of behavior, Carol constantly compared learning, both formally and informally, to other ideas and concepts. In her formal comparisons, she designed lessons to compare new content with another concept more familiar to students. She compared information informally by using personal connections and information found in previous and future learning. Figure 7 outlined Carol's general themes of behavior.

Theme #1: Use of Teacher Explanation.

Clarification of vocabulary. Throughout her lessons, Carol stopped, identified, and clarified key vocabulary. This occurred in a variety of different **s**ituations. She began the class with a thinking question students answered in their journal. She used this time to preview a vocabulary word utilized later in the lesson. During Carol's lesson on communism and capitalism, she began the lesson by analyzing the word *economy*.

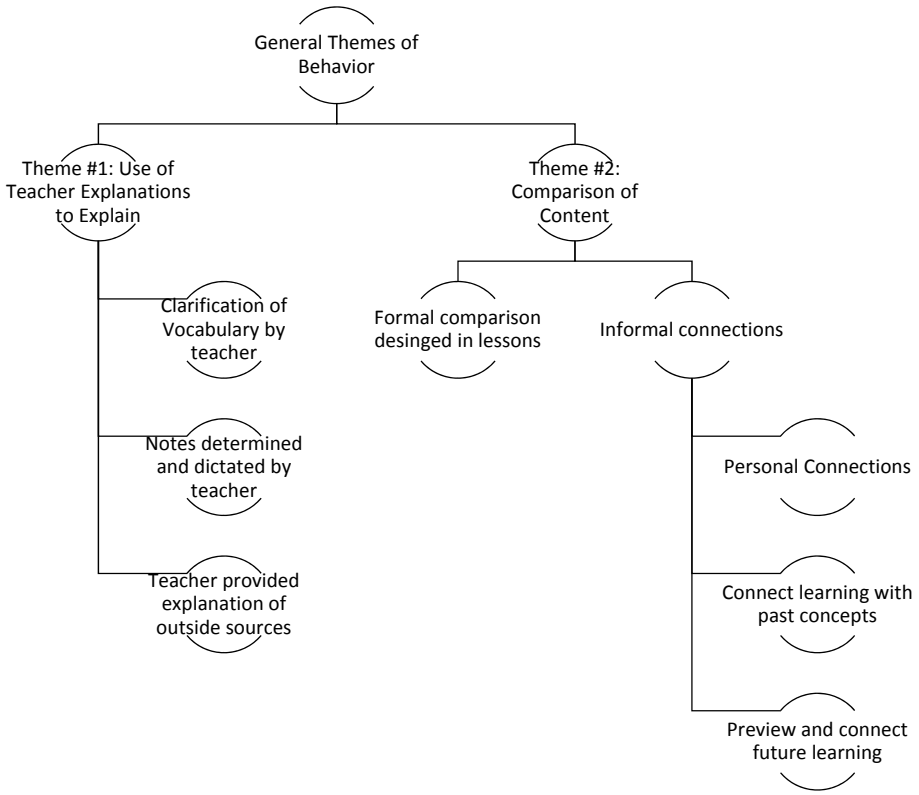

Figure 7. Themes of behavior.

When describing economy, Carol incorporated a variety of concepts and connections.

> **CS:** All right, we are going to start with a question then. Anyone knows what is an economy? What does it have to do with?
>
> **Several students respond**: Money
>
> **CS:** Money. Money, what does that mean? What does it have to do with money?
>
> **Student A**: Who has money and who doesn't.
>
> **CS:** Good, distribution of money. What else?
>
> **Student B:** It's the way money circulates between people and other countries.
>
> **CS:** Okay, the way the money circulates. Audrey?
>
> **Student C:** Jobs.

> **CS:** Jobs, Okay. We hear the word economy a lot whether the economy is doing well or isn't.
>
> **Student D:** I haven't heard of it ever doing well (jokingly).
>
> **CS:** *Laughs*. I have, let's put it at that.

Interestingly, at this point, she referred to the definition located in the textbook but stated it limited students' understanding. Instead, she explained the textbook definition and incorporated previous students' responses in her explanation.

> **CS:** So if you were to look in the glossary of the book to find out what an economy is, the book would say, "It's the production and distribution or exchange of goods." So it [economy] has to do with a product or if someone trades a product. If we want something today, we have to get a job, like [Student C] said, and then we get money like [Student A] said and get what we want. So economies have to do with money, but it's a little bit more. It's the products that are made and that people buy. So today, we are going to take some notes on three types of economies that are around the world today.

In this example, she utilized multiple sources to help explain the word *economy*.

In another example from her history class, she paused during the lecture and defined the word *precedent*. Students wrote down the vocabulary word and then she explained the significance of the word.

> **CS:** So this word is not "president" but "precedent." We are going to write this word [precedent] in our notes under the word "electoral college." . . . So a precedent is an action or decision that later serves as an example. Think about how we talked about President Washington's election, we are going to see how it goes and [the} things that happen later on that will be used as an example. Washington really starts to define the presidency and it stays that way for a few years. Then President Jackson does his own thing and redefines it again. So, precedent is just this idea that when something takes place, then in the future we use it as an example. It's kinda like this, how many of you say to you parents, "well so and so gets to do this?" "So and so doesn't have a curfew or so and so gets to wear that outfit." {Do you} see how what that person does sets a precedent for you, or maybe your parents, to look at [it] as an example. Keep in mind, that in these first few years of the government a lot of new things were happening. So they were establishing a lot of new things.

Once again, she utilized multiple sources (such as the definition, connection to present and future learning, and personal examples) to explain the word *precedent*.

She even clarified vocabulary words found in videos, worksheets, and readings. In the following example, students read a section from their textbook on Balkanization. She stopped and clarified the word *hostile*.

CS: What does *hostile* mean? James, are you ever hostile?

Student: No.

CS: Are you sure?

Student: I don't know.

CS: On the football field, are you ever hostile? Do you go after a certain person on the football field?

Student: Yes.

CS: Do you tackle them or do you take them out?

Student: I take them out!!!

CS: That's right. Hostile means you're violent or angry.

In this example, she explained words not included in notes. Her explanation utilized a personal experience of a student to help them understand the word.

In each example, students either wrote the word down or she simply clarified the word. Then, she provided an explanation of the words.

Notes determined by teacher. Along with clarifying vocabulary, Carol required students to write down key ideas. During these activities, she dictated the notes. This occurred in a variety of formats. When she showed a video, students either filled in a worksheet or she directed specific notes. In this example, she used a video on capitalism,

socialism, and communism. She predetermined the portions of the video to show and then directed students what to write down.

> **CS:** So I'm going to skip through and go through some of the stuff I want you to write down. So [that] in the end, we will have these three words [capitalism, communism, and socialism] and have two or three sentences for each. So the first one, and he'll show you his notes, we are going to begin with capitalism.
>
> Video begins.
>
> **CS:** "We are not writing anything yet." *Stopped and paused the video after definition of Capitalism is given.* Ok, so we are just going to write two things here. We are going to write "Smith's Theory" and we are going to write down the words "Supply and Demand." Then, in our own words, we are going to try and define what we think "supply and demand" [is] and then I just want you to write down the words "lassiez-faire" and [this means} "to let alone". So we are just going to put the government has no control over business or [that] government just lets it be.

Even though the video defined capitalism, she provided further explanation. She explicitly explained to the students what they should and shouldn't write down. This pattern of pausing and dictating continued throughout the video.

She exhibited this behavior in her U.S. History class as well. For example, she showed a video on the Electoral College and directed students what to write from the video.

> **CS:** We are going to look at how these votes take place. We are going to look at his version.
>
> **Student A:** Do you want us to take notes?
>
> **CS:** I'll tell you what to take notes on.
>
> **Student A:** Ok, That makes it a lot easier.
>
> **CS:** *Begins movie.* We are not writing these things down. *Pauses video after one minute.* So just to clarify, what happens is you don't go to vote but you get someone to represent you to vote. That is what the Electoral College is. So your

> vote does matter and it does counts but instead of all the votes counting [to directly elect], it's just a select few. It's a representative that is going to vote for us. That's the first thing we are going to write, we are actually going to write two things. Write, "It is done by a majority" and the second thing we are going to write down is that "it [the number] is equal to how many representatives each state has."

Once again, Carol explained throughout the video her expectations for notes.

Carol exhibited this behavior in multiple situations, such as readings or simple lectures where she explained information. During a reading on the Judiciary Act of 1789 she explained and clarified notes for students.

> **CS:** Turn back the page, and we are going to look at the picture of Washington's Cabinet. You are going to write one more thing in the notes. We are going to write "presidential cabinet" underneath the Judiciary Act.
>
> **Student A:** Do we need to leave a space underneath the Judiciary Act?
>
> **CS:** No, that's all you need to know. We'll come back to that when we get to Jefferson.

Even though Carol utilized a reading instead of a lecture, she demonstrated similar behaviors with note taking

Carol predetermined the content and sequence of information for students. She dictated to the students how to document the information. She even added additional emphasis on the teacher-led notes as students received points for writing down notes as outlined.

Explanation of outside sources. Carol utilized many outside sources such as videos and readings to augment her teaching. She helped students understand outside sources with teacher-led explanations. In her discussion of presidential cabinets, she showed a video on President Obama's cabinet. Afterwards, she led them to a White

House website and guided them through the different cabinets. In these situations, Carol facilitated the discussion and explained the content.

More often, she engaged the class as a whole, stopping at certain points to explain. In one lesson Carol utilized a variety of quotations on communism. As a class, she broke the quotation into different parts and then discussed the main idea of each section.

> **CS:** All right, go on the next sentence. It's a little bit harder to figure out. Let's work on this together and break it apart. "*But communism is the death of the soul."* This is someone's opinion, right? So what would "the death" be? It's pretty dramatic, right? He's saying it isn't good but a really bad thing. He says, *"It is the organization of total conformity."* Anna, do you know what "conformity" is?
>
> Student shakes her head no.
>
> **Student B:** If you conform, you try to be like someone else.
>
> **CS:** If you conform, you are the same. So in his statement, communism is an organization of making everyone totally the same. "*In short, it is tyranny*." Does anyone know what tyranny is? Again it is a really bad word meaning dictator or someone who controls you. It's probably not a good way to live. He goes on to say, *"It's to make tyranny universal."* In your own words, in a short sentence, write down what he is trying to say.

Carol predetermined how to break up the quotations and provided teacher-generated definitions of the different words. Once again, she led the discussion and explanation of the content.

In another class, she showed an excerpt from Martin Luther King's "I Have a Dream" speech. Previously, she developed background on the event and discussed the questions to be answered while watching the speech. During the speech, she stopped the video to explain different details. In one instance, she paused the video as it showed the crowd.

> **CS:** Look at all the different people. [Do you] remember how many people were at the speech?
>
> **Student A:** 200,000 to 300,000
>
> **CS:** Right! Now, look at the type of people who are there. Remember how there were both blacks and whites.

She referenced a previous fact by pausing the film and reinforced the fact. From these behaviors, students generated understanding of concepts Carol predetermined as important.

Along with highlighting certain aspects, she stopped when videos answered worksheet questions and discussed the answers. During a video on the Electoral College, she paused when a map appeared and explained the map in depth to the class before going on to the next part.

> **CS:** (Referring to the map). Does that make sense to you? That is where the numbers are coming from. It's the number of senators. Remember, everyone has two plus the number of representatives. We are going to look at this [the map] then. Let's pick out the five most populated states.
>
> She points out the states as students list the states.
>
> So can you see how many of these states [point to the smaller states] you would need to get this state [California]? Does that make sense to you? You'd have to have all those, right? So you could go and campaign and get all these people to vote for you.
>
> **Student A:** That's why you go to Texas.
>
> **CS:** Yes! Max, you are getting it! That's why they never come to Utah or Wyoming or Alaska. So when you run for president, you are going to want to go to those states.

Once again, Carol utilized an outside resource, a video, but provided additional explanation.

This behavior occurred in textbook readings as well. During a geography lesson on Balkanization, she interrupted the reading and explained concepts mentioned. When the reading described the Ottoman Empire overtaking the region, she clarified this point to the students.

> **CS:** Remember when we had (Student A) moving into the area [Balkan Peninsula]? The Ottoman Empire was Turkey, Iran, Iraq, located in the Middle East. It [the reading] says they came in to try and take the area."

In each of these cases, her beliefs, not the outside source, influenced her behavior. She interacted with different sources of information (i.e. video, map, reading) with the same behaviors.

Theme #2: Comparison of Content

Along with the general theme of explanation, Carol frequently utilized comparisons to clarify concepts. Occasionally, she structured the lesson to deliberately compare two concepts. In other instances, she informally utilized comparisons to clarify smaller concepts found in the lesson.

Formal comparisons designed in lessons. Carol designed lessons to compare a new concept with something she perceived more familiar. In the lesson on the Trans-Siberian Railroad, she discussed and compared it with the Trans-Continental Railroad. When she explained a fact about the Trans-Siberian Railroad, she explicitly compared it with the Trans-Continental Railroad.

> **CS:** So the Trans-Siberian Railroad was funded and built by the government. Let's look at what happened with the Trans-Continental Railroad. The Trans-continental Railroad was built by private businesses that received some funding from the government. So we used private businesses to build it, but Russia used the government to oversee their project.

In another lesson, she deliberately compared sources of information. When discussing the Aral Sea, students analyzed several documents to answer the question. "Why did the Aral Sea become an environmental disaster?" The documents used for analysis consisted of photos of the sea, satellite pictures, and the textbook. Before they investigated the Aral Sea, she reviewed a local landform, Lake Powell, using the same structure of sources (reading, photo, satellite pictures).

> **CS:** The Aral Sea was an inland sea in Russia that the Soviet Union diverted the rivers from and it changed what it looks like. Interestingly, the same thing is happening in Utah to a lake. Anyone know what lake is losing water right now? Down south? Pretty big? They have house boats on it?
>
> **Student A:** Lake Powell
>
> **CS:** Yes! So we are going to look where it is happening in Lake Powell and what some people are doing to save Lake Powell. So, the first thing we are going to do, before the Aral Sea, is we are going to look at what is happening with Lake Powell. Let's see what the problem is for us. We will do a reading and look at some pictures.

She explicitly explained the purpose and structure of the comparison. Then, throughout the lesson, she continually referred and compared the two examples.

> **CS:** What did you think of the idea of draining Lake Powell? Do you think that is a good idea, a bad idea? Did you see what happened to the Aral Sea when it dried up? What about the people who rely on the Aral Sea? You saw how the Aral Sea was a big fishing industry and that is now gone. Let's go back to Lake Powell. What would happen to Page, Arizona, if Lake Powell lost its water?

She made explicit connections for the purpose of increasing students' understanding on the Aral Sea.

In another example, Carol compared George Washington's cabinet with President Obama's. She introduced Washington's Cabinet and then showed a video from the White House.

> **CS**: So we talked about how Washington got some pretty smart people to work with him and come up with ideas on how to run the government. We are going to watch this video of President Obama's cabinet. Pay attention to who is in the meetings, what happens in the meeting, and see if you can make any connections with what we read about Washington's cabinet.

Afterwards, students were put in pairs to investigate a more current cabinet on the netbooks. She designed the worksheet to deliberately compare it with Washington's cabinet.

> **CS**: You'll notice that the last question has you look at the cabinet you've been assigned to and determine if that cabinet existed with President Washington. If it doesn't exist, make a prediction why that cabinet didn't exist under President Washington.

Carol designed the lessons and activities to deliberately compare topics with other examples. Examples connected with personal experiences (such as Lake Powell), content they learned previously (Trans-Continental Railroad), or future learning (current presidential cabinets). She also utilized connections in smaller instances as she clarified and explained concepts.

Informal connections used to explain ideas. Carol consistently compared new information with ideas or examples. She believed this assisted students in understanding the ideas. These occurred informally and spontaneously during the discussions and explanations.

Informal personal connections. Most informal connections utilized personal examples or connections with previous or future learning. These connections occurred briefly. For example, in her history class, they discussed rights found in the Constitution to petition the government against grievances. She connected the concept *grievances* with more familiar examples.

> **CS:** If you have a grievance, how would you solve it, Maria? How would you solve it?
>
> **Student**: You'd go to that person in that class and talk with them.
>
> **CS**: So a grievance is something you're not happy about. So this [the Constitution] says that we are free to have things we don't like about the government. Are there things your parents talk about that they don't like about the government?
>
> **Several Students Respond:** Yes.
>
> **CS:** So we are going to look at the idea that you can complain. As a student you can complain to a teacher, right? Some of them are nicer than others, but if you had a problem with the seating chart, you could come to me if you had a complaint.
>
> **Student:** Ms. Smith, I have a problem with the seating chart (jokingly).
>
> **CS:** (Laughing) Well, come see me after school.

She used two different personal connections with the students. Each case reinforced the concept of grievance.

In some cases, she created scenarios where she incorporated the students to build connections. In describing rights and limits in the Constitution, she described a scenario she believed students related with.

> **CS**: Let's go back to this idea that you can assemble. Let's say we were to decide we had enough of school lunch today and we went out in the parking lot and protested. We made some cool signs saying, "Bring back the real peanut butter bars."
>
> **Several Students**: Yes!
>
> **Student A**: We could post our rally on Facebook!
>
> **CS**: What would be some problems with this? Keep in mind we'd get in trouble because it is private property and we didn't get a permit. Really to do these protests or to assemble together, you've got to think it through. You've got to have the proper permits, be in the proper place, and then you're free to do it.

> **Student B**: It kinda takes away the point because then you can't be like "bam," flashmob (Laughter).

She utilized the example of protesting school cafeteria food to generate a situation that connected the students with the concept. This allowed for further connections to other concepts they recognized, such as Facebook and flash mobs.

Carol utilized personal connections during teacher-led explanation or instruction. Often they occurred spontaneously as they built on the flow of the lecture. In each instance, the purpose of the connections focused on helping students understand key concepts.

Informal connections with past and future learning. Along with personal connections, Carol connected new information with previous learning or created a preview of future concepts. In an opening question for her geography class, she asked students to analyze a map and describe the population patterns of Russia. She connected this with previous learning on population patterns.

> **CS**: When we talked about the United States, so long ago, where did we say most people live in the United States?
>
> **Student A**: East Coast.
>
> **CS**: East coast. Who said it?
>
> Student raises hand.
>
> **CS**: Yes. We talked about how most of the major cities are on the East coast. Then, we talked about Canada and where do most of those people live?
>
> **Student B**: The border.
>
> **CS**: Yes. The border, close to the U.S. What would be up north for them? Snow and cold? You couldn't live productively in large groups. Let's go back to Europe. What did we say about Europe, where did most of the people live in

Europe?

Student C: The coast?

CS: Not the coast. Cities. The cities. So now we are looking at Russia, So, look at this map, where do most of them live? The west, closer to Europe, because what is located in the East?

Student D: Siberia.

CS: Frozen Siberia. So remember most of the Russians live on the Western half.

She utilized information from three different areas of study before she connected it with new learning. Interestingly, she went through each example in the same order she taught the different units, demonstrating her desire for continuity.

She adapted the connections to meet the needs of the class. In the Martin Luther King lesson (a lesson taught to both geography and history), she adapted the connection between U.S. history and geography to connect with each of the classes' previous learning. In geography, she made connections between the Civil Rights movement and Ireland.

CS: Remember a couple of weeks ago when we talked about Ireland. What was the struggle in Ireland?

Several students respond: Religion.

CS: Religion! Catholics and Protestants. We talked about how that conflict is based in violence, right? We talked about at the same time how the Civil Rights movement was based on peaceful protests.

Student A: They still beat them up.

CS: That's true! They did beat them up and some violence occurred, yes. Which do you think has gone farther? Do you think the problem in Ireland has been solved.

Several students respond: No

In her history class, she adapted and connected the phrase “sons of slaves and sons of slave-owners” with the slave trade.

> **CS:** Remember we talked about the colonization of the South. What groups of people of lived in the South?
>
> **Several Students:** The blacks.
>
> **CS**: Right, remember how because so many Native Americans died and they started to grow cash crops, they brought slaves over from Africa. But who also lived there?
>
> **Student A:** Whites?
>
> **CS**: Right! So in this area you had two people living there but they were experiencing two different lives. He is going to refer back to this history.

She adapted the connections between the speech and the different contents to make the current knowledge understandable.

Carol connected information to future learning as well. Often, she provided a brief description of the content they would encounter in the future and connected it to the current idea. These occurred less frequently as compared with connections of prior learning. In geography, she connected geographical concepts with historical concepts students would encounter later in high school. In her geography lesson on capitalism, she referred to Upton Sinclair’s “The Jungle” when she described government regulations.

> **CS:** Those regulations kinda started out in the 1800s when people were manufacturing meat in meat packing places and they were putting rats and bones, even human fingers that got cut off, through the thing [meat processor machines]. There was a famous book called “The Jungle” and because of the book, now, when you go to a processing place they have protections in place. You have to have a certain type of environment. You have to wear a hair net, etc. So again, the government does not tell you how to make hot dogs and make bologna but it does tell you how to do it safely.

Student A: There were human fingers coming through the hot dog machine?

CS: Yes.

Student A: Ooh. Yummy.

CS: Ok. So that's how today, they can't control it completely, but they try to make things better. And I don't know what it would be like if you didn't have those regulations. You could get lead in the toys and rats or materials in paint.

Often times, informal connections occurred spontaneously during her teacher-led explanation. Instead of preplanning the connections, the connections occurred in response to the events of the lesson. Carol utilized these connections to help students increase understanding on the topic at hand.

Analysis of Behavior

Each theme of behavior portrayed consistent behaviors of Carol. Most of those behaviors surrounded instructional techniques that aligned with broad categorizations of teacher-focused instruction, such as her behavior of *explaining content*. In the following discussion, Carol determined information she wanted her students to learn and focused the selection on her predetermination of important knowledge.

JT: So you said this several times, "you just need to write down one word" so what was the reasoning for only choosing one word?

CS: So when [students] write down "I have a dream that is embedded in the American Dream" they are trying to write down the word "embedded" and they are trying to spell it and then they missed the next one [question]. So if they just gave me one word then *I'd know they heard what he said.*

Carol predetermined information students needed from the video and created notes to reinforce key ideas. She determined the information rather than the students.

In another instance, she dictated notes students wrote down based upon what she believed her students should learn. In her lesson on capitalism, Carol described a hierarchy of information and described the information she valued. In this example, she introduced students to Adam Smith but placed emphasis on the concept of capitalism.

> **CS:** This isn't a economics class so we mentioned that he [Adam Smith] was the guy behind the idea [capitalism] but we don't need to know more…the word "capitalism" *they needed to know what that word is.*

These behaviors and beliefs demonstrated some consistency between her broad beliefs of teacher-focused instruction and her behavior of teacher-led notes.

Inconsistent Behaviors

Carol's consistent behaviors occurred in multiple places and often affected large-scale behaviors, such as the design of a lesson. Utilizing Speer's (2005, 2008) methodology of analyzing small-grained behavior, small moments of Carol's behaviors revealed behaviors not consistent with teacher-led instruction. These behaviors occurred on a small scale. During a lesson on capitalism and communism, Carol concluded the lesson with students summarizing quotes on communism using their words. In one instance, Carol redirected a student to use her own words and provided little interference as the student processed her own definition.

> **CS:** So look at the first quote, "The theory of communism could be summarized in one sentence: abolish all private property." Write down the main idea of the first quote. If you haven't shared yet, be prepared to share with us. Jayden, what is your one sentence?
>
> **Student:** I just put abolish private property.
>
> **CS:** Okay, how could we do this and not take any of the words there and put it into your own words.

Student: Make everyone equal?

CS: Ok, good.

In this small moment, Carol chose not provide assistance with the student rewriting the quote. Instead, she focused on redirecting the student to the task. Even though throughout the lesson, Carol utilized mostly teacher-focused behaviors, a small instance emerged in this lesson where she exhibited a student-focused behavior. This behavior ran counter to other behaviors found in the lesson.

Carol adapted her teaching when she believed students lacked understanding, a behavior more aligned with student-focused instruction. During the lesson on Martin Luther King's speech, she attempted to explain using connections. Her first connections only resonated with a few students. She continued to give examples to increase the number of students who made the connection.

CS: How many people do you think attended Martin Luther King's speech?

Various Responses

CS: They estimate that between 200,000 and 300,000 people were at the speech. Do you know how many people that would look like? Imagine this, how many of you have ever attended a college football game?

One student raises his hand.

CS: What game did you go to?

He stated a local college.

CS: Ok, that stadium can hold 30,000 people.

Student A: Wow, it looks a lot more when you are there.

CS: How many of you have attended the Central Arena [the local concert and basketball arena]) for a concert or Disney on Ice?

Two or three students raise their hand.

CS: OK. So that holds 22,000. Let's think about last week's fire drill. Do you remember how crowded that was?

Students shake their head in agreement.

CS: That was just 1,300 students, so imagine 200,000 people there, let alone 300,000.

Carol employed many teacher-focused behaviors during the lesson on Martin Luther King Jr.'s speech. But in this small instance, Carol determined previous examples lacked connections with their personal lives and provided little understanding to the student. She adapted the content to help the students understand. While these inconsistent behaviors were exhibited infrequently and on a small scale, they contradicted Carol's general themes of behavior.

Small-grain analysis of behaviors found examples where Carol demonstrated both inconsistent and consistent behavior in the situation. When they discussed the vocabulary word economy, one student, in her first period, listed the textbook definition. She observed the definition didn't help with student understanding. In the next class period she adapted and utilized personal connections instead.

CS: I noticed [during] second period the textbook didn't really help the students understand what "economy" was so I changed it with the next period.

JT: How did you figure out the students didn't understand the words?

CS: I watched them and tried to get them to apply the word and they couldn't do it.

Carol adapted her instruction for the students. Although adapting curriculum aligned with student-focused instruction, she utilized teacher-led connections to increase

understanding.

JT: What type of changes did you make?

CS: I tried to relate it [to] something they would understand.

JT: How did you choose the connections to use?

CS: I thought that if I could connect "economy" with things they are familiar with then they would understand it.

Even though Carol initially utilized student-focused behaviors to evaluate the situation, she utilized teacher-focused behaviors in her instructional decision.

In all these examples, the influence of beliefs affected Carol's behaviors. Grounding analysis in small-instances of behaviors elicited data potentially lost in general observations. Small inconsistent behaviors exhibited themselves as Carol evaluated a particular situation. Her reaction provided an observable instance of inconsistent behavior. Speer (2005, 2008) and Palak and Walls (2009) described beliefs as content-sensitive where the surrounding factors influenced implementation of beliefs. In these small moments, the various situations influenced how Carol enacted beliefs.

Her consistent, teacher-focused behaviors interacted with these situations. Carol's less dominant beliefs evaluated the situation. However, her dominant, teacher-focused beliefs influenced her reaction and adaptation. Green (1971) described the existence of beliefs with different psychological strengths with stronger beliefs holding greater influence. In the case of Carol, her peripheral beliefs influenced the behaviors that evaluated the situation. However, her dominant, core beliefs affected her reaction to the evaluations. Final judgment and behaviors grounded themselves in her core beliefs.

Importance of Shared Understanding with Inconsistent Behaviors

In understanding the relationship between beliefs and behaviors, shared understanding between Carol and me provided tremendous insight into not only inconsistent behaviors but consistent as well. Carol often utilized explanations as a dominant instructional strategy. She aligned several beliefs with this behavior. For example, she often connected the belief *scaffolding stretches students* with her behavior of teacher-led explanations. She aligned this behavior with her belief *connections make content relevant* as she generated most connections.

By viewing Carol's behaviors through her beliefs, I found understanding of her consistent behaviors across multiple situations. For example, Carol often explained and clarified content. When the students engaged in readings, she often paused to clarify particular points. This also occurred with videos as she stopped and provided further explanation. The multiple behaviors aligned with her belief *explanations increase understanding* and demonstrated consistency because of a belief.

Shared understanding between Carol and myself provided greater depth of understanding into her consistent behaviors. For example, Carol utilized connections to help students understand the information. Throughout discussions, Carol described her belief that connections helped students develop understanding. In multiple observations in geography, she selected one student consistently to make connections. At that point I understood why she used connections, but lacked understanding on her consistent selection of this student.

JT: So I noticed you often called on Peter.

> **CS:** I know. I always pick on Peter and that is bad.
>
> **JT:** Why do you choose him?
>
> **CS:** I know him. He's a friend of my son and so we have a lot of personal connections. Because I am so familiar with him, I know how to make a connection with him and he will *give me the answer that I want to share with the class.*

By grounding the discussion in a specific behavior, Carol provided additional insight in the influence of her beliefs. She demonstrated not only the use of connections in building understanding, but this belief influenced her consistent calling on Peter. In this instance, her belief *connections make content relatable* influenced two separate behaviors (the use of explanation and the selection of the student). This relationship appeared only through shared understanding.

Occasionally Carol exhibited behaviors I initially found inconsistent with her beliefs. For example, very few behaviors aligned with her belief *interpretations increase understanding.* To understand why, I showed Carol a clip of her explaining primary source quotes. I then deliberately compared this belief with the unseen belief of interpretation.

> **JT:** The instructions on the worksheet asked students to write the quotes into their own words. Why did you break down and explain the different quotes?
>
> **CS:** I didn't think the students would be able to understand these quotes by themselves. Many of them use vocabulary words they [students] don't normally use.
>
> **JT:** In previous discussions, you mentioned that students needed to interpret the information in order to understand it. Why did you choose to explain here instead of interpret?
>
> **CS:** I think it was the end of the lesson and I was running out of time. So, I thought explaining would allow us to get through what we needed to get through

that day.

Carol's justification referenced another belief that time (an outside factor) affected her ability to use interpretive instructional strategies. Shared understanding provided awareness that her belief *outside forces affect learning* influenced her decision to not have students interpret the content. By grounding an unseen belief in a contrasting behavior, Carol provided rationale of her behavior utilizing her beliefs. Without the shared understanding, little explanation occurred between her behaviors and beliefs.

Carol frequently exhibited behaviors that required shared understanding. As the researcher, I needed additional information to understand both consistent and inconsistent behaviors. This appeared when Carol provided further explanations grounded in specific behaviors. Without shared understanding, little insight on the connections between Carol's beliefs and behaviors emerged, a weakness cited in previous research (Gill & Hoffman, 2009; Pajares, 1992; Thompson, 1992). Utilizing shared understanding produced greater explanatory power between beliefs and behaviors.

Summary of Results

Carol generally exhibited consistent behaviors. These behaviors aligned with teacher-focused strategies. Specifically, she provided teacher-led explanations and directed students' note taking. She designed lessons to create comparisons between ideas she believed would elicit understanding. In each of these cases, Carol directed the method and type of instruction.

However, on a small scale, Carol illustrated behaviors not aligned with teacher-

focused instruction. These small moments of behaviors aligned more with student-focused beliefs. Particularly, she evaluated understanding by analyzing students' responses. However, she adapted instruction based on her consistent behaviors of teacher-led explanations. This interaction of behaviors and beliefs illustrated the existence of beliefs with different levels of strength. Carol's dominant, core beliefs influenced the final behaviors she enacted to increase student understanding. Her less dominant beliefs only provided a lens to view the understanding. It did not influence final behaviors.

Shared understanding provided connections in Carol's consistent and inconsistent behaviors. Specifically, by grounding discussion through observable behaviors, insights emerged in the relationship between Carol's beliefs and behaviors, creating explanatory power. Shared understanding showed Carol's enacting of multiple beliefs in particular situations. Carol's descriptions of the events provided connections between her multiple beliefs and how they interacted with each other. This led to understanding how specific beliefs influenced behaviors.

CHAPTER VII

ANALYSIS AND DISCUSSION

Carol's teaching emerged as a complex act. Decisions required Carol to evaluate content, and then determine how and when to convey the content. Previous researchers found decisions made by the teacher reflected what a teacher believed to be important and plausible. "Beliefs are instrumental in defining tasks and selecting the cognitive tools with which to interpret, plan, and make decisions regarding such tasks; hence, they play a critical role in defining behavior and organizing knowledge and information" (Pajares, 1992, p. 325).

Carol's beliefs evaluated the situations presented in the classroom and, consequently, influenced her behaviors. Identification of these beliefs emerged through observation of her behaviors. This contrasted with traditional methodologies, which measured beliefs before data collection. Then, they attempted to make connections between established beliefs and behaviors leading to little understanding (Gill & Hoffman, 2009; Speer, 2005, 2008). Utilizing both stated beliefs and behaviors to create an evolving framework of beliefs created greater understanding of Carol's beliefs. This established a concrete relationship of Carol's beliefs influencing her behaviors.

After identification, I reflected on the nature of Carol's beliefs. Specifically, I focused on their formation and the existence of dominant and less-dominant beliefs. Shared understanding between Carol and me provided tremendous understanding. After I gained insight into her beliefs, I utilized this knowledge to analyze her consistent and inconsistent behaviors. Throughout this process of analysis, explanatory power surfaced

in the relationship between beliefs and behaviors.

Use of Framework to Analyze Beliefs

In identifying and analyzing Carol's beliefs, I utilized a framework that first grounded assumptions about beliefs from Green's (1971) research. I organized beliefs into premises and conclusions. Most of Carol's premises emerged from personal experiences. She cited personal experiences as the reasons for her beliefs and then used these experiences to support the rationale for her beliefs. For example, she described how students needed to take responsibility for their learning and supported this with an annotatable experience with her son taking responsibility for his finances. In each of these cases, the experiences formed the premise and then the belief emerged as consequential conclusions, which she applied in her teaching.

I also utilized Green's other dimensions of beliefs and organized beliefs into dominant and less dominant. By viewing beliefs as a hierarchy, I connected consistent, frequent behaviors with beliefs that appeared to hold greater psychological strength. The framework allowed consistent behaviors to inform beliefs which often allowed implicitly held beliefs, such as Carol's belief *explanations increase understanding*, to become part of the analysis. A hierarchy within beliefs created a more useful framework in understanding the why behind Carol's behaviors. By viewing her consistent behaviors through the framework of dominant and less dominant beliefs, greater depth emerged in the relationship between Carol's beliefs and behaviors. In particular, this framework generated tremendous insight surrounding her reaction to reforms.

By analyzing Carol's beliefs through Green's (1971) theoretical assumptions of beliefs, additional insight and understanding emerged as this framework interplayed and informed others' research. In particular, Speer's (2005, 2008) "collection of beliefs" methodological supposition that beliefs and behaviors could not be analyzed independently but instead must be viewed simultaneously influenced the gathering of data. As I gathered data, the beliefs informed Carol's behavior and her behavior also informed the beliefs. This cyclic analysis, with foundation from Glaser and Strauss' (1967) grounded theory, provided a depth and understanding towards the relationship with behaviors and beliefs previous researchers found difficult.

For example, throughout my analysis of Carol's consistent and inconsistent behaviors, Carol utilized teacher explanations to explain content more often then any other instructional technique. Discussion grounded in this behavior led to the emergence of Carol's belief *explanations increase understanding*. Viewing Carol's frequent utilization of this belief and consequent behavior through Green's (1971) framework created a lens that identified this belief as a core/dominant belief. This categorization of beliefs within a hierarchy then influenced my analysis of Carol's interaction with reforms. In particular, I found that Carol utilized her dominant behaviors when she felt disequilibrium or uncertainty. She evaluated the situations presented because of the reforms through her belief hierarchy.

In this research, the strength of my framework for analyzing beliefs allowed for multiple ideas around belief research (Glaser & Strauss, 1967; Green, 1971; Speer, 2005, 2008) to interplay and interact with each other and provided greater depth and knowledge

into the relationship between beliefs and behaviors. Speer's (2005, 2008) provided a framework in identifying and analyzing the actual beliefs held by the individual. Grounded Theory offered methodological guidance during the analysis. Finally, Green's (1971) dimensions of beliefs created a lens to understand the observations and analysis in the greater picture of beliefs as a whole.

Nature of Beliefs Found in Consistent and Inconsistent Behaviors

Researchers have criticized the lack of explanatory power between beliefs and behaviors. Several focused on the messy nature found in traditional constructs of beliefs. These traditional constructs portrayed beliefs as broad, static, isolated, and interconnected with concepts of knowledge (Pajares, 1992; Speer, 2005, 2008; Thompson, 1992). Critics of these constructs focused on their inability to provide explanatory power. Recent researchers stated explanatory power occurred only with revised constructs that portrayed beliefs as multidimensional, episodic, dynamic, interactive, and context-specific (Gill & Hoffman, 2009; Palak & Walls, 2009; Speer, 2005, 2008).

Revisions of belief constructs focused on demarcating beliefs and knowledge. Traditional constructs often grouped beliefs and knowledge together. Several researchers asserted beliefs and knowledge varied from each other, primarily in differences related to their individual characteristics, formation, and organization (Gill & Hoffman, 2009; Nespor, 1987; Palak & Walls, 2009; Speer, 2005, 2008). In fact, Pajares (1992) argued traditional constructs of beliefs aligned more with knowledge rather than beliefs. He described beliefs as emotional, nonobjective, internally constructed, and dynamic. Nespor

stated belief formation occurred in highly emotional experiences of the individual compared to the formation of knowledge through logical analysis. Pajares' and Nespor's descriptions of beliefs supported Speer's (2005, 2008) and Green's (1971) descriptions of beliefs as clusters or "collections" with hierarchical structures found within.

Throughout the analysis, I utilized Green's (1971) three dimensions to examine Carol's beliefs. I evaluated the organization of her beliefs and sorted her rationales from premises and conclusions as beliefs. I investigated the influences of her beliefs' formation in order to understand the framework of her beliefs. In addition, I explored the psychological strength of the different beliefs to identify dominant and less dominant beliefs. Then, I considered how the various beliefs interacted with each other as they clustered and separated.

Beliefs are Experienced Based

I investigated the formation of Carol's beliefs in order to establish a foundation of Carol's beliefs. Many researchers cited the power and influences of individuals' schooling experience. Lortie (1975) described this as the *apprenticeship of schooling* and Murphy and colleagues (2004) supported Lortie's findings by citing the early emergence of beliefs about teaching. However, no mention of her own experiences of schooling occurred during the interviews with Carol. She grounded her beliefs primarily in her experiences as a high school teacher and as a wife and mother.

Carol explained her experience as a high school teacher influenced her current classroom. She viewed the curriculum in a broader spectrum because she knew what students needed to know later. She created curriculum that incorporated a continuum of

learning. She believed that without her previous experience she might not have made these adaptions to the curriculum. This finding aligned with Richardson's (1996) assertion that teaching experience affected the beliefs formation and evolution. Because Carol experienced other curriculums, she adapted to make these connections explicit.

More often, Carol explained her beliefs through her experiences as a wife and mother. Several times she rationalized a particular belief with an example from one of her family members. In one instance, she cited the personal experience of her husband and applied this to her belief *support helps students.* Throughout the data collection, Carol utilized personal experiences outside schooling, both past and recent, to create the premises of her beliefs.

Previous researchers provided insight into the dominance of Carol's life experiences. Caudle and Moran (2012) described beliefs as lay theories developed outside formal instruction. They believed these lay theories filtered new knowledge that individuals encountered. For Carol, she cited only personal and professional influences, without mentioning preservice training. Carol's beliefs formed outside formal instruction and, more than likely, filtered her preservice experience.

Nespor (1987) stated beliefs developed from episodic memory, particularly vivid memories. Carol valued her role as wife and mother and these memories influenced her beliefs more than others. Research by Parker and Brindley (2008) offered further illumination into these findings. In their study, nontraditional preservice teachers experiences proved to be more vivid and influential than traditional preservice teachers' experiences. Nontraditional preservice teachers' beliefs influenced the individuals'

preservice experiences more than their classmates. Carol began teaching after several years with her children. As a nontraditional student, she entered the program with a rich set of beliefs. These beliefs filtered her formal training and experiences in the classroom.

Carol demonstrated that previous experiences influenced how beliefs formed and the powerful influence of these beliefs. Green (1971) described the structure of beliefs as premises and conclusions. With Carol, she utilized her experiences to provide the premise of the belief. This showed a powerful influence on the nature of beliefs and, consequentially, the influence on behaviors.

This finding connects with other areas of research, particularly with reforms and nontraditional students. Researchers found teachers' beliefs influenced reforms (Caudle & Moran, 2010; Palak & Walls, 2009). If experiences influence belief formation, then teachers' engagement with reforms influences the beliefs (positively and negatively) as well. This could be a powerful tool to provide support of reform *in* the classroom where experiences occur. Positive engagement with reforms might provide a new premise for a belief.

Carol illustrated that nontraditional teachers often utilize influential beliefs to filter experiences. Tanase and Wang (2010) contended that nontraditional teachers' beliefs could not be ignored when reforms occur. In fact, in some cases, their previous experiences could even support reform movements.

Beliefs are Clustered and Interactive

Analysis of Carol's consistent and inconsistent behaviors provided insight into the nature of her beliefs. Carol's beliefs existed as clustered and interactive. This description

countered traditional constructs and aligned with recent portrayals of beliefs as multidimensional, context specific, and interactive (Nespor, 1987; Pajares, 1992; Speer, 2005, 2008).

I measured Carol's beliefs by analyzing her rationale of small examples of consistent and inconsistent behaviors. Throughout her justifications, no single belief accurately characterized her behavior. Instead, she referenced a "collection of beliefs" that continually interacted with each other. For example, Carol often used connections to explain a concept. She rationalized this behavior by referencing the belief *scaffolding stretches students*. This belief interplayed with *connections build continuity* and, consequently, explained the concept. These beliefs clustered together and interacted to influence her behavior.

In the clusters, a hierarchy occurred within the beliefs. In this hierarchy, Carol's dominant beliefs, *explanations increase understanding* and *outside factors affect learning*, influenced more than other beliefs. In these cases, the beliefs did not conflict with others. She simply valued these over other peripheral beliefs. The interaction of dominant and less dominant beliefs aligned with Green's (1971) dimensions of beliefs. He stated beliefs could be incompatible or inconsistent with each other as the individual could separate different beliefs. When conflicts occurred in situations, some beliefs simply dominate and influence the behaviors.

Even though fundamentally different in nature, throughout discussions, Carol listed little conflict between her beliefs of *explanations increase understanding* and *interpretations increase understanding.* When these beliefs interacted in particular

situations, a hierarchy surfaced with her belief *explanations increase understanding* exhibiting more influence on her behavior.

In most cases, the interaction of these two beliefs depended on Carol's judgment of time. When she utilized teacher-focused explanations rather than student-led interpretations of review and discussion, she stated this occurred because she felt a limited amount of time. In these cases, she evaluated what behavior (teacher-led explanations) would best interact with the situation (limited amount of time).

Situations played a critical role in Carol enacting her dominant beliefs. Speer (2005, 2008) described beliefs as context sensitive and stated beliefs interacted differently in various situations. She stressed a person's beliefs included information not only of the instructional practice, but included judgment on its merit and feasibility. Pajares (1992) described this as the evaluative component found in beliefs. He stated individuals used beliefs to evaluate situations, and consequently, influence behaviors.

In some instances, tensions occurred between Carol's beliefs. On a few occasions, she enacted a less dominant belief instead of a dominant belief. This occurred more often when two beliefs from different clusters interacted and conflicted in a situation. Green (1971) stated beliefs existed both clustered and segregated. This provides the ability for an individual to hold conflicting beliefs. With Carol, certain situations forced her to negotiate beliefs within the particular situation. In these moments, the situation influenced Carol's utilization of less dominant beliefs. I termed these *situational dominant* as a single situation influencing Carol's beliefs rather than her traditional hierarchy. In these instances, Carol evaluated the situation and judged a less dominant

belief more appropriate for the situation.

The emergence of dominant and situational dominant beliefs illustrated an interaction within beliefs. Beliefs occurred not in broad constructs where one belief influenced another, but instead, multiple beliefs interacted to influence behaviors. This finding aligned with constructs that described beliefs as dynamic, interactive, and context sensitive (Gill & Hoffman, 2009; Green, 1971; Speer, 2005, 2008).

If both the internal hierarchy of beliefs and situations affect the behaviors, beliefs cannot be evaluated separately from behaviors. Methodologies such as Speer's (2005, 2008) "collection of beliefs" and Fredericksen and colleagues' (1998) video portfolio provided guidance into implementing circular analysis of beliefs and behaviors.

Emergence of Beliefs Through Inconsistent Behaviors

Previous researchers analyzed beliefs and behaviors separately and discovered inconsistent findings (Hancock, Bray, & Nason, 2003; Swan, 2007; Tanase & Wang, 2010). Critics believed these findings underanalyzed the relationship between beliefs and behaviors because of the constructs utilized and issues surrounding methodologies (Speer, 2005, 2008). Frederiksen and colleagues (1998) asserted the necessity of grounding beliefs and behaviors in the nature of their interactions. Understanding Carol's beliefs occurred through analysis of beliefs *and* behaviors. Carol held some beliefs implicitly and identification occurred only through observation of behaviors. Allowing behaviors to inform beliefs increased the explanatory power of Carol's beliefs and behaviors.

Initially, Carol and I discussed her beliefs and created a framework for the observations. In this interview, Carol identified and explained several beliefs. As observations occurred, Carol exhibited consistent and inconsistent behaviors with these beliefs. Consequently, subsequent discussion of inconsistencies identified beliefs not known in the initial framework.

For example, before observations occurred, Carol described her belief *interpretations increase understanding,* No mention occurred of her belief *explanations increase understanding.* As observations occurred, Carol exhibited behaviors inconsistent with her belief of interpretations. Grounding subsequent discussions with these inconsistent behaviors led to the identification of the belief *explanations increase understanding*. Interestingly, this belief dominated other beliefs and yet, identification occurred only through observations of behaviors. She held even dominant beliefs implicitly.

These findings demonstrated important, even dominant, beliefs could appear only through analysis of behavior. Carol's implicit beliefs aligned with previous researchers that stated with more experience, teachers' beliefs became more hidden and automatic (Albarracin & Vargas, 2010; Kagan, 1992). This supported Speer's (2005, 2008) logic for analyzing beliefs and behaviors in consistent and inconsistent behaviors.

In conclusion, an analysis of Carol's beliefs confirmed that traditional constructs of beliefs as static, explicit, and unchanging lack explanatory power. Her beliefs formed through episodes of personal, highly emotional experiences. These experiences formed the premises for her beliefs. Carol exhibited a hierarchy within her beliefs with some

more dominant and influential. However, in some instances, the situation enacted a less dominant belief. Therefore, even though beliefs influenced the behaviors, they needed to be analyzed together. Finally, Carol held some beliefs implicitly. Discussion of inconsistent and consistent behaviors brought these beliefs to the surface. Carol's beliefs, portrayed as clustered, interactive, and situational, aligned with more recent constructs such as Speer's (2005, 2008) "collection of beliefs" and, consequently, provided greater insight into the nature of beliefs.

Relationship Between Beliefs and Behaviors

Belief and Behavior Interaction

After gaining understanding of Carol's beliefs, I analyzed the relationship between her beliefs and behaviors. Throughout multiple observations, Carol exhibited consistent behaviors. Most of these behaviors surrounded instructional techniques aligned with broad categorizations of teacher-focused instruction. Hancock and colleagues (2003) defined teacher-focused instruction as learning tasks structured for the teacher to state, explain, and model the content. In addition to learning tasks, the teacher's use of questions utilized right/wrong feedback, employed prompts and cues, and if necessary, provided correct answers.

Utilizing this description, Carol consistently demonstrated teacher-focused behaviors, especially through her dominant behavior of explanations. Analysis of her beliefs and behaviors demonstrated a significant relationship where her beliefs influenced behaviors. For example, Carol's belief *scaffolding stretches student* exhibited direct

connections with several behaviors (see Figure 8). This led to consistency between her beliefs of teacher-focused instruction and behaviors. Other researchers cited similar results. Kraus's (1995) meta-analysis demonstrated a positive correlation between beliefs and behaviors. In another study by Haney and colleagues' (2002), they predicted behaviors in five of the six teachers simply by understanding the teachers' beliefs. These, and other researchers, demonstrated beliefs do influence behavior.

Analysis of the relationship between Carol's beliefs and behavior provided additional insight and knowledge. In particular, Carol's interaction with the new curriculum and netbooks illustrated how beliefs could interact with reforms. Analysis of

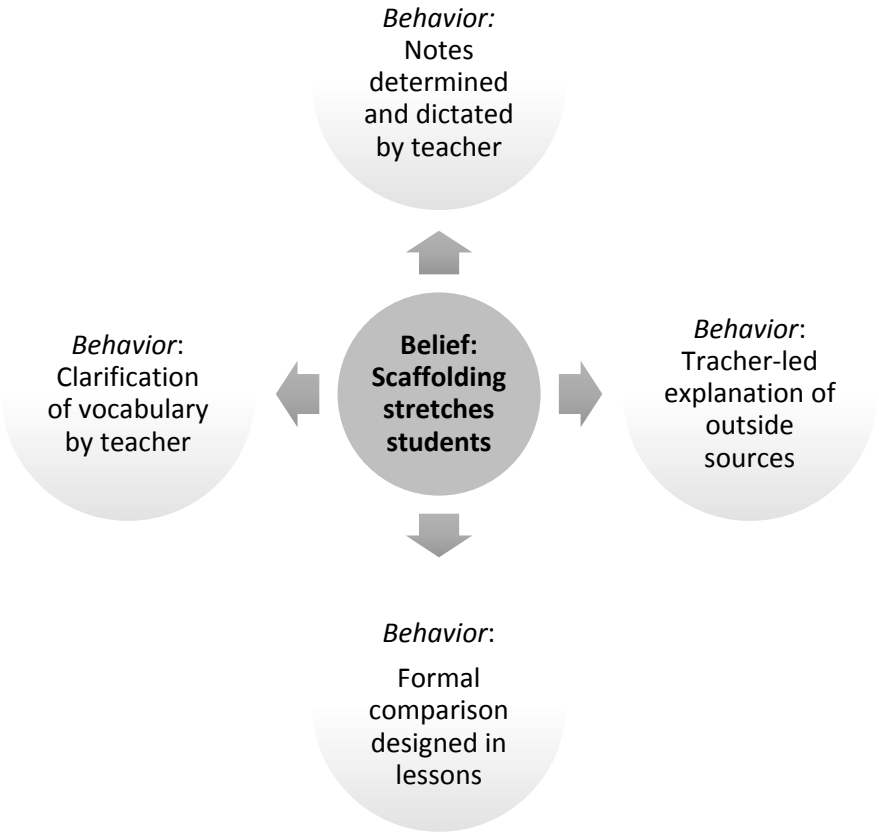

Figure 8. Influence of belief on behavior.

the inconsistent behaviors provided a powerful mechanism in understanding beliefs and behaviors.

Influence of Dominant Beliefs with Reforms

Carol participated in two reforms. Utilized initially to make potentially implicit beliefs obvious and observable, interesting findings surfaced with Carol's dominant beliefs' interacting with reforms. Previous researchers established connections between teachers' beliefs and reforms. Palak and Walls (2009) investigated teachers' incorporation of technology in the classroom. They discovered teachers employed technology based on their beliefs. Many researchers simply stated a relationship existed without additional investigation on the interaction. Thompson (1992) stated the process of teachers adapting new ideas and reforms into their framework of beliefs remained relatively unknown.

As Carol engaged in reforms, her beliefs influenced her behaviors. In one reform, Carol changed and adapted the curriculum for an honors class. Carol interacted with the new curriculum by incorporating beliefs formed through her experience as a high school teacher. Borko and Putnam (1996) described this common behavior. "What is increasingly clear is that whenever teachers set out to adopt a new curriculum or instructional technique, they learn and use the innovation through the lenses of their existing knowledge, beliefs, and practices" (p. 685). In her interaction with the new curriculum, Carol utilized multiple beliefs. Dominant *and* less dominant beliefs appeared throughout the observations (see Figure 9).

Carol's dominant beliefs *explanations increase understanding* and *outside forces*

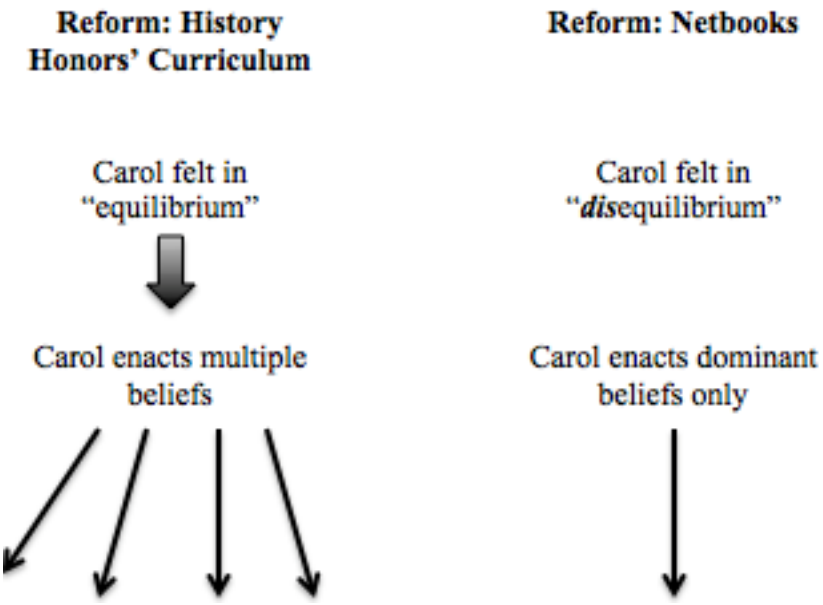

Figure 9. Comparison of reforms with beliefs interaction.

affect learning influenced her behavior with the netbooks. She employed teacher-focused strategies, primarily to access additional information. She limited her incorporation of the technology as she lacked familiarity with the netbooks (see Figure 9). "Experienced teachers' attempt to learn to teach in new ways and are also highly influenced by what they know and believe about teaching, learning, and learners" (Borko & Putnam, 1996, p. 684). Carol perceived the netbooks as unfamiliar technology and, thereby, limited their implementation. In contrast, Carol felt comfortable with honors curriculum and utilized multiple beliefs.

Mouza's (2006) research on additive learning provided insight into this finding. When presented with technology reforms, she observed some teachers incorporated the technology in a similar manner aligned with established beliefs. They termed this as additive learning. Carol's experience with the two reforms illustrated additive learning

occurred in both, but differences emerged in how she aligned the particular reform with beliefs. With the netbooks, Carol felt disequilibrium and so she incorporated only her dominant beliefs. She felt more comfortable when she engaged in the honors curriculum, and so she incorporated multiple beliefs. Carol demonstrated that beliefs interact differently with various reforms. Carol's feelings of equilibrium and disequilibrium influenced how she incorporated her beliefs.

These findings supported research where beliefs influenced the implementation of reforms and professional development (Caudle & Moran, 2010; Cochran-Smith & Lytle, 1993). As teachers engaged in the reforms, they attempted to negotiate through their beliefs. With Carol, her feelings of equilibrium and disequilibrium affected how she negotiated the reform.

Knowledge Gained Through Inconsistent Behaviors

Carol's beliefs influenced her behaviors in a fairly consistent manner. However, Carol displayed small behaviors of inconsistency between her beliefs and behaviors. Previous researchers cited similar findings (Caudle & Moran, 2010; Palak & Walls, 2009) but few researchers explained inconsistent behaviors, a weakness cited by many (Gill & Hoffman, 2009; Palak & Walls, 2009; Speer, 2005, 2008; Thompson, 1992). Analysis of Carol's inconsistencies revealed two findings into the relationship between beliefs and behaviors. First, analysis of inconsistent behaviors revealed the evaluative role beliefs play in particular situations. Second, shared understanding between Carol and myself provided critical understanding into how her beliefs interacted with behaviors.

Influence of Beliefs in Situational Evaluation

Carol displayed behaviors aligned with broad descriptions of teacher-focused instruction. In most cases, a clear relationship emerged between the belief and behavior. Occasionally, in small-instances, Carol demonstrated inconsistency with her behaviors of teacher-focused instruction. These small behaviors aligned more with student-focused instruction as she *evaluated* the situation using less-dominant beliefs. However, she *employed* her dominant beliefs in final adaption of the instruction.

In one instance, Carol modified her instruction because students lacked connections with examples she presented. This modification aligned more with student-focused instruction as she used student input to make adjustments. However, she resolved the problem by utilizing teacher-created connections rather than allowing students to create the connections. This adjustment aligned with teacher-focused instruction. She evaluated the situation using elements of student-focused behaviors, but enacted final instructional behaviors consistent with her dominant belief of teacher-led explanations.

These results provided insight into research surrounding beliefs and behaviors. In preservice training, teachers learn new knowledge. In application, they employ strategies and knowledge aligned with their beliefs (Ertmer & Ottenbrelt-Leftiwch, 2010; Tanase & Wang, 2010). Carol's behavior illustrated that even though she valued student-focused instruction and used it to increase her understanding of a situation, her dominant, teacher-focused beliefs filtered and influenced the final behavior (see Figure 10). Carol interacted with the situation using multiple beliefs, but final judgment became an evaluation of the belief she felt useful for the situation.

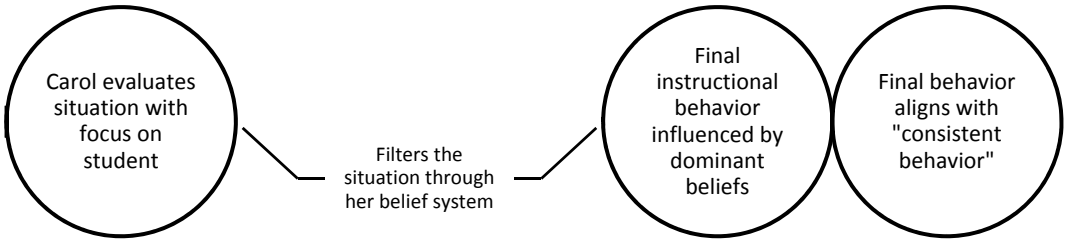

Figure 10. Carol's inconsistent behaviors.

Carol did not utilize the netbooks often because she felt it inapplicable to her classroom because of outside factors, particularly lack of training and time. Similar results occurred with research surrounding professional development and reforms (Guskey, 2003; Mouza, 2006). The teachers interacted with professional development and reforms, but final application in the classroom filtered through their beliefs. Teachers' negotiation led to an evaluation of the new knowledge or reform. If it did not align with their beliefs, many judged it inapplicable. In contrast, if the teacher found alignment, they more readily employed the change into their classroom.

Shared Understanding Role in Understanding Inconsistent Behaviors

In understanding the relationship between beliefs and behaviors, shared understanding between Carol and me proved vital in analyzing both consistent and inconsistent behaviors. Previous researchers divided beliefs into what teachers stated as "professed beliefs" and those reflected in practices, described as "attributed beliefs" (Calderhead, 1996; Putnam & Borko, 2000). Most researchers focused only on descriptions of *professed* and *attributed* rather than an analysis for the existence of two types of beliefs.

Through shared understanding, Carol explained both her consistent and inconsistent behaviors. Through consistent behaviors, connections and insight of Carol's beliefs surfaced and became observable. Additional understanding occurred through Carol's explanations of inconsistent behaviors. These behaviors, initially appearing as inconsistent, did not align with previously professed beliefs. Shared understanding between Carol and me allowed for analysis of the inconsistent behavior and often this realigned the behavior with a specific belief. The inconsistent belief became consistent as I received further knowledge from Carol that clarified the behavior. Instead of dividing her beliefs into professed and attributed, a reevaluation of the behavior occurred that brought unseen influences of beliefs to the surface.

For example, Carol believed *interpretations increased understanding.* Yet, this belief exhibited itself only in the interviews. Framing this into constructs of professed and attributed beliefs provided little explanatory power into why her belief in interpretation rarely exhibited itself. Through the process of developing a shared understanding, Carol explained her belief interpretation seldom occurred because she felt time (an outside factor) influenced her ability to employ this technique. She explained the behavior of not using "interpretation" instructional strategies through her dominant belief *outside factors affect learning*. Instead of viewing her beliefs into two categories (professed and attributed), a hierarchy emerged in her belief framework with dominant and less dominant beliefs.

Many researchers cited a lack of shared understanding as a weakness of traditional methodologies that led to inconsistent results in the relationship between

beliefs and behaviors (Gill & Hoffman, 2009; Pajares, 1992; Speer, 2008). Shared understanding allowed Carol to explain the connections between consistent and inconsistent behaviors. Her explanations illustrated beliefs did influence inconsistent behaviors, but the consistency and understanding surfaced in her justification (something not directly observable).

Conclusion

Carol's beliefs influenced her behaviors. The findings of this study provided explanatory power into the relationship between Carol's beliefs and behaviors. In particular, by analyzing the nature of beliefs through inconsistent and consistent behaviors additional understanding arose.

Carol's experiences played a powerful role in the development of her own beliefs. Because she started teaching several years after completing her initial college degree, her life experiences influenced more than formalize training. Her experiences created the premises for her beliefs. Her beliefs existed as clustered and interactive with multiple beliefs influencing her behaviors simultaneously. Occasionally, tensions occurred and dominant beliefs held the greatest influence. This affected her interaction with reforms. In particular, when Carol felt disequilibrium with the netbooks she relied on her dominant beliefs to assist in her negotiation.

Traditional methodologies focused on measuring beliefs first, and then comparing the beliefs with observed behaviors (Speer, 2005, 2008). This led to many inconsistent results. By measuring beliefs and behaviors simultaneously, consistent findings appeared.

Two main reasons occurred for these findings. First, Carol's implicit beliefs appeared in her behaviors. Once identification of implicit beliefs occurred, more consistent results materialized. Second, the situation played an important role in beliefs' influence on behaviors. Understanding the relationship between beliefs and behaviors required inclusion of the situation. Finally, shared understanding provided explanatory power of the relationship. Discussions between Carol and me clarified inconsistent behaviors and created greater understanding how beliefs affected behaviors.

CHAPTER VII

CONCLUSION

Summary of Findings

By analyzing Carol's beliefs and behaviors, several findings emerged in regards to the nature of beliefs and their interaction with behaviors. A single sample lacked the ability to generalize results to a larger population, but three major findings surfaced that provides insight into the nature of beliefs and how beliefs influence behaviors. First, experiences influenced the formation of beliefs. Carol came from a nontraditional background where she joined the profession later in life after raising most of her children. The experiences of a mother and wife interplayed with her belief formation. She also cited previous teaching experiences, such as teaching high school, as influences on her belief development and formation.

Carols beliefs appeared clustered and interactive. No single belief explained her behaviors. Instead, behaviors engaged within clusters of beliefs. Consistent behavior illustrated Carol's dominant beliefs. These beliefs appeared often and in a variety of situations. In fact, when tensions occurred among various beliefs, her dominant beliefs held greater influence. Interestingly, her dominant beliefs did not initially appear in foundational interviews. They manifested themselves through her behaviors. This indicates that Carol held her dominant beliefs implicitly. They influenced her behavior often without her knowledge.

Carol's behaviors interplayed not only with implicitly held beliefs but also

responded to situations found in the classroom. In some instances, the situation enacted a less consistent behavior that demonstrated a less dominant belief. In these cases, Carol responded to the circumstances and utilized less dominant beliefs to evaluate the situation. These results demonstrate Carol's beliefs as interactive, hierarchical, and situational, descriptions aligned with belief constructs of Speer (2005, 2008) and Green (1971).

By observing Carol's interaction with reforms, an interesting relationship materialized between the reform and Carol's beliefs. Honors curriculum created little disequilibrium for Carol. She felt comfortable with the curriculum and with her students. In this class, she employed multiple beliefs. In contrast, she experienced disequilibrium with the netbooks as she felt a lack of familiarity and control of the situations. Therefore, she utilized only her dominant beliefs. In each reform, Carol's sense of equilibrium and disequilibrium influenced what beliefs she employed.

In relationship with behaviors, a strong connection emerged between Carol's beliefs and her behaviors. She consistently utilized teacher-focused instruction across a variety of situations to help increase student understanding. Her behaviors and explanations aligned with her dominant beliefs that explanations increase understanding. This belief and consequential behaviors dominated her instructional behaviors in the classroom creating consistency and explanatory power of the relationship between her beliefs and behaviors.

Occasionally, small moments of her teaching demonstrated student-focused behaviors. In these instances, Carol utilized student feedback to modify her instruction.

She employed student-focused instruction to evaluate the learning of her students. However, after evaluation of their learning, she adapted instruction more consistent with teacher-focused beliefs. She utilized student-focused instruction to determine the level of learning, but then attempted to increase learning with more familiar instructional behaviors. In most situations, her dominant beliefs held greater influence on how she reacted to the situation.

During investigation of inconsistent behaviors, shared understanding between Carol and me proved critical. The initial discussions and beliefs did not appear in initial observations. Disconnects found within stated beliefs and inconsistent behaviors became the focus of remaining interviews and observations. Carol's explanations of specific behaviors led to the discovery of either implicit beliefs or misreading by myself as the researcher. By grounding discussion in the behaviors, we created a more accurate description of beliefs. This led to a more precise application of beliefs to the behaviors. Methodically, analyzing beliefs and behaviors together provided clarification and understanding that created greater depth and understanding into the nature of beliefs and the relationship between beliefs and behaviors.

Implications

While this study cannot be generalized, findings and conclusions create additional understanding into various areas of research, primarily with the nature of beliefs, methodology, and reform movements.

Nature of Beliefs

Much discussion in the literature on beliefs focused on the constructs utilized for beliefs. Division occurred with constructs that viewed beliefs as single and isolated, as compared to recent descriptions as clustered and interactive. Carol's beliefs consistently interacted with each other. The situation influenced how and what beliefs Carol employed. This implies her beliefs exist not in broad-general constructs but rather as multidimensional, hierarchical, and context sensitive. Broad, general characterization of Carol's beliefs failed to capture important insights into Carol's behaviors. This aligned with Speer's (2005, 2008) "collection of beliefs" and asserted the need for a nontraditional view construct of beliefs that measures beliefs with behaviors.

As Carol responded and reacted to different situations, a hierarchy emerged within her beliefs. She enacted two beliefs consistently in all situations. In particular, her beliefs "explanations increase understanding" and "outside forces influence learning" appeared in all lessons, both geography and U.S. history. These dominant beliefs influenced Carol's consistent teacher-focused behaviors. She also held less dominant beliefs that appeared only in certain circumstances. She occasionally enacted student-focused behaviors where she evaluated student learning based on their responses or behaviors. However, these behaviors appeared only in situations where Carol felt in control and could expand her behaviors. These findings demonstrate that certain beliefs hold greater influence. It also reiterates the role a situation can play in a teacher's belief system.

Evaluating differences between stated beliefs and behaviors exhibit fundamental

differences existed between constructs of beliefs and knowledge, with beliefs existing as more influential and judgmental. Carol utilized her beliefs to evaluate a technique, situation, or reform. She stated knowledge about the item, but utilized her beliefs to evaluate the utility of the knowledge. Understanding the difference between beliefs and knowledge provides insight in several areas of research, primarily preservice training and professional development. These areas focus on helping teachers improve their teaching. If beliefs judge the value of the knowledge, as seen with Carol, additional understanding is needed about how knowledge and beliefs differ.

Differences between knowledge and beliefs also center on areas of formation. Carol cited personal experience, especially those outside education, as the premise and reasoning of her beliefs. Her beliefs formed episodically. Episodic formation of beliefs challenges descriptions found in traditional constructs of beliefs and also create delineation between beliefs and knowledge. Pajares (1992) argued that knowledge forms abstractly and without context constraints. However, beliefs emerged emotionally with key beliefs foundations in specific moments. If beliefs form emotionally and grounded in specific experiences, an assumption emerged that changing beliefs requires experience, not cognitive analysis.

Methodology

Previous researchers established that broad constructs of beliefs lacked explanatory power (Pajares, 1992; Palak & Walls, 2009). Traditional methods measuring beliefs, such as surveys, provided limited explanation. I created a framework that incorporated several components from other researchers. In particular, I utilized Speer's

(2005, 2008) “collection of beliefs” construct, Glaser and Strauss (1967) “grounded theory” and the methodological layout found in Frederiksen and colleagues’ (1998) video analysis. This allowed Carol’s beliefs and behaviors to be viewed together. Then, I analyzed beliefs through Green’s (1971) framework of three dimensions. When applied, this framework allowed her behaviors to inform beliefs, and explanatory power appeared about the relationship between beliefs and behaviors.

This methodology provides potential in finding results with explanatory power. Explanatory power proves critical as many findings of previous research lacked in-depth analysis of the relationship between beliefs and behaviors. It might be possible to utilize broad-grain characterizations to analyze beliefs and practices. For example, Carol demonstrated a general trend of teacher-focused instruction. This broad description however, was not the whole story. There is much more we can learn from an in-depth analysis of beliefs and behaviors grounded in small instances of behaviors. “If the goal is to understand why, when, and how...a more fine-grained characterization of beliefs appears necessary” (Speer, 2008, p. 260).

The framework utilized for this research provided an in-depth analysis as a result of several factors. First, investigations grounded in instances of behaviors provide accurate, rich descriptions. As Carol discussed her beliefs, she grounded her reasoning in moments of behaviors rather than abstract concepts. This assisted in delineating between knowledge and beliefs. Knowledge occurred in her abstract theorizing, which was found in her initial interview. Beliefs emerged in her evaluations of the classroom observations. Grounded in behaviors, descriptions of beliefs appeared rather than proclamations of

knowledge.

Second, providing continual analysis of beliefs throughout the data collection allows the measurement of beliefs to evolve and change. Carol held some beliefs implicitly. An evolving framework grounded in actual behaviors allowed these beliefs to emerge through concrete examples of consistency and inconsistency and, thereby, adjust the belief construct.

These results provided a framework in analyzing beliefs and behaviors. Beliefs should inform behaviors and behaviors should inform beliefs. Rather than preestablishing a framework of beliefs to measure, the framework should continually evolve and change throughout the data collection process. Consistent and inconsistent behaviors should guide the analysis of beliefs. Instead of focusing on the existence of inconsistent behaviors, analysis should focus on *why* inconsistent behaviors occur.

Reform Movements

Reform is a constant in schools. While some reforms occur using a bottom-top approach with teachers and department leaders initiating change, more often reforms occur top-bottom (e.g., state or national mandates such as standardized testing) and subsequently shape priorities and instructional time in classrooms (Glickman, Gordan, & Ross-Gordan, 2010). In these reforms, "[t]he methodology for innovation is almost entirely top-down in nature, through a combination of dissemination and pressure. There may be much lip service paid to "participation" but this usually means getting people to 'go along,' in an attempt to create a sense of ownership" (Evans, 1996, p. 8). The implementation becomes staff adopting the expert plan, established by leadership or

administrative groups. This requires the teacher to negotiate the proposed reforms by modifying his or her behavior to align with the “top-down” mandates.

Carol’s negotiation through reforms proved anything but simplistic. She utilized her beliefs to negotiate through the two reforms she encountered. These beliefs affected how she implemented the reforms in her classroom. With honors curriculum, she felt comfortable and enacted multiple beliefs in her instructional strategies. With netbooks, she utilized only dominant beliefs in her negotiation. Carol’s feeling of equilibrium influenced how and when she enacted her beliefs. This implies a critical component to reforms. Reforms often are introduced to teachers in professional development outside the classroom. Application of the reforms often occurs without direct and continuous support. Feelings of disequilibrium could influence a teacher’s belief system and consequential, the implementation of the reform.

Reforms cannot be viewed in a vacuum or in a relationship with broad themed categories of beliefs. Instead, they interact with complex, multidimensional beliefs that interact with various aspects of the reform. As Carol demonstrated the formation of beliefs occur emotionally and from vivid experiences, the incorporation of reforms also interact with elements of belief formation, for positive and negative.

Conclusion

Previous researchers stated connections existed between teacher beliefs and behavior (Speer, 2005). Using broad, general constructs and self-reporting teacher surveys, dominant methodologies historically employed by researchers drew criticism.

Specifically, when relying exclusively on self-reporting surveys, concern arose regarding whether teachers held explicit awareness of the beliefs that most impacted their practice (Pajares, 1992; Speer, 2005, 2008; Thompson, 1992).

This study challenged the portrayal of beliefs as isolated and static. Like Speer (2005), I adopted a methodology that connected interviews with instructional episodes. I utilized one participant to better understand (a) the nature of beliefs through measurements of consistent and inconsistent behaviors and (b) the relationship between beliefs and behaviors.

The power of the examination focused on (a) Carol's beliefs, (b) actual practices, and (c) the connections between the beliefs and observed behaviors. This allowed Carol to explicitly articulate her beliefs and allowed me, the researcher, to understand the beliefs. A more accurate portrayal of beliefs occurred and provided greater understanding in how beliefs influence behaviors. This provided an in-depth analysis of the interaction of beliefs and behaviors that offered explanatory power of the relationship.

The importance of identifying Carol's beliefs and interaction with behaviors focused not on generalizing the results, but instead, to gain understanding. Tensions occasionally appeared between different beliefs in specific situations. These tensions occurred as outside forces pushed Carol toward decisions, actions, and behaviors. This last point seemed particularly important in future understanding of enacting reforms. As an example, if reform efforts take into account beliefs, implicit or explicit, conversations can work through inconsistencies. These reform conversations can focus on alignment between reform and teacher beliefs with the aim of reducing internal belief tensions.

Limitation and Further Research

It is clear that conceptualizing beliefs within a "collection of beliefs" can provide a rich framework for investigations. The connection between behaviors and beliefs still remains under-examined. This study utilized methods examining beliefs and behaviors simultaneously and provided additional insights into the nature of beliefs and how beliefs affect behavior. It is still unclear why some beliefs dominate others. Carol's belief *outside factors affect learning* often overrode other beliefs and influenced the instructional techniques chosen to teach information. Why did this belief overtake her other beliefs about learning (i.e., value of discussion)? What factors influenced the dominance of one belief over another?

Carol utilized her beliefs to navigate through the reforms. Little analysis occurred in how Carol's beliefs and behaviors aligned with the reforms. Further investigation is needed into the nature of conflict existing between teacher beliefs and proposed reforms. For example, what happens if a teacher's beliefs conflict with the reforms? This dynamic adds greater depth to not only the nature of beliefs, but the teacher's ability to negotiate through reforms.

Additional insight is also needed on the role professional development within the relationship between beliefs, behaviors, and reforms. During these reforms, Carol did not receive any professional development to support or augment her instruction. Consequentially, Carol's beliefs filtered and influenced the reforms. Additional insight is needed on how professional development could influence a particular reform.

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VITA

JENNELYN TALBOT

1549 E. Poets Rest
Layton, UT 84040
801-941-6098
jennelyn.talbot@gmail.com

EDUCATION

Utah State University, Logan, UT
Ph.D. in Education, Curriculum and Instruction **2014**
Dissertation: "An Investigation of the Interaction of Beliefs and Behaviors in the Classroom"

Weber State University, Ogden, UT
M.A. in Education **2009**
Thesis: "A Narrative Inquiry of the Use of Classroom Assessment Based Upon Mastery Learning"

Weber State University, Ogden, UT
B.A. in Social Studies Teaching Composite **2004**
Areas of Concentration: History, Political Science, Geography, and Psychology
Senior Paper: "Impact of War: Popularity and Presidential Approval during Times of Crisis"

TEACHING EXPERIENCE

North Davis Junior High, Clearfield UT
2011-Present
Instructor – AP Human Geography
Created and implemented 9th grade AP Human Geography Curriculum; Led "PLC" team with three other teachers.

Utah State University, Logan UT
Instructor – SCED 3500 Social Studies Teaching Methods **2010-2011**
Instructed future teachers in curriculum and instruction methods based upon "Understanding by Design"

Instructor – SCED 3300 Clinical I **2010-2011**
Coordinated and facilitated clinical experience within local schools for clinical students

Teaching Assistant: SCED 4210 Assessment and Curriculum Design **2010-2011**
Assisted professor in instruction of formative and summative assessment and data analysis in professional learning communities

Syracuse High School, Syracuse UT **2008-2010**
Instructor – U.S. History (11th Grade)
Created and implemented classroom assessment model based upon mastery learning; Lead and facilitated new advisory program within school

West Jordan Middle School, West Jordan UT **2004-2007**
Instructor – U.S. History (8th Grade) and World Geography (9th Grade)
Created core curriculum within an integrated team; Presented successful team model for University of Utah Department and Jordan School District

RELATED EXPERIENCE

Jordan History Academy of Teachers ***2005-2007***
Grant Participant
Assisted in coordinating and creating instructional networks within participating middle schools; Designed and implemented action research on improving test-taking strategies

PUBLICATIONS AND PRESENTATIONS

"Examining a Teacher's Negotiation through Change: Understanding the Influence of Beliefs on Behavior"
Teacher Development – *In Publication* 2014

"Examining a Teacher's Negotiation through Change: Understanding the Influence of Beliefs on Behavior"
Paper presented to Weber State University's Teaching and Learning Forum 2013

"Utilization of Technology and Elements of the Flipped Classroom"
Presentation to Davis School District's Technology Conference 2013