

IDENTITY FORMATION AS A TEACHER-OF-MATHEMATICS: THE EMOTIONAL GEOGRAPHIES OF PROSPECTIVE ELEMENTARY TEACHERS

by

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(Under the Direction of James W. Wilson)

ABSTRACT

Teacher education programs can be perceived as a series of interventions with the goal of modifying, shifting, or constructing beliefs about teaching and learning. This means teacher education programs are in the business of identity development. Understanding the formation of prospective teachers' identities may better inform teacher educators in developing interventions used in teacher education programs. In this study I examined four prospective elementary teachers' emotional geographies (Hargreaves, 2000) and constructed feeling rules (Hochschild, 1979) using the narratives of becoming a teacher shared during a practicum experience. The exploration of their emotional geographies provided a manifestation of their identity as mathematics teachers. The participants were prospective elementary teachers in their second semester of a two-year teacher education program. Each participant was interviewed three times throughout the semester. Additionally, the participants met as a group four times. All the interviews and small group meetings were transcribed. I analyzed the data using the emotional geographies framework for initial coding and an open coding process (Strauss & Corbin, 1990) within the geographies. After multiple rounds of coding, I identified themes and characteristics for the participants' emotional geographies. Additionally, the prospective teachers went through

three stages of identity formation: (a) Peripheral participation (b) Seeking validation from students and authorities, and (c) Identity construction through reflection. The findings of this study demonstrate the powerful influence emotionality has on the identity formation as mathematics teachers of prospective teachers. I call for research in the overlap between emotions, teacher education, and identity formation to better understand the act of becoming and design stronger interventions for prospective teachers.

INDEX WORDS: Mathematics Teacher Preparation, Identity, Emotion

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DEDICATION

To my parents, Carlos and Viviana Gomez

For all the sacrifices you made for our education

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CHAPTER 1

INTRODUCTION

My Own Critical Experience: Melissa

My study began long before I collected data, asked prospective elementary teachers to be participants, or even had a research question in mind. My study began when I witnessed an emotional breakdown of a prospective secondary teacher. It occurred in the middle of Melissa's¹ first semester mathematics pedagogy course. After class, she began to cry and spoke to the professors about how difficult it all seemed. She could not imagine herself as ever being capable of teaching mathematics. As she was learning to teach, teaching seemed much more complex than she ever thought. The instructors consoled her by positioning her as someone who was capable. Other conversations between her and the instructor would happen. After the semester ended, Melissa returned to her coursework rejuvenated. She had found a new purpose and value in her program. Eventually, she graduated and began to teach.

It was, however, watching Melissa's emotional response to the realization of the complexities of teaching that reminded me of my own emotional struggles in learning to teach. I, too, grappled with how complex it is to teach, but I was not as open as Melissa. Instead, I resisted what I was learning and rejected many of the constructs shown to me. I was angry and bitter about what I was learning and the experiences provided by my teacher education program. I began to think about the emotions involved in becoming a teacher as I reflected on my own experience and Melissa's contrasting experience.

¹ Pseudonym are used for all individuals and places

² Transcript excerpts have been modified for readability

This study is the story of four prospective elementary teachers each trying to find a place as an elementary educator and a teacher-of-mathematics. Their teacher preparation program provided them experiences allowing peripheral participation into the community of practice (Lave & Wenger, 1991; Wenger, 1998) they desired to join. Each one of them had a different vision of what it meant to teach mathematics and what it meant to care for students' mathematics. They each had various affective responses to their first experiences as a teacher in the elementary mathematics classroom. Some came to understand the complexities of teaching, while others needed a stronger intervention. Each participant viewed differently the connection between her teacher education program and her field experience. This study is about the connection between decision-making processes and the emotional response to peripheral participation in a community of practice, and how all these experiences influenced their self-conceptualizations as teachers-of-mathematics.

Problem Statement & Research Questions

Becoming a teacher is a complex process involving many internal and external factors (Brown & Borko, 1992; Borko et al., 1992; Sowder, 2007). Internal aspects include the development of mathematical content knowledge and pedagogical content knowledge (Shulman, 1986; Hill, Ball, & Schilling, 2008; Hill, Sleep, Lewis, & Ball, 2007), the development of productive beliefs (Conner, Edenfield, Gleason, & Ersoz, 2011; Cooney, Shealy, & Arvold, 1998; NCTM, 2014; Philipp, 2007), the individual's disposition toward mathematics (Dixon, Andreasen, Roy, Wheeldon, & Tobias, 2011) and tensions prospective teachers feel (Pillen, den Brok, & Beijaard, 2013). External factors include the prospective teachers' attempts to become members of a community (Lave & Wenger, 1991; Wenger, 1998) through the learning of a particular discourse (Gee, 2001; Avraamidou, 2014). These actions are taken to convince others

they are members of the desired community (Coldron & Smith, 1999). Although many of these factors have been studied separately, there is an implicit recognition these internal and external factors are not mutually exclusive. By studying the identities of prospective teachers, the investigator can focus on the influence of both the internal and external aspects on the individual. Thereby, the researcher takes into consideration the relationship between the internal and external aspects of becoming a teacher.

In recent years, increased attention has been placed on research into the development of a teacher's identity (Brown, 2008; Coldron & Smith, 1999; Cross & Hong, 2012; Friesen & Besley, 2013; Lutovac & Kaasila, 2011, 2014; Peressini, Borko, Romagnano, Knuth, & Willis, 2004). As research into the identity of teachers continues to grow, so do ways of thinking about teacher education. Luehman (2007) described how using identity as a lens for looking at teacher education programs can lead to new insights into issues of preparing teachers with productive beliefs. Teacher education programs provide opportunities to prospective teachers to engage in the discourse of mathematics teaching (e.g. practicum experiences; students teaching). These opportunities allow prospective teachers begin to be recognized by others (Gee, 2001; Goffman, 1959) as teachers-of-mathematics, enabling them to enter their desired community of practice. Using identity as a lens for teacher education, however, still requires the consideration of the internal aspects of the individual. As Raymond (1997) found, teachers' backgrounds were influential to their practice. The same can be said for how prospective teachers view their own education (Britzman, 2003).

Most prospective teachers at the beginning of their program only have their apprenticeship of observation (Lortie, 1975/2002) to construct a sense of self-as-teacher.

Britzman (2009) discussed the paradox prospective teachers face while constructing who they want to be:

Newcomers learning to teach enter teacher education looking backward on their years of school experience and project these memories and wishes into the present that they then identify with as somehow indication of what should happen or never happen again. (p. 28-29)

As prospective teachers continue through their program they are asked, through various interventions, to look backward at their own education and forward to their own possible practices. Throughout this process an individual continues to develop his or her identity as a teacher-of-mathematics. Studies on prospective teacher identity as a teacher-of-mathematics, however, are limited. In mathematics education, identity research has been more centered on students developing their identity as doers-of-mathematics (Bishop, 2012; Cobb, Gresalfi, & Hodge, 2009; Martin, 2000). Research on the identity of mathematics prospective teachers has been minimal (Hodgen & Askew, 2007).

According to Philipp (2007), identity is “the embodiment of an individual’s knowledge, beliefs, values, commitments, intentions, and affect as they relate to one’s participation within a particular community of practice; the ways one has learned to think, act, and interact” (p. 25). One can hold multiple identities depending on which community he or she is consciously or unconsciously considers oneself as being a member. Wenger (1998) stated, “we can participate in multiple communities of practice at once... our experience of multi-membership always has the potential of creating various forms of continuity among them” (p. 105). The individual can be empowered by an institution (e.g. corporation, university, government body, etc.) or person (e.g. boss, professor, administrator, etc.) to cross boundaries between these communities. For example, prospective teachers are simultaneously members of a community of prospective teachers and a community of students. The university teacher education program is what allows

prospective teachers to peripherally experience the community of teachers through student teaching and other practicums. Although they may not be teachers, the prospective teachers experience the classroom both as a student or actual self, and as a teacher or projected self. Additionally, these degrees of participation can have multiple levels. For example, a teacher candidate during student teaching may be feeling more like they belong to the community of teachers but still belong to the community of students, as well as any racial and class communities.

Specifically for prospective teachers, developing and forming their own identities as a mathematics teacher, means forming a constellation of knowledge, beliefs, attitudes, values and commitments about teaching and learning mathematics (Peressini et al., 2004). Prospective teachers enter teacher education programs with some beliefs of what it means to teach and learn mathematics as part of their apprenticeship of observation (Lortie, 1975/2002). Completing a mathematics teacher education program does not mean change or formation of an identity as a teacher-of-mathematics will occur. The prospective teacher may resist the interventions planned out by their teacher education program or refuse to fragment their holistic identity as a teacher (fragmentation of identity is explored later on in this study). The formation of an identity is particularly relevant for prospective elementary teachers because they enter their teacher preparation programs with a variety of dispositions toward mathematics (Lutovac & Kaasila, 2011). Consider that Kaasila, Hannula, Laine, & Pehkonen (2008) found 43% of prospective elementary teachers in Finland had a positive view ($n = 269$), while 22% had a negative view of mathematics. Other researchers have reaffirmed the trend of negative dispositions toward mathematics for prospective elementary teachers in the U.S. (Ambrose, 2004; Bekdemir, 2010). As previously stated, the prospective teacher's background can have an immense influence on

his or her teaching practice (Raymond, 1997). This includes the emotional experiences in and out of school (Brown, 2008; Hodgen & Askew, 2007; Lutovac & Kaasila, 2011).

Looking at a larger sphere of influence, teacher preparation programs have their own vision of mathematics teaching and plan interventions to convince prospective teachers to “buy in” to those beliefs, attitudes, dispositions, etc. Thus, teacher preparation programs hope to influence the developing professional mathematical identity of the participant. “Preparation programs deliberately and inadvertently reinforce the development of different kinds of teaching identities as they emphasize various aspects of what it means to be a teacher” (Hammerness et al., 2007, p. 382). Larger organizations can also try to influence prospective teachers’ identities. For example, with the publication of *Principles to Action* (NCTM, 2014), the National Council of Teachers of Mathematics (NCTM) laid out the productive and unproductive beliefs of a mathematics teacher. Consequently, NCTM constructed a particular image and criteria for those who wish to belong to the community of mathematics teachers. The clash between the individual’s desired model of teaching, the model idealized by their teacher education program, and experiences in the field (e.g. practicum and student teaching experiences) leaves an emotional residue influencing the ways prospective teachers view teaching, learning, and their own preparation as teachers-of-mathematics.

The National Research Council (2001) stressed learners of mathematics should develop their mathematical proficiency, which includes a productive disposition, or seeing mathematics as, “sensible, useful, and worthwhile” (p. 5). A teacher’s professional or teacher identity is the lens through which he or she sees and makes sense of his or her practice (Peressini et al., 2004). This also means one’s identity of a teacher would be attached to the disposition he or she holds of his or her own mathematical proficiency. For example, Bibby (2002) explored the shame

seven primary teachers felt while working on mathematics and the influence such emotions had on their viewed themselves as teachers. She concluded the dispositions those teachers had about their own mathematics held them back, “even if one had time to explore different ways of being or teaching, one might not want to risk the vulnerability of a transitional phase where one wasn’t entirely sure what one was doing” (Bibby, 2002, p. 719). Although Bibby did not study identity explicitly, Bibby’s conclusion was in line with Hammerness et al.’s (2007) argument that better understanding of the formation of teacher identity can aide in retention of professionals and how they see professional development as part of their career.

Also, researchers have argued affect is an important part of cognition and influences the way one learns mathematics (Bibby, 2002; Bishop, 2012; DeBellis & Goldin, 2006; Evans, 2000; Furinghetti & Morselli, 2009; Goldin, 2002; Hannula, 2002; Mandler, 1984, 1989; Marshall, 1989; McLeod, 1989, 1992; Zan, Brown, Evans, & Hannula, 2006). To students, however, mathematics is often perceived to be an emotionless objective subject (DeBellis & Goldin, 2006). Hannula (2002) states cognition and affect are two sides of the same coin and separating the two is purely done for analytical purposes. Carlson and Bloom (2005) add that affect is an important part of problem solving, but affective states are much more difficult to study:

Affective responses, however, are seen to be extremely complex, consisting of much more than the expression of positive and negative feelings or the exhibition of confidence. They entail structures of intimacy, integrity, and meta-affect that promote deep mathematical inquiry and understanding (p. 49).

Even though there have been various calls for more research on the formation of one’s identity and the affect/emotions involved (Beauchamp & Thomas, 2009; Brown, 2008; Friesen & Beasley, 2013; Pillen et al., 2013), not many in the mathematics education community have responded (Brown, 2008; Philipp, 2007). Additionally, different content areas “tend to elicit

different types and levels of emotional experiences for both teachers and students” (Williams-Johnson et al., 2008, p. 1603). Mathematics, then, elicits different emotions from individuals than other subjects. Yet, teacher educators have done little research to consider what these types of emotions are and how they are influencing teachers’ vision of mathematics teaching and learning.

The affective domain influences the ways prospective teachers think about teaching and learning mathematics. Other than a focus on changing dispositions toward mathematics, however, the majority of affect research has focused mostly on students learning or doing mathematics, while little has been done on the preparation of mathematics teachers (Goldin, 2014). This is problematic because learning to teach is a complex endeavor for the individual (Borko et al., 1992). As teacher educators, we are preparing prospective teachers to enter an emotional field (Hargreaves, 1998; 2000) in which teachers will have to partake in the emotional labor of teaching (Hochschild, 1979; 1983/2012). Consequently, prospective teachers will shape their identity as mathematics teachers based on their experiences. More research in how these transitions influence the prospective teachers’ views of mathematics teaching and learning need to be conducted, especially because it has been argued by neuroscientists and psychologists that emotions influence our decision-making processes (Damasio, 1994/2005; Ortony, Clore, & Collins, 1988). By better understanding these changes one can design more focused interventions.

Taking a different lens on teacher preparation can also aid in better structuring teacher education programs and providing prospective teachers in creating better learning environments for students to experience mathematics. For this reason, a study on teachers’ development of professional identity (conceptualizations of self-as-teacher) and the affective domain, specifically

emotions, needs to be done. I conducted a qualitative investigation through a situative perspective, with a foundation built on the work of Denzin (1984/2009), Hochschild (1983/2012), and Hargreaves (2000; 2001a; 2001b). I describe the identity formation and the emotional residue of four prospective elementary teachers during their first practicum experiences where they are asked to partake in legitimate peripheral participation (Lave & Wenger, 1991). In particular, the following research question guides this study:

- How are emotions involved in the development of prospective elementary teachers' identity as a teacher-of-mathematics?
 - What are some of the characteristics of prospective teachers' emotional geographies as they partake in a practicum experience?
 - What are some of the feeling rules prospective elementary teachers constructed as they partake in a practicum experience?
 - What are some influential components to the prospective teachers' developing professional identity?

The intersection of emotions and the formation of professional identity have not been researched deeply in mathematics education. Mathematics content deeply divides as a gatekeeper (Martin, Gholson, & Leonard, 2010; Stinson, 2004) and those learning mathematics attach their own diverse set of emotions to it (Williams-Johnson et al., 2008). By looking further into how one becomes a mathematics teacher, it can be helpful in the education of many students, and help better prepare those emerging into the larger power structures of education. Understanding how emotions affect the individual during his or her professional development is important. Zembylas & Schultz (2009) argue for more research into the emotions of prospective and inservice teachers, claiming teacher educators need, “to help [teachers] to see the professional relevance and value of teachers' emotional experiences and to support teachers in critically reflecting on those experiences” (p. 371). Therefore, to have a deeper understanding of this experience, the emotions one goes through when becoming a teacher need to be recognized.

Important Terminology

I used two frameworks to guide this study of the identity formation of four prospective elementary teachers: a situative perspective and the emotional geographies framework. The use of these frameworks also comes with a particular discourse to understanding the experiences of the prospective teachers. Thereby, there is some important terminology attached to each framework. Particularly important is the difference between emotionality and emotion, the concept of recognition, and emotional geographies. In this section, I discuss the difference between emotion and emotionality followed by the construct of recognition. I then briefly discuss emotional geographies (Hargreaves, 2000; 2001a; 2001b), but a more significant description can be found in Chapter 2. Table 1 provides definitions for pertinent terminology.

Table 1
Important Terms and Definitions

Term	Definition
Emotion	Emotion is a lived, believed-in, situated, temporally embodied experience... in the process of being lived, plunges the person and his associates into a wholly new and transformed reality—the reality of a world that is being constituted by the emotional experience (Denzin, 1984/2009, p. 66).
Emotion Labor	The act of trying to change in degree or quality an emotion or feeling (Hochschild, 1979, p. 561)
Emotion Talk	Emotional talk turns on the use of three kinds of words: Emotional words themselves (for example, <i>anger, fear, love, hate</i>); ordinary words that surround emotional words and phrases, embedding them with interpretation, ambience, and subtlety; and the personal pronouns, especially <i>I, me, mine, you, your, yours, ours, we, they, them, and theirs</i> . Ordinary words locate emotional talk interactionally, by time, place, others, and the intentions of the speaker (Denzin, 1984/2009, p. 267)
Emotional Geographies	The spatial and experiential patterns of closeness and/or distance in human interactions that help create, configure and color the feelings and emotions we experience about ourselves, our world and each other (Hargreaves, 2001a, p. 1061)
Emotionality	The process of being emotional, locates the person in the world of social interaction (Denzin, 1984/2009, p. 3)

Faith	Developed trust in teacher education program, which leads the individual to believe the teacher education program will support and prepare him or her for what he or she is going to do in the future (see Faith section in Chapter 4, p. 135)
Feeling Rules	The social guidelines that direct how we want to try to feel may be describable as a set of socially shared, albeit often latent (not thought about unless probed at), rules" (Hochschild, 1979, p. 563)
Identity	The 'kind of person' one is recognized as 'being,' at a given time and place (Gee, 2001, p. 99) Identity can be understood as a story with all of the narrative constructs typically found in Western stories (Drake, Spillane, & Hufferd-Ackles, 2001, p. 3)
Identity Crisis	A crucial moment, when development must move one way or another, marshaling resources of growth, recovery, and further differentiation (Erikson, 1968, p. 16)
Legitimate Peripheral Participation	Learners inevitably participate in communities of practitioners and that the mastery of knowledge and skill requires newcomers to move toward full participation in the sociocultural practices of a community (Lave & Wenger, 1991, p. 29)
Moral Geography	Where people pursue common purposes and feel a sense of accomplishment together, or where they are defensive about their own purposes and unconcerned or in disagreement about the purposes of others (Hargreaves, 2001b, p. 508)
Narrative	A story, having a plot and existence separate from the life of teller (Denzin, 1989, p. 48)
Physical Geography	Time and space which can bring and keep people in proximity over long periods so that relationships might develop, or which can reduce these relationships to strings of episodic interactions. (Hargreaves, 2001b, p. 509)
Political Geography	Where differences of power and status can distort interpersonal communication, or where such differences can be used not to protect people's own interests but to empower others (Hargreaves, 2001b, p. 509)
Professional Geography	Where definitions and norms of professionalism either set professionals apart from their colleagues and clients, or open them up to exploring professional issues together (Hargreaves, 2001b, p. 509)
Recontextualization	The transformation of discourses as they are disembedded from one social context and inserted into others (Ensor, 2001, p. 297).
Sociocultural Geography	Where differences of race, culture, gender and disability, including different ways of experiencing and expressing emotion, can create distance between people (Hargreaves, 2001b, p. 508)

Voice	The discourse that is created when people define their own issues in their own ways, from their own perspectives, using their own terms – in a word, speak for themselves (Secada, 1995, p. 156)
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Emotion and Emotionality

Denzin (1980; 1983; 1984/2009; 1985) argued emotions should be examined more from a sociocultural perspective focused on the ways emotions influence interactions between individuals. Emotion, however, only refers to the feelings of the individual and does not capture the process of feeling. Denzin (1984/2009) claimed research needs to focus on emotionality or the processes of emotion. This perspective would help in attaining a better understanding of the influence of emotions in the decision-making processes of individuals.

Emotionality arises out of inhibited, interpreted social acts in which the subject inserts self-conversations between the perception of experience and the organization of action. In these conversations, feelings directed to the self mediate action and interpretation. Emotionality becomes a social act lodged in the social situation. (Denzin, 1985, p. 224)

Emotionality places an emphasis on how emotions influence social interactions compared to emotions, which only refers to one piece of the interactions. Emotions can simply be defined as a "states of consciousness" (Philipp, 2007, p. 259). As will be argued later, Philipp's definition is too simple and takes many aspects of one's emotionality for granted. The state of one's being during an interaction is only one part of the individual's emotionality. There is a back-and-forth between individuals where one attempts to understand the emotionality of the other. Denzin (1984/2009) referred to this processes as emotional intersubjectivity or "the interactional appropriation of another's emotionality such that one feels one's way into the feelings and intentional feeling states of another" (p. 282). The ways in which emotions are influencing one's decision-making processes is the emotionality of the individual.

Recognition

The construct of recognition I use in this study focuses on the actions done by individual to be seen in a particular way. Goffman (1959) called this the *front* of the individual.

Accordingly, the individual desires for the front he or she is portraying to be recognized by the social other in a particular way.

While in the presence of others, the individual typically infuses his activity with signs which dramatically highlight and portray confirmatory facts that might otherwise remain unapparent or obscure. For if the individual's activity is to become significant to others, he must mobilize his activity so that it will express *during the interaction* what he wishes to convey. (Goffman, 1959, p. 30)

The individual acts in a way for his or her actions to be recognized as being appropriate to the context he or she is in. Gee (2001) argued recognition is essential to the identity of the individual. Gee (2001) described four different perspectives on identity to show what it means to be "recognized as a 'certain kind of person.'" (p. 100). Recognition in each of the perspectives described by Gee was central to the individual being legitimized. The social other legitimizes the identity of the individual when the social other recognizes he or she as the certain kind of person he or she wished to be seen as. This is important when one is attempting to join a community of practice (Lave & Wenger, 1991; Wenger, 1998). Prospective teachers have a desire to be recognized as a member of the community of educators. They wished to be recognized as teachers. Part of the individual's identity is being recognized as one who is participating appropriately in a community of practice. (Wenger, 1998)

Emotional Geographies

Hargreaves (2001a) described five emotional spaces or geographies of teachers from his investigation of the narratives of practicing teachers. Hargreaves (2001a) defined emotional geographies as "the spatial and experiential patterns of closeness and/or distance in human

interactions that help create, configure and color the feelings and emotions we experience about ourselves, our world and each other" (p. 1061). The five emotional geographies are: (a) moral, (b) professional, (c) political, (d) sociocultural, and (e) physical. The emotional geographies are the spaces in which bonds between people, objects, or events are created or broken depending on the similarities or differences of a purpose (moral), the work of the individual (professional), the power position (political), a social aspect (sociocultural), or proximity (physical). The emotional geographies were developed to help the individual explore how emotions influence interactions. They are not meant to examine the emotions of the individual. It does not matter if a person states he is frustrated, but how he describes the influence of the frustration during an interaction. One's emotionality is more than just about the feeling, but about how it influenced the decision-making processes of the individual. The emotional geographies are the spaces where the emotionality of teachers occurs in relation to the social other. Table 2 provides Hargreaves' (2001b) definition of each space and provides an example from this studies data (more on the exact coding procedure in the methodology chapter).

Table 2
Emotional Geographies of Teachers

Geography	Definition (Hargreaves, 2001b)	Example
Moral	Where people pursue common purposes and feel a sense of accomplishment together, or where they are defensive about their own purposes and unconcerned or in disagreement about the purposes of others (p. 508)	So I think that that has been mine and Elsa's biggest frustration but also the biggest thing that we have overcome... cause we will just sit in the back of the classroom and just shudder at what she teaches. It is like they are never going to get this (Anastasia, Int. 1).
Professional	Where definitions and norms of professionalism either set professionals apart from their colleagues and clients, or open them up to exploring professional issues together (p. 509)	The fact of the matter is we are not going to be good teachers until we've been teaching for a couple of years. And it's a bummer for whatever students have me that 1st year because I know I'll be a much better teacher the next year and the year after that. And yeah, just time, experience, training when you're actually a teacher. Professional development. Learning from your co-workers (Sally, Int. 2)
Political	Where differences of power and status can distort interpersonal communication, or where such differences can be used not to protect people's own interests but to empower others (p. 509)	I wanted more of what was good for the students for learning, rather than what my mentor teacher just did. Because at the beginning I was definitely really afraid, maybe not afraid, but like hesitant to go and help these students. Because I was not sure of the exact way that she did it. And I didn't want to like offend her by teaching - overstepping my boundaries (Elsa, Int. 3).
Sociocultural	Where differences of race, culture, gender and disability, including different ways of experiencing and expressing emotion, can create distance between people (p. 508)	I applied to be on the team. And I was the only girl on it. And it was such a big deal...I already mentioned this but that Math counts team like just the feeling of pride when I got accepted because it was four students from my 8th grade class or something. And it was three boys and me (Anastasia, Int. 1).
Physical	Time and space which can bring and keep people in proximity over long periods so that relationships might develop, or which can reduce these relationships to strings of episodic interactions. (p. 509)	Only being at our elementary placement one day a week it was kind of overwhelming like this is exhausting. I'm going to be doing this five days a week. So there is that. Just like preparing for that but at the same time like this semester is exhausting, but being in the placement two days a week and being at the school three days a week, it is so much more than going to class here and then like going there (Kida, Int. 3)

CHAPTER 2

LITERATURE REVIEW AND THEORITICAL FRAMEWORK

According to the Council for the Accreditation of Educator Preparation (CAEP), clinical experiences or field components should allow prospective teachers to apply theory into practice (Council for the Accreditation of Educator Preparation [CAEP], 2015).

[Clinical experiences] offer multiple opportunities of candidates to develop, practice, demonstrate and reflect upon clinical and academic components of preparations, as well as opportunities to develop, practice, and demonstrate evidence-based, pedagogical practices that improve student learning and development" (CAEP, Standard 2 Rationale)

The designed clinical experience of a teacher education program is the setting for this study.

Therefore, it is important to explore what relationships mathematics teacher education researchers have found about the relationship between mathematics education coursework, particularly pedagogy courses, and the program's field components. The studies I highlight have influenced how I perceive a teacher education program and its field component should work.

Sowder's (2007) review of literature on teacher professional development stated multiple goals in teacher preparation programs. I focus the beginning of this literature review on two of these goals most pertinent to this study: promote recontextualization (Ensor, 2001) of concepts learned in coursework; and promote change in teachers' beliefs. Each of these aspects of teacher education influences the development of the prospective teacher's professional identity. These goals are met by the planned interventions within a teacher education program problematizing the prospective teachers' apprenticeship of observation (Lortie, 1975/2002). I then discuss the

relevant literature on emotions and professional identity formation in mathematics education followed by the theoretical framework used in this study.

The Preparation of Mathematics Teachers

Brown and Borko (1992) described the act of learning to teach as involving "the acquisition of knowledge systems or schemata, cognitive skills such as pedagogical problem solving and decision making, and a set of observable teaching behaviors" (p. 211). They fail to acknowledge, however, the prospective teacher must be convinced the acquisition of knowledge is valuable and/or needed. In other words, Brown and Borko or Sowder (2007) do not discuss prospective teachers' resistance to learn (Garrett & Avner, 2013). How do teacher educators convince prospective teachers of the value of the program? Teacher educators need to problematize or challenge the beliefs and ways of knowing to promote change in prospective teachers' belief systems (Green, 1971/1998). Changing beliefs, however, is a difficult endeavor.

Promoting Teacher Change

A goal in mathematics teacher education research is to explore the changes, modification, and compromises of beliefs about teaching and learning mathematics (Conner et al., 2011; Cooney, 1999; Orton, 1996; Skott, 2009). Other researchers included the attached values, emotions, attitudes, morals, and ethics of the individual's belief system (e.g. Britzman, 2009; Brown, 2008; Hannula, 2002; Kaasila, et al., 2008). Green's (1971/1998) metaphor of a belief system is an important theoretical foundation for research on beliefs of individuals. Green's metaphor, although not empirically based, provided a way of thinking about how beliefs are held by the individual. Consequently, Green's belief system provided a way to consider teacher change. Cooney, Shealy, and Arvold (1998) combined Green's metaphor with the voice construct of Belenky, Clinchy, Goldberger, and Tarule's (1986/1997) and Perry's scheme of intellectual

and ethical development (1970/1999) to argue for the construction of belief structures of prospective mathematics teachers. These belief structures are influential to the developing identities of prospective teachers because beliefs are one aspect of the identity of the individual (Korthagen, 2004; Peressini et al., 2004). Teacher educators are also promoting shifts in the individual's identity as a teacher-of-mathematics by encouraging changes in beliefs.

Focusing prospective teachers on student thinking has also been a powerful way of influencing change in their beliefs about learning and teaching mathematics. From a dramaturgical perspective (Goffman, 1959), teacher educators emphasize the audience to prospective teachers to convince them to change or shift their beliefs about teaching and learning mathematics. This means teaching the prospective teachers how to listen to students' ways of doing as students work on mathematics and to build on the students' thinking may shift beliefs to being more productive (NCTM, 2014). Philipp, Armstrong, and Bezuk (1993) used Cognitively Guided Instruction (CGI) (Carpenter, Fennema, Franke, Levi, & Empson, 1999) as a way to promote students' thinking to prospective elementary teachers. Through the case of Miss T, Phillip et al. (1993) found an existence proof showing prospective teachers can, with the right support, assimilate beliefs about students' thinking and learning to promote the practice of CGI. Miss T did run into some difficulties in developing her beliefs especially when it came to making curricular decisions. One reason for this difficulty was Miss T's "knowledge of students' thinking may not fit into a larger framework" (Philipp, Armstrong, & Bezuk, 1993, p. 162). Peressini et al. (2004) described a teacher's professional identity or identity as a teacher-of-mathematics as the framework one uses to make sense of his or her practice. Therefore, Ms. T was not able to integrate students' mathematical thinking into her framework. It did not fit within her identity as a teacher-of-mathematics until her mathematics identity was perturbed by the event Ms. T

observed in Ms. A's classroom. Then her identity shifted or her framework was modified to see students' mathematical thinking.

Beliefs have not been the only way teacher educators have attempted to promote change in prospective teachers. In *Adding it up* (NRC, 2001) one of the five strands of mathematical proficiency is productive disposition, “the inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy” (p. 5). The NRC (2001) also stressed developing prospective teachers’ productive dispositions. Acquiring a positive disposition has been one focus of studies in prospective teachers’ development (Hodgen & Askew, 2007; Philippou, & Christou, 1998; Ruffell, Mason, & Allen, 1998). For example, Dixon, Andreasen, Roy, Wheeldon, & Tobias, (2011) chose to focus on changing dispositions toward a specific mathematics topic, in their case fractions, because Ball (1990) found prospective teachers have the same difficulty as students in learning about fractions. Dixon et al. (2011) claim by being aware of prospective teachers’ affective reactions during these courses, the instructors can empower prospective teachers by giving them a stronger sense of efficacy, which adds value to mathematics learning and develops an awareness of the experiences their own students will go through.

Altogether, mathematics education coursework is meant to problematize or potentially justify the beliefs and ways of knowing of prospective teachers. Changes in beliefs and productive disposition have an impact on the professional identity of the prospective teacher (Korthagen, 2004). The prospective teacher’s coursework and field components can be a strong intervention promoting change in the prospective teacher's identity as a teacher-of-mathematics. A prospective teacher being able to recontextualize their learning is also influential to one's mathematics teacher identity.

Promoting Recontextualization

Prospective teachers cannot learn to teach in isolation nor without interacting with students. Prospective teachers can experience a *pedagogy of investigation* (Nicol, 1999) through opportunities to work with students while enrolled in mathematics method courses.

A pedagogy of investigation shifts the emphasis of learning to teach from a focus on only limiting instruction to the best teaching methods and techniques to an emphasis on discussion, critique, and investigation of pedagogical problems as they might arise in the context of practice. Rather than present prospective teachers with aspects of recommended teaching strategies based on educational theories, a pedagogy of investigation uses problems and dilemmas of practice as springboards for investigation of mathematics, teaching, and learning. (Nicol, 1999, p. 47)

The prospective elementary and middle grades teachers in Nicol's (1999) study struggled in questioning, listening and responding to students' mathematics. Although the participants improved through the semester, their experience working with students made them question the mathematics they had learned. The prospective teachers were able to practice recontextualizing what they were learning in their mathematics methods course. They needed to be able to take a strategy or teacher move learned in one context and apply it in another. This action is referred to as recontextualization.

Ensor (2001) described recontextualization as "the transformation of discourses as they are disembedded from one social context and inserted into others" (p. 297). Recontextualization, in other words, is the ability one has to use something learned in one context and apply it into another context. Those learning to teach mathematics recontextualize coursework to their experiences in schools. Ensor (2001) showed recontextualizing was a challenging process for prospective teachers as there remained a disconnect between what the methods courses "privileged" and the practice of Ensor's participants. The participants were able to recontextualize the tasks they had seen during their mathematics education preparation courses,

but were unable to produce new tasks similar to those from the courses. The prospective teachers could only recontextualize activities, actions, and discourses as they were experienced and could not create or modify other tasks to match similar goals and objectives.

Mathematics educators must continue investigating the connections prospective teachers make between teacher education and practice (Britzman, 2003; Grossman, Hammerness, & McDonald, 2009; Mewborn, 2000). Prospective teachers bridge their teacher education and practice by recontextualizing from one to the other and vice versa. The constructed bridges influence the value placed on teacher education coursework; consequently influencing the professional identity formation of the prospective teacher. It is important to recognize and understand the difficult process prospective teachers go through in developing professional identity as a teacher-of-mathematics.

The difficulty then, comes from at least two directions. Teachers bring to their work their own idiomatic school biography, the conflicted history of their own deep investments in and ambivalence about what a teacher is and does, and likewise they anticipate their dreams of students, their hopes for colleagues, and their fantasies for recognition and learning. (Britzman, 2003, p. 2)

Ensor (2001) also noted the influential power of the individual's background in making connections between coursework and practice. I argue consideration of the emotionality of a prospective teacher as he or she develops his or her identity as a teacher-of-mathematics can provide greater insight into the ways one recontextualizes coursework to practice. The goals of teacher change and promotion of recontextualization are two ways a teacher education program promotes identity formation.

A Brief History of Emotion Theories

Identity formation is an emotional process. Therefore an exploration of emotion is needed to provide new insight in teacher formation. To better understand where the field construct of

emotion has developed over time, I provide a brief history of the considerations of human emotion from St. Augustine of Hippo to Charles Darwin and William James. A portrait of how theories of emotion has shifted from theological 'movements' to human mechanisms as a consequence of evolutionary processes to physiological reactions to cognitive and social understandings is important. History provides an individual with a better understanding of where we have been and where we can go.

Two of the earliest and influential discussions about emotions and being were done by St. Augustine of Hippo and St. Thomas of Aquinas (Dixon, 2003). Though 900 years separated the two men, their discussions of human emotion were similar. Each of these theologians discussed the connection between emotion and the human spirit with the overall goal of compartmentalizing and distinguishing emotion in order to find the appropriate emotions for a Christian to have or aspire to have. They mainly separated emotions as either passions or affections. Passions were movements toward actions seen as inappropriate.

The passions were seen primarily as disturbances to be quashed by the controlling forces of reason and virtue, as inappropriate desires (*cupiditas*, *libido*, *concupiscentia*) and lusts after sex and tangible goods, as diseases (*morbi*) of the soul marked by the rebellion of corruptible flesh, and as, at best, appropriate to this probationary earthly state but ultimately to be shed in the future life. (Dixon, 2003, p. 41)

Affections were the feelings opposing the passions of the individual. These affections were passive movements of man pushing him closer to God. Though heavily inspired by their Christian faith, St. Augustine of Hippo and St. Thomas of Aquinas described emotion as "movements" within man. They both saw an action attached to feelings. This shifted much later from movements to seeing emotions as a mechanism (Dixon, 2003). The history of the shift can be explored further in Dixon (2003). For my purpose, I move on to two other influential theories on emotion by Charles Darwin and William James.

In 1872, Charles Darwin published *The Expression of the Emotions in Man and Animals* in which he described how evolutionary actions are connected to gestures of emotion. For example, the showing of teeth to demonstrate rage was linked to the act of biting. "This retraction of the lips and uncovering of the teeth during paroxysms of rage, as if to bite the offender, is so remarkable, considering how seldom the teeth are used by men in fighting" (Darwin, 1872/2005, p. 244). Hochschild (1983/2012) critiqued Darwin's theory as being more about emotional gestures than a theory on emotion. For example, Darwin does not go into specifics of how emotions occur within the individual. Instead, his major argument is that evolutionary processes have influenced how human beings express emotion to one another. This is also problematic because he does not consider culture in his discussion, and studies have shown culture does influence the emotional reactions and ways individuals talk about emotion (Heelas, 1996; Stearns & Knapp, 1996). Darwin's theory of expression was buried within his other work, especially when William James published his article in 1884.

James (1884) described his theory on emotion in an attempt to answer the question, what is an emotion? James claimed emotions occur when there are changes in the physiology of the individual. The phenomena one encounters cause specific physiological reactions to which the individual attributes an emotion.

My thesis on the contrary is that *the bodily changes follow directly the PERCEPTION of the exciting fact, and that our feeling of the same changes as they occur IS the emotion.* Common sense says, we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike. The hypothesis here to be defended says that this order of sequence is incorrect, that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry, or fearful, as the case may be. (James, 1884, p. 189-190, emphasis in original)

What we feel is due to the physiological changes that occur. The body and mind work as a unit and our actions are not due to emotions but humans feel because of the actions of the body. James' theory was not backed up by any scientific studies, as it was a philosophical piece. It quickly drew a strong response by Gurney (1884) who made 11 points against James' theory. Regardless, James' article has been highly influential as "it [James' theory] remained the single most cited theory and the starting point for virtually all academic discussion of emotion from the early 1890s onwards, and arguably up until the present day" (Dixon, 2003, p. 211).

One major issue with James' theory is the separation of emotion from cognition. The emotional reactions of individuals are no longer the interpretation and reaction to phenomenon but part of the physiological system. Therefore, James' theory makes it difficult to distinguish emotions from non-emotions. His claim that emotions are non-cognitive, like Darwin, does not allow one to consider cultural influences on emotional responses. James' theory also disregards social interactions and how what is said to the individual may cause an emotional response.

Overall, there have been many theories of emotions and I only highlight three influential theories. These three differing theories on emotions demonstrate the range to which philosophers, psychologists, and others have considered about emotion when it comes to humans. Thanks to St. Augustine of Hippo, St. Thomas of Aquinas, Darwin, and James the conversation about emotion has shifted from theological movements to human mechanisms to more cognitive considerations (Dixon, 2003). It is with the cognitive perspective of emotions I begin with in mathematics education.

The Cognitive Perspective on Emotion

The cognitive perspective dominated mathematics education affect research in the 1980's and early 90's. Mathematics education researchers during that time were influenced mainly by

Mandler's discrepancy theory (Mandler, 1984; 1989) as a way for studying student affect (McLeod, 1992). Goldin and colleagues (Debellis & Goldin, 2006; Epstein et al., 2007; Schorr & Goldin, 2008) built on McLeod's work through the 2000's. More recently, Ortony, Clore, and Collins' (OCC) theory (1988) has been used as a theoretical framework to study emotions of students in mathematics education (Martinez-Sierra & Garcia-González, 2014a; 2014b; 2016). Both discrepancy theory and OCC theory focus on internal interpretations without considering social interaction with the other. They focus more on individual affective components of doing and learning mathematics.

I deem these studies to have focused more on the cognitive side of emotion. What I mean by this is the following studies have emphasized the ways emotions influence the individual with minimal consideration of the social other. Most of the studies in this section center around which emotions are felt by the student and/or teacher and not necessarily considering how the emotions are influencing the actions of the student and/or teacher thereafter. I begin by looking at Mandler's (1984; 1989) discrepancy theory, which was a response to the fundamentalist perspective on emotions.

Mandler's Discrepancy Theory

Fundamentalists assumed feelings are, “discrete patterns of behavior, experience, and neural activity” (Mandler, 1989, p. 4). This means emotions come in packages of fundamental feelings; these include anger, fear, and joy. Fundamentalists believe all emotions can be constructed from any combination of “basic” feelings. The fundamentalist view was not very useful because the research became more interested in the recipes of affective responses instead of a rigorous, more complex analysis of emotion (Mandler, 1989). In response, Mandler's view of emotion considered “emotional experience[s] (and behavior) to be the result of cognitive

analyses and physiological (autonomic nervous system) response” (Mandler, 1989, p. 4).

Mandler considered this view more in line with constructivist ideals. The emotions of the individual are a part of the interpretations of one’s context and the stimuli received from the environment.

Consider a prospective teacher observing a middle school classroom in which the teacher is conducting a problem-solving lesson. The students are engaged but loud and moving about the room to different stations. The teacher is sitting at one table working with four students at one time. The prospective teacher would first need to make sense of the environment prior to having an emotional response. The prospective teacher interprets the actions of the actors in the room, the décor, the language used, and other factors. Thereafter, the prospective teacher compares the actions to what he or she expected to see. The imagery of the classroom, students, and teacher actions would be based on the individual’s beliefs, goals, and standards they have developed (Schutz, 2014) and their apprenticeship of observation (Lortie, 1975/2002). Depending on the discrepancy of what he or she expected, the individual has an emotional reaction.

For example, in the previous scenario, if the prospective teacher had a belief (expectation) the mathematics classroom should be teacher driven, then there is an error (a mismatch between the expected and what happened). The reaction can be *hot* or *cold* depending on the magnitude or intensity of the reaction and it can be *positive* or *negative* depending on its direction (McLeod, 1989). The prospective teacher observing would have multiple emotional responses ranging in magnitude (hot, cold) and direction (negative, positive). These affective reactions culminate to describe his or her total experience. This is referred to as Mandler’s (1984, 1989) discrepancy theory.

Mandler (1989) argued one uses his or her schemes, concepts, and operations to make sense of the world, and then has the “appropriate” affective response. Mandler and Shebo (1983) claimed emotional reactions are *slower* than cognitive actions. In other words, one must make sense and interpret the situation (context) before one determines how to feel about it, thereby, opposing James' (1884) theory. The individual's interpretations are consciously or unconsciously completed. An “appropriate” response, however, is determined by the larger social and cultural contexts the individual experiences. The context will impact one's interpretation of events by setting the boundaries of what is acceptable and not acceptable (Goldin, 2002). Thus from this perspective one's affective domain is shaped by many external factors such as gender, socioeconomic status, or language. In many of the early studies these contexts were not considered extensively, but it was generally recognized culture and context does influence the individual's emotional responses.

McLeod's (1992) review of literature described a large number of studies framed with Mandler's discrepancy theory. However these studies focused on attitude and beliefs for the most part. McLeod admitted emotions were not investigated heavily.

The emotional reactions of students have not been major factors in research on affect in mathematics education. This lack of attention to emotion is probably due in part to the fact that research on affective issues has mostly looked for factors that are stable and can be measured by questionnaires. (McLeod, 1992, p. 582)

McLeod (1992) also claimed most studies focused on the studies of students' emotional reactions when doing and learning mathematics, not on prospective teachers learning to teach mathematics. Philipp's (2007) review of literature also was unable to find many examples of studies emphasizing the emotional reactions of those learning to teach.

Some emotion researchers disagree with Mandler (e.g. Hochschild, 1983/2012; Ortony et al., 1988). They claim Mandler's discrepancy theory is limited because it is unable to describe

specific emotions of the participants. "Mandler's account has little to say about specific emotions, especially positive ones, and it offers no systematic account of the relation among different emotions" (Ortony et al., 1988, p. 6). The works of Goldin and colleagues (Debellis & Goldin, 2006; Epstein et al., 2007; Schorr & Goldin, 2008) and Hannula (2002) have expanded Mandler's theory to describe affective structures of students doing and learning mathematics. However, these too limit their focus to positive and negative affect in general without specifying particular emotions. The structures and trajectories described, although useful, only focus on the individual and not what occurs when interacting with others. This is a result of the chosen methodology used in the studies. Tasked based interviews were the main data source. So Goldin and colleagues could only focus on the interaction between the participants and mathematics. They removed the social other to focus on said relationship.

OCC Theory (A Cognitive Theory of Emotion)

OCC theory or Ortony, Clore, and Collin's cognitive theory of emotion (Ortony et al., 1988) was a response to Mandler's discrepancy theory. Ortony et al. (1988) criticized appraisal theorists (including James, 1884; Lazarus, 1991; Mandler, 1984) for being more about emotion words than about the actual structure of the emotions. "A theory about emotion has to be a theory about the kinds of things to which emotion words refer, not about the words themselves" (Ortony et al., 1988, p. 2). The authors admit, however, the study of emotions is limited because researchers are dependent on the language of the individual used to describe the emotions he or she experienced. The researchers claimed, regardless of the limitation, it is important to not focus on the words being used but on how one described emotions when interacting with different phenomena.

OCC theory framework emphasizes the ways emotion is structured and works together with the beliefs, goals, and interests of the individual. So along with an emotional structure there is a parallel appraisal structure. The appraisal structure of the individual provides three variables to influence the intensity of an emotion. These variables are desirability, praiseworthiness, and appealingness. Each of these variables is attached to the type of phenomenon an emotional reaction is caused by: (a) an event, (b) an object, or (c) an agent. Figure 1 shows the flow chart constructed by Ortony et al. (1988) to describe the structure of emotions.

OCC theory attempts to explain the reasoning behind an affective reaction. Ortony et al. (1988) claimed to have based OCC theory on empirical evidence, but do not provide any in the source itself. In order for someone to have an emotional response, he or she reacts to one of three stimuli: (a) the consequences of events, (b) actions of agents, or (c) aspects of objects. From there, the individual reacts positively or negatively. For example, a positive reaction to a consequence of an event is pleasing while a negative response is displeasing. Then some reactions will be dependent on the focus or whether the actions are relevant to the individual or another. In total Ortony et al.'s (1988) structure has 22 emotion types compartmentalized in differing classes and groups.

In mathematics education, Martinez-Sierra and Garcia-Gonzalez (2014a; 2014b; 2016) were proponents of the use of OCC theory to study the emotions of students learning mathematics. With the use of OCC theory Martinez-Sierra and Garcia-Gonzalez (2016) have studied the emotions of undergraduates in a linear algebra class and secondary students learning mathematics. The methods used by Martinez-Sierra and Garcia-Gonzalez (2014a; 2014b; 2016) involved focus groups to discuss shared experiences and the emotional reactions occurring in the classroom. OCC theory provided the researchers a way to compartmentalize the emotion talk of

the students by considering the emotion words they used when describing experiences in the mathematics classroom. Martinez-Sierra and Garcia-Gonzalez (2016) claimed, "the results show that the students' narratives focus on three groups of emotions: prospect-based group (*satisfaction, disappointment and fear*), well-being group (*distress*) and attribution group (*self-reproach*)" (p. 101). Each group was then examined for the variables affecting intensity and the goal/objective the participants were trying to achieve.

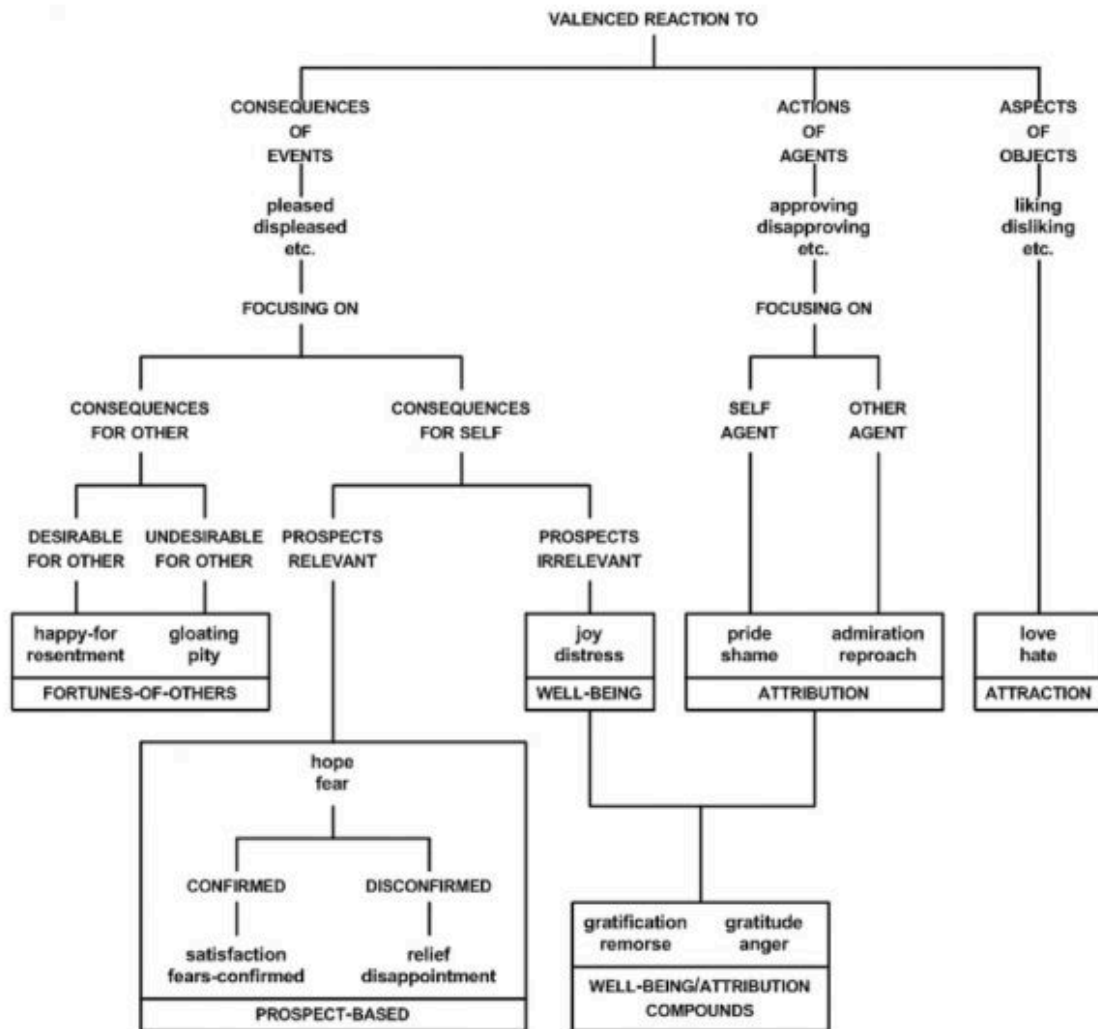


Figure 1. OCC theories global structure of emotions types

The work of Martinez-Sierra and Garcia-Gonzalez (2014a; 2014b; 2016) using OCC theory seems, however, to be focused more on compartmentalizing the described emotional

reactions of students. The exploration of the intensity variables and goals/objectives was not pushed beyond recognizing their attachment to the students' emotional reactions. Although Ortony et al. (1988) and Martinez-Sierra and Garcia-Gonzalez (2014a; 2014b; 2016) argue OCC theory takes into account the social other, its results are the same as the fundamentalist described by Mandler (1984; 1989). As Ortony et al. (1988) claimed, "We have repeatedly stressed throughout this book that our concern has been with characterizing emotion... we proposed a set of emotion types characterized in terms of their eliciting conditions" (p. 172). OCC theory does not address the underlying conditions causing the different emotion types beyond whether one's emotion is caused by the consequence of an event, actions of agents, or aspects of objects.

Emotions research using the cognitive perspective can only describe or come to understand what phenomena elicit emotional reactions. Goldin (2014) argued researchers need to focus on "more complex descriptions of affective architecture" (p. 405) in mathematics education. Affective architecture, however, is limited in the same way OCC theory is, because it is intended to only describe what elicits emotions. To truly understand how emotions influence the learning and teaching of mathematics, researchers need to go beyond the emotional reactions of the students. There must be a connection to the social other and how emotions influence the act of learning mathematics or the decision-making processes of students. I believe by using a more sociocultural perspective influenced by the work of sociology of emotion researchers (e.g. Hargreaves, 1998; Hochschild, 1983/2012) a better understanding of emotions influence in learning and teaching mathematics can be attained.

The Sociocultural Perspective on Emotions

The sociocultural perspective on emotion is influenced by the sociology of emotion (Denzin, 1984/2009; Hochschild, 1979; 1983/2012). These studies explore how emotions

influence the interactions between an individual and the other. Additionally, these studies consider how emotions are influenced by social factors as well as how an individual's decision-making processes are influenced by his or her emotions. They also focus on the emotional regulation, emotional labor, and feeling rules constructed by those working within specific spaces (Hochschild, 1983/2012). Few studies in mathematics education have explicitly taken this perspective (e.g. Brown, 2008; Cobb, Yackel, & Wood, 1989; Evans, Morgan, & Tsatsaroni, 2006). Educational psychologists, however, have investigated teacher emotions from this perspective (e.g. Frenzel, Goetz, Lüdtke, Pekrun, & Sutton, 2009; Frenzel, Pekrun, & Goetz, 2007; Schutz, 2014; Sutton & Wheatley, 2003; Taxer & Frenzel, 2015), but they have not focused specifically on mathematics teachers and the majority of the studies have been quantitative. I argue by situating this study within the sociocultural perspective, a better understanding of the identity development of prospective mathematics teachers can be attained.

The sociocultural perspective involves the exploration of emotions within a context, and how the emotions of the individual influence one's work or decision-making processes (Hochschild, 1979; 1983/2012). Hochschild's (1983/2012), *The Managed Heart*, was fundamental to the creation of the field of sociology of emotion. Denzin (1984/2009), influenced by Hochschild's work, constructed a philosophical framework describing the ways emotionality influences the actions of individuals. Denzin's (1984/2009) conceptualization of emotionality placed emotions at the center of phenomenological interactions. Although mathematics education researchers have not taken up the sociocultural perspective of emotionality explicitly, previous studies have addressed emotions as part of a broader focus on students' interactions and mathematical learning (e.g. Cobb et al., 1989; Evans et al., 2006). I believe understanding mathematics teachers' identity development can benefit from the work on emotional geographies

by Hargreaves (1998; 2000; 2001a; 2001b), who by investigating inservice teachers expanded the work of Hochschild and Denzin by describing the spaces where emotions occur.

The Managed Heart: Feeling Rules and Emotional Labor

Emotions occur in social spaces. Emotional responses are specific to events due to having an intentional content (Cross & Hong, 2012). In other words, emotional reactions are directed at something. One does not feel frustration in a void, but frustration at an event, object, or agent. More importantly, where these emotions are directed reflect the position of the individual in relation to the event or phenomenon. "Awe, love, anger, and envy tell of a self vis-à-vis a situation. When we reflect on feeling we reflect on this sense of 'from where I am'" (Hochschild, 1984/2012, p. 31). In order to portray oneself to the social other in a particular way, one needs to control the emotions expressed. This is referred to as emotional labor (Hochschild, 1984/2012), which Hochschild includes as being part of the individual's impression management (Goffman, 1959; 1967; 1981).

The question then is, how does one know how or which emotions to regulate? The institution one desires to work at can aid in developing the individual's beliefs about how to regulate one's emotions. Hochschild (1983/2012) gave the example of airline stewardess being trained by an airline.

The pilot spoke of the smile as the *flight attendant's* asset. But as novices... move through training, the value of a personal smile is groomed to reflect the company's disposition—its confidence that its planes will not crash, its reassurance that departures and arrivals will be on time, its welcome and its invitation to return. Trainers take it as their job to attach to the trainee's smile an attitude, a viewpoint, a rhythm of feeling that is, as they often say, 'professional.' (Hochschild, 1983/2012, p. 4, emphasis in original)

The airline stewardesses are trained by the institution to portray a particular face to the patrons of the airline. The stewardesses see this regulation as necessary in order to join the community of professionals. In order to be good at one's job, then one must regulate their emotions as stated by

the institution. These rules can also be socially constructed from collective understandings of appropriateness. Hochschild (1979; 1983/2012) described the rules constructed by the individual as feeling rules, "the social guidelines that direct how we want to try to feel may be describable as a set of socially shared, albeit often latent (not thought about unless probed at), rules" (Hochschild, 1979, p. 563). By following one's constructed feeling rules, he or she is acting like a member of a community. I believe teacher education programs, like the airline stewardess training, influence prospective teachers in the construction of feeling rules one needs to follow to belong to the community of educators.

Following rules, however, is not always easy to do. One needs to be conscious of the rules in order for them to be followed, but feeling rules are not always consciously followed. Emotional labor is the emotion work involved in following feeling rules (Hochschild, 1983/2012). Teachers, like other professions who serve public interests, participate in emotional labor (Hochschild, 1983/2012) and must learn to manage their emotions in the classroom. Schultz and Zembylas (2009) describe what emotional labor means for teachers: It "involves the effort, planning, and control teachers need to express organizationally desired emotions during interpersonal interactions" (p. 3). For example, teachers plan out, consciously or unconsciously, the emotions they will portray to students to better their own student-teacher relationships (Williams-Johnson et al., 2008), and the desired relationships they want students to have with mathematics. Emotional labor aids teachers in developing relationships with others (Hargreaves, 2000; 2001a; 2001b).

Emotional labor is part of the emotional practice of teaching (Hargreaves, 1998). There are three criteria to an emotional practice: (a) face-to-face interactions with the public, (b) the production of an emotional state in the social other, and (c) the control the individual allows the

employer or community of practice to have over the individual's emotional practices (Hochschild, 1983/2012). The work of a teacher of mathematics covers all three criteria of an emotional practice. Teachers interact with the public through the students they teach. They also are seen as members of a school community. Being in a position of authority over the students in the classroom, the teacher produces emotional states in the other. Cobb, Yackel, and Wood (1989) demonstrated how a mathematics teacher used norms to promote particular affective reactions to working on mathematics. Another example is the way the teacher chooses to teach mathematics will have varying effects on students' dispositions. Furthermore, the teacher will act in ways he or she believes demonstrates care for the student (Noddings, 1984/2013) or the students' mathematics (Hackenberg, 2005a; 2005b; 2010) to promote learning.

But does a teacher allow the employer or the community of practice to influence the emotional practices of the individual? Hargreaves (2001b) has shown teachers have varying emotional reactions when interacting with colleagues. These interactions, in turn, influence the mindset of the individual.

Teachers also seek and enjoy the rewards of affiliation with colleagues—seeing personal support and social acceptance as strong sources of positive emotion in their work. However, while the friendships that teachers want, help build emotional and intellectual understanding among them, as well as creating the energy and commitment for joint work, such friendships seem to be the exception rather than the norm. They also tend to be built on and to reinforce like-mindedness instead of also supporting the professional disagreement and mutual critique that can move teaching forward. (Hargreaves, 2001b, p. 256)

According to Hargreaves (2001b), there is a need for professional disagreements to challenge and push teachers to grow. Professional development could also then promote specific emotional work of teachers if they are challenged to move beyond the current way of doing. Emotion work and emotional interactions can cause changes in individual's beliefs and potentially their identity as a teacher-of-mathematics.

Cultural norms also play a part in the regulation of emotions and the construction of feeling rules. According to Landman (1996), “the emotion rules differ significantly depending on one’s assigned place in the social order. Many cultures, for instance, hold characteristic assumptions about what emotional experiences and expression are appropriate for males versus females” (p. 89). Lutz (1996) described some of the ways in the US emotions are engendered arguing any discourse on emotions is additionally about gender. Consequently, emotions are recognized as being socially constructed (Parrott & Harre, 1996; Winograd, 2003). Heelas (1996), completing a review of the field's work on culture and emotion, claimed, “Emotion talk functions as a kind of spotlight. Depending on culture, it dwells on whatever is taken to be associated with those raw experiences... necessary for emotions” (p. 192). Therefore, I believe by exploring the emotional descriptions of prospective teachers one can better understand the experiences of enculturation into a community of teachers.

The Sociocultural Perspective of Emotion in Mathematics Education

In mathematics education the sociocultural perspective of emotion has been used minimally. Studies have taken into account the social interactions between teachers and students, but did not focus on the emotionality of the students explicitly. For example, Cobb, Yackel, and Wood (1989), related the emotional acts of children to the norms and social cues constructed in the classroom. They became conscious of emotional acts as “essential features of the dynamic, self-organizing social system that characterized life in the classroom” (p. 117). This revelation led Cobb et al. to further investigate these particular emotional acts when students were engaged in problem solving. Cobb et al. referenced the work of Armon-Jones (1986) to argue that students’ emotions in the classroom “are not only warranted in specific situations but, at times, ought to occur” (Cobb et al., 1989, p. 119). Consequently, the social norms of the classroom

played a vital role in the exploration of the emotional acts of the students. By placing their focus on the norms of the classroom, Cobb et al. claimed the emotional acts of students are reactions to the violations and discrepancies of already established norms. Additionally, the children's beliefs about the nature of mathematical activity would establish the expectations of the social norms. The teacher's position was then to enforce the norms of the classroom, and to use the emotional reactions of students to uphold the norms set.

Cobb et al. (1989) and other studies (e.g. Evans et al., 2006) encouraged the use of discourse analysis as a way to explore the emotions of students. But they moved beyond describing the emotions of the students to discuss how the emotions influence the interactions between teacher and student (Cobb et al., 1989) and between student and student while problem solving (Evans et al., 2006). The researchers used emotionality as a lens to explore a phenomenon in the classroom. Consequently, to understand the students' emotionality, it is not enough to study the feelings of the individual, but requires the researcher to explore the emotional context of the situation. This has not occurred explicitly in mathematic education.

Looking at the literature reviews completed by Goldin (2014), McLeod (1992), and Philipp (2007), the majority of studies on emotion in mathematics education have centered on students doing and learning mathematics. The emotionality of prospective teachers learning to become mathematics teachers or developing their identity as mathematics teachers has yet to be explored. I argue investigating the emotionality of prospective teachers can lead to a better understanding of the developing identity as a teacher-of-mathematics. As Evans et al. (2006) argued, emotions are used to construct one's social identity. Therefore by exploring the emotional geographies (Hargreaves, 2000; 2001a; 2001b) of a prospective teacher one can attain

a perspective on the critical events or actions influencing the formation of his or her identity as a teacher-of-mathematics.

Identity Formation

Already from the literature of emotion, there is a relationship with the identity of the individual from the sociocultural perspective. Emotion labor (Hochschild, 1979; 1983/2012) is part of the individual's impression management. The work one conducts to convince others of owning or having an identity is dependent on the face (Goffman, 1967) one provides to the social other. The emotions portrayed are part of one's face. Like emotions, however, identity also has a rich history of theoretical explorations (Beauchamp, & Thomas, 2009; Boaler & Greeno, 2000; Erikson, 1968). In this section, I focus specifically on the work that has focused on the formation of identity.

Formation of Identity

The formation of one's identity has been explored through many differing lenses in education (Beijaard, Meijer, & Verloop, 2004). Considering teachers, some of the ways the formation of identity has been considered are through self-conceptualizations (Peressini et al, 2004), discourses (Avraamidou, 2014; Gee, 2001; Sugrue, 1997), narratives (Drake et al., 2001; Lutovac & Kaasila, 2011), and crafts (Coldron & Smith, 1999). Students' identity formation as doers-of-mathematics has also been examined through various lenses. Some of these are narratives (Sfard & Prusak, 2005), sociohistorical structures (Martin, 2000, 2006), and discursive positioning (Bishop, 2012). Though each of the mentioned researchers took on different perspectives on identity formation, underlying their theoretical framework is Erikson's (1968) description of identity formation as involving simultaneous reflection and observation:

Identity formation employs a process of simultaneous reflection and observation, a process taking place on all levels of mental functioning, by which the individual

judges himself in the light of what he perceives to be the way in which others judge him in comparison to themselves and to a typology significant to them; while he judges their way of judging him in the light of how he perceives himself in comparison to them and to types that have become relevant to him. This process is, luckily, and necessarily, for the most part unconscious except where inner conditions and outer circumstances combine to aggravate a painful, or elated, 'identity consciousness'. (p. 22–23)

Also, Erikson (1968) stresses the social other the individual interacts with, consciously or unconsciously, as important in the formation of one's identity. Witnessing phenomena pushes the individual to reflect on their self-in-context, which could produce an identity crisis. An identity crisis is described as a necessary turning point, "a crucial moment, when development must move one way or another, marshaling resources of growth, recovery, and further differentiation" (Erikson, 1968, p. 16). According to Erikson (1968), identity crises are common and necessary as one goes through adolescence.

Similarly, Flores and Day (2006) argued prospective teachers are perpetually building, deconstructing and reconstructing their identities of self-as-teacher. Therefore, one can conceptualize a prospective teacher's developing professional identity as a series of identity crises (Erikson, 1968), in which he or she is pushed to reconstruct his or her conceptualizations of self-as-teacher. That is not to say the reconstruction is always positive or in the direction matching the vision of the program. Reconstruction is a process of reflection through the beliefs, knowledge, and other internal aspects of the individual. It is conceivable that throughout a teacher education program, the prospective teachers are put through multiple interventions, in hopes that identity crises will occur and the prospective teachers will have multiple turning points toward more productive beliefs (NCTM, 2014). These reconstructions will leave behind an emotion memory attached with the experience. Therefore, when prospective teachers reflect on their teacher education program, their emotionality will be part of their narratives.

Research into the formation of prospective teacher's identity has not been the subject of much research (Beijaard et al., 2004). The process of reconstructing an identity involves possible shifts in beliefs, competencies, and behaviors (Korthagen, 2004). The way one interprets the contexts the individual partakes in will also be influential. Change in beliefs and emotions are entangled with one another (Mandler, 1989). Therefore, there is an affective response to these shifts in identity.

Emotions Within the Formation of Teacher Identity

Few researchers have explored the emotions and the formation of teacher identity of prospective teachers. Becoming a teacher is an emotionally heavy process (Brown, 2008; Hargreaves, 1998), and for prospective teachers, “identity becomes a contested field accompanied by feelings of excitement at new possibilities, by desires to abandon old positions, by hopes for renewal, by anxieties and resistance to new demands and the expectations of self and other” (Brown, 2008, p. 97). The profession of teaching has been described as an emotional field (Hargreaves, 1998) because teacher’s emotions influence his or her curriculum choices (Hargreaves, 1998), and whether or not to stay in the field (Hammerness, 2006; Hargreaves, 2005). The experiences involved in becoming a teacher create emotional memories because the modification of beliefs about mathematics, teaching, and learning will have an affective response (Mandler, 1989; McLeod, 1989; 1992). As one reconstructs his or her concept of self-as-teacher, there is also an emotional response and memory attached to the phenomena. There is an important need to investigate the intersection between emotions and identity formation.

Specifically for elementary mathematics teachers, Brown (2008) explored the intersection of emotion and identity formation theoretically from a psychoanalytic perspective. Brown (2008) claimed, “Education is a potential source of profound disturbance because it demands change.

Professional development requires new insights and practices” (p. 97). These disturbances require the individual to question who he or she is as a teacher and make a choice. Therefore, education can be seen as a catalyst for an identity crisis. The interventions planned by instructors have the goal to turn prospective teachers into reform-oriented individuals as defined by NCTM. According to Brown, a successful intervention produces an identity crisis (Erikson, 1968) and a change in one aspect (belief, knowledge, value, etc.) within the individual. Consequently this also potentially changes how one positions him or herself in the community of educators. These moments of questioning were described by Brown (2008) as after-education:

The education we construct for ourselves from the re-working of earlier experiences, or from the unexpected associations made between a recent experience and a much earlier one. After-education can begin when we work creatively on recent and remembered experiences in ways that lead to new and different constructions: seeing ourselves and possibilities for ourselves in ways that we could not imagine previously (p. 99).

Throughout teacher preparation programs and beyond, prospective teachers will go through various moments of after-education. These moments can be overwhelming for some, especially if the moment of after-education has a strong emotional response (Brown, 2008).

Although useful, Brown’s (2008) argument is heavily theoretical and its practicality is challenging to interpret. Brown argued, like many others, more research on emotion and identity formation is needed (Beauchamp & Thomas, 2009; Beijaard et al., 2004). Brown (2008) stated teacher preparation programs do not focus on identity formation: “The fast moving and challenging process of training has relatively few mechanisms for supporting identity development” (p. 103). Overall, Brown (2008) argued education programs should focus more on social structures and the power relations prospective teachers encounter. This includes the community of practice prospective teachers experience during practicums. Although I agree with this notion, I believe a strong empirical study using a combination of a situative perspective and

the sociocultural perspective on emotions can provide more concrete ways to aid prospective students in constructing their professional identities and further expand the research base on emotions within mathematics education.

Empirical Work on Emotions and Identity

Much of the empirical work on emotion and teacher's professional identity has focused on attempting to better understand the emotional side of teaching by looking at the conditions of teachers' work (e.g. Bullough, 2007; Cross & Hong, 2012; Flores & Day, 2006; Gu & Day, 2007; Hargreaves, 1998, 2005; Williams-Johnson et al., 2008). Beauchamp and Thomas (2009) stated, "Emotion may alter a teacher's identity in relation to the profession, but may also be altered by aspects of the profession" (p. 181). This included the emotional work teachers put into their practice. Emotional work has been described as "emotions that teachers freely experienced and self-regulated" (Meyer, 2007, p. 77). Therefore, part of teaching is learning how to regulate the emotions a person is feeling. For example, some emotions are considered to not be the norm in education such as hatred toward students. Gu and Day (2007) argued, regardless of the negative experiences of teaching, resilient teachers (those who resisted pressures to change) depended on previous positive past experiences to maintain "positive emotions and a sense of vocation" (p. 1310). These resiliencies can be positive (such as reform oriented beliefs held against pressures of standardized testing) or negative (such as teachers resisting to change traditional practices). Hammerness' (2006) findings were similar to Gu and Day (2007); however, Hammerness attributed teachers' positive or negative emotions to how they felt their current environment supported their vision of teaching. In particular, a subset of these studies focused on times of reform and the consequences to the teachers' emotional well-being (Cross & Hong, 2012; Hargreaves, 2005).

None of the mentioned studies focus specifically on teachers of mathematics, even though Hoyles (1980 as cited by Hodgen & Askew, 2007) found mathematics evokes greater emotional responses from individuals than other content. This goes hand-in-hand with Williams-Johnson et al.'s (2008) finding that different subjects elicited differing emotions from both teachers and students. One of the few studies I found on emotion and professional identity with a focus on mathematics education was Hodgen and Askew (2007). Here the researchers investigated an inservice elementary teachers' emotional relationship with mathematics. By specifically examining the relationship the practicing teacher Ursula (a pseudonym) had with mathematics, Hodgen and Askew (2007) attempted to understand the ways professional development aided in repairing the relationship between Ursula and mathematics, which she saw as disconnected. In interviews, Ursula explained two critical incidents helped her in reconnecting with mathematics: (a) participating in a 20-day professional development; and (b) participating in a research guided reform initiative. Hodgen and Askew (2007) claimed it was during the second experience Ursula reported having a new desire to be a mathematics teacher. In particular, Ursula constructed these motivations by repositioning authority in the classroom, "Ursula believed that, contrary to her own experiences, authority should be dependent not on the teacher but on mathematical discussion" (p. 479). Therefore, Hodgen and Askew (2007) demonstrate the connections between emotions and identity, as the past experiences and newly found desires of Ursula motivated great changes in what it meant to *be* a mathematics teacher.

Consideration of Voice to Examine Identity and Emotion

Various researchers have explored the voice of a teacher or student used in the mathematics classroom (De Freitas, 2004; Forman & Ansell, 2001; Chapman & Heater, 2010). "Voice refers to the discourse that is created when people define their own issues in their own

ways, from their own perspectives, using their own terms – in a word, speak for themselves" (Secada, 1995, p. 156). The metaphor of voice is used to examine who is speaking and the relationship between the speaker and the listener (Herbel-Eisenmann, 2007). The voice of the prospective teacher is valuable in understanding how he or she wishes to be legitimized by the social other. The narratives shared by the individuals demonstrate their perspective and the issues in their own terms provide insight into the perceived positioning of the individual in a community of practice. The emotionality of the prospective teacher will be shared in order to provide evidence of their position. The use of one's voice then is how they wish to be perceived in a public space. This conception of voice is aligned with Belenky et al. (1986/1997) use of the metaphor. Inspired by Gilligan (1982/2003), Belenky et al.'s (1986/1997) conception of voice has not been incorporated much into mathematics education.

Cooney, Shealy, and Arvold (1998) used Belenky et al.'s (1986/1997) construct of voice and Perry's scheme (1970/1999) to argue for the construction of belief structures of prospective mathematics teachers. I believe the voice of the individual can aid in seeing what the individual holds as having high value in the mathematics classroom. Consequently, voice provides a lens into the emotionality and the developing identity of the prospective teacher. By investigating some of the beliefs about mathematics and the emotional geographies, one can describe the voice the prospective teacher is attempting to construct for him or herself. This in turn provides a way to investigate the developing identity as a teacher-of-mathematics.

For example, I believe Ursula's professional development and participation in reform initiatives provided her a space to develop her voice (Belenky, Clinchy, Goldberger, & Tarule, 1986/1997) as a teacher-of-mathematics. The voice of the woman according to Belenky et al. (1986/1997) was attached to the ways of knowing the individual enacted. In other words, how

does one know something is true? Is it because the voice of the authority said so or is it because the subjective experiences of the individual have provided enough evidence to believe something as true? Or is it a mixture of the individual's voice with the authority's? Belenky et al.

(1986/1997) explored these facets and came up with five voices or ways of knowing the women in the study developed. Ursula (Hodgen & Askew, 2007) needed to develop her own ways of knowing mathematics and mathematics pedagogy in order to see that her voice as the authority in the classroom was not the one most appropriate as the teacher. Ursula came to the realization she needed to change how she wanted to be perceived. Therefore, she used her voice to change the students' perception of mathematics. She combined her own subjective voice with the authorities (in this case the researchers running the professional development). She tried their voice in the classroom and found success with the students. This legitimized her new voice as a teacher-of-mathematics. Overall, the intervention of the professional development provided Ursula a space to try a new voice and compromise with her own voice. The success caused an identity crisis, to which Ursula shifted her beliefs about mathematics teaching and learning. Consequently, Ursula developed her professional identity as a teacher-of-mathematics.

Theoretical Framework

The emotional work, labor, regulation, and constructed feeling rules influence the emotionality (Denzin, 1984/2009) of the individual. Emotionality is not just the emotions one feels. Emotionality goes beyond the individual. Emotionality is about how emotion influences the interactions between one and the social other. This necessitates defining emotions as more than just a "states of consciousness" as defined by Philipp (2007, p. 259). Throughout this study I used Denzin's (1984/2009) definition of emotion:

Emotion is a lived, believed-in, situated temporally embodied experience that radiates through a person's stream of consciousness, is felt in and runs through his body, and, in

the process of being lived, plunges the person and his associates into a wholly new and transformed reality—the reality of a world that is being constituted by the emotional experience. (p. 66)

Recognizing emotions are used as communicative tools, they change the ways individuals interact with one another and transform the phenomenological experience of both the one emoting and the social other interpreting the emotion. Therefore, emotionality centers the emotions and emotional understandings at the heart of human interaction and being in the world. There is an assumption interactions then are not only about reaching intersubjectivity about meanings and understandings, but also an emotional intersubjectivity. Considering Hochschild's (1983/2012) claim that emotions' direction can reflect the position of the individual, the emotionality further aids in understanding how one's position influences their interpretation of being in the world. Consequently, the emotionality of the individual could potentially influence the development of one's identity.

Emotional Geographies of Teachers

There have been few explorations of the emotionality of teachers. Hargreaves (2000; 2001a; 2001b; 2005) conducted one of the more prominent explorations on the emotionality of teachers. Influenced by the work of Hochschild (1979; 1983/2012) and Denzin (1984/2009), Hargreaves studied 53 practicing elementary and secondary teachers' emotionality. Each of the teachers were interviewed and participated in small focus group interviews. Each of the interviews and small focus groups allowed the researchers to elicit "teachers' reports of their emotional relationship to their work, their professional development, their lives and identities and educational change" (Hargreaves, 2000, p. 811). Using methodology similar to Hochschild (1979; 1983/2012), Hargreaves focused on teacher narratives describing episodes of positive and negative emotions.

Using the emotional geographies framework, Hargreaves explored the emotional spaces and relationships between teachers and parents (Hargreaves, 2001a), students (Hargreaves, 2000), colleagues (Hargreaves, 2001b), and curriculum change (Hargreaves, 2005). In each of these studies, Hargreaves discussed the areas of response of teachers to others characterized by the teachers as being the most significant to their emotionality. Between teachers and colleagues, for example, Hargreaves (2001b) found "the emotionally significant aspects of their relations with colleagues: appreciation and acknowledgment; personal support and social acceptance; cooperation, collaboration and conflict; and trust and betrayal" (p. 509). Using the emotional geographies framework enables one to find the actions or events emotionally significant to a group of teachers.

The emotional geographies encompass the emotionality of the teachers by looking beyond feeling states and providing a lens into the ways emotion influences the decision-making processes of the teacher. Hargreaves' work is limited in the sense he only studied the group of 53 teachers. He did no follow-up study nor continued with this line of work. His future research was not about the emotional spaces of teachers. No study has been conducted looking deeper into the emotional geographies of an individual or small number of participants. Additionally, how the emotional geographies influence other aspects of a teacher's development has not been explored. Hargreaves studies took only a survey of the teaching experience. A more phenomenological approach to the teachers' emotional geographies needs to be taken.

By using the Emotional Geographies framework, I hope to investigate these emotional spaces of prospective teachers as they participate peripherally in a community of teachers. Exploring emotionality can provide a lens in the ways prospective teachers position themselves

throughout their experience. This will also help to understand the emotional regulation and rules prospective teachers construct as they develop their identity as a teacher-of-mathematics.

Identity as a Teacher-of-Mathematics

As a foundation, I used Peressini et al.'s (2004) definition of professional identity as constructed from cognitive and sociocultural aspects:

Cognitive aspects of a teacher's professional identity encompass a complex constellation of goals, values, commitments, knowledge, beliefs, and other personal characteristics, drawn together to create a sense of 'who I am' as a teacher. Sociocultural aspects include the ways in which teachers participate in the activities of their professional communities and present themselves to others in the context of professional relationships (p. 79–80).

Peressini et al. (2004) took a situative perspective to learning to teach when considering the construction of identity. From a situative perspective, the individual and the community he or she is situated in are inseparable. Learning in different contexts entails the "constant negotiation and renegotiation of meaning in the world" (Lave & Wenger, 1991, p. 51). This includes the meanings and negotiations one makes of him or herself according to his or her interpreted position and desired social identity (Gee, 2001; Goffman, 1959; Snow & Anderson, 1987). As one desires participation within communities of practice legitimate peripheral participation is needed.

The construct of *legitimate peripheral participation* (Lave & Wenger, 1991, p. 31) is also important to the actions of the prospective teacher. "'Legitimate peripheral participation' provides a way to speak about the relations between newcomers and old-timers, and about activities, identities, artifacts, and communities of knowledge and practice" (Lave & Wenger, 1991, p. 29). The use of Hargreaves' (2000; 2001a; 2001b) emotional geographies framework also provided insight into the emotionality involved with participating peripherally in the community of practice the prospective teachers were looking to join. The teacher education program provided

the participants with the opportunity to have legitimate peripheral participation. Using the emotional geographies and legitimate peripheral participation a better understanding of the sociocultural aspect of identity can be attained.

A situative perspective also takes into account the act of recontextualization prospective teachers practice. Recontextualizing is an important action influential to attaining membership because the discourse revolved around an action has to be modified for a new context.

Rather than asking whether or how knowledge transfers across situations, researchers within a situative tradition ask questions about the consistency of patterns of participation across situations, conditions under which successful participation in activity in one type of situation facilitates successful participation in other types of situations, and the process of recontextualizing resources and discourses in new situations. (Peressini et al., 2004)

A prospective teacher needs to translate patterns of classroom participation developed from previous experiences with teaching and learning mathematics to fit or work within a different classroom environment. His or her vision of practice (Hammerness, 2001, 2003, 2006) if it matches or is similar to the context can make a difference in how the individual works within said space.

The emotional geographies framework also works within the situative perspective to explore the beliefs about the practices involved in the classroom. By exploring these emotional spaces, the beliefs about some of the practices involved in the community come to light in the form of feeling rules (Hochschild, 1983/2012). Feeling rules constructed by the individual guide how he or she should regulate his or her emotions in a context. These are practices because the individual believes by following constructed feeling rules he or she is participating appropriately in a community of practice. Feeling rules cannot be observed without inferring a lot about the emotionality of the individual. These forms of participation can be better understood by better understanding the emotionality of the individual. Consequently, the feeling rules constructed by

the individual are part of his or her identity as it relates to the membership in a community of practice.

One aspect included in my exploration of professional identity was the development of one's voice as a teacher-of-mathematics. I used the term voice to explore one's desired way to be heard and seen in the classroom. This is an aspect of the social identity of the individual. I use the metaphor in a similar way as Belenky et al. (1986/1997). They used voice as a way of determining women's ways of knowing at various institutions. One of these was in the college setting. I agree with Belenky et al. and add that prospective teachers use voice to find their ways of knowing who they are in the classroom. The prospective teacher has a goal or objective for him or herself in the classroom based on the beliefs about mathematics learning and teaching the individual holds. It was important to consider the ways of knowing of the participant's use of his or her voice (or the enactment of beliefs about teaching and learning mathematics) in the classroom of his or her mentor teacher (authority) to construct an image of the prospective teachers' identity formation. This means there is a requirement of comparing one's voice with that of the authority. In some cases, as will be shown later on, the individual needs to combine his or her voice and that of the authority.

Overall, a teacher's identity formation is a complex multifaceted process involving a collision of internal and external forces. Research into this process must continue; in particular, I believe it must include the emotions one goes through. By focusing on the emotionality of prospective teachers, one can better understand the critical events influencing the shifts in identity and the merging of the student and teacher identity.

The Situated Emotionality Bricolage

For this study two frameworks are being used to examine the identity formation of

prospective elementary teachers through emotionality. The situative perspective was the broader theoretical framework for learning to teach because the study was situated within a teacher education program. "A theoretical framework is a structure that guides research by relying on a formal theory; that is, the framework is constructed by using an established, coherent explanation of certain phenomena and relationships" (Eisenhart, 1991, p. 205). The situative perspective provided the theoretical basis of the study, providing the researcher with a discourse and accepted assumptions to continue investigating the desired phenomena of identity formation and emotionality. The teacher education program was providing the prospective teachers with access to the community of practice they desired to join (legitimate peripheral participation). The teacher education program also provided the prospective teachers with the discourse used in the community, thereby providing access to the ways of participating of the community of mathematics teachers (an identity within the community). It would be up to the prospective teachers, however, to bridge their coursework and field components (recontextualization).

The situated perspective, however, did not provide a way to consider the emotionality of prospective teachers. Thereby, within the larger theoretical framework, I needed a conceptual framework to examine the prospective teachers' emotionality. "A conceptual framework is an argument including different points of view and culminating in a series of reasons for adopting some points—i.e., some ideas or concepts—and not others" (Eisenhart, 1991, p. 209). The emotional geographies framework developed by Hargreaves (2000; 2001a; 2001b) was useful in exploring the emotionality of prospective teachers. The emotional geographies framework was constructed taking into consideration the interactions between teachers and administration, parents, students, and colleagues. The emotional geographies framework then followed the sociocultural perspective of emotion. The constructs of feeling rules and emotional labor

developed by Hochschild (1979; 1983/2012) could be used to describe the emotionality of the prospective teachers. Additionally, Goffman's (1959; 1967) ideas of image management could also be used. The attempts to be recognized by the prospective teachers in the mentor teachers' classrooms could be seen as part of their emotionality.

The combination of the emotional geographies framework and the situative perspective is the basis of the theoretical perspective of this study. I refer to this perspective as Situative Emotionality. From this perspective, both the sociocultural perspective of emotion and community membership are taken under consideration when examining prospective teachers' act of becoming a teacher. Certain constructs such as voice (Belenky et al., 1986) and identity crises (Erikson, 1968) can now be included in the prospective teachers' narratives of becoming a teacher. Additionally, considering one's identity as a narrative (Drake et al., 2001; Kaasila, 2007; Sfard & Prusak, 2005) provides the researcher with a way to operationalize identity. The prospective teachers with their narratives share their believed position within the teacher education program and mentor teachers' classroom. The narratives also provide access to the individual's emotion talk (Denzin, 1984/2009), which is important in understanding the emotionality of the individual. Figure 2 shows the constructs from each framework and the overlapping constructs that inform the Situative Emotionality perspective.

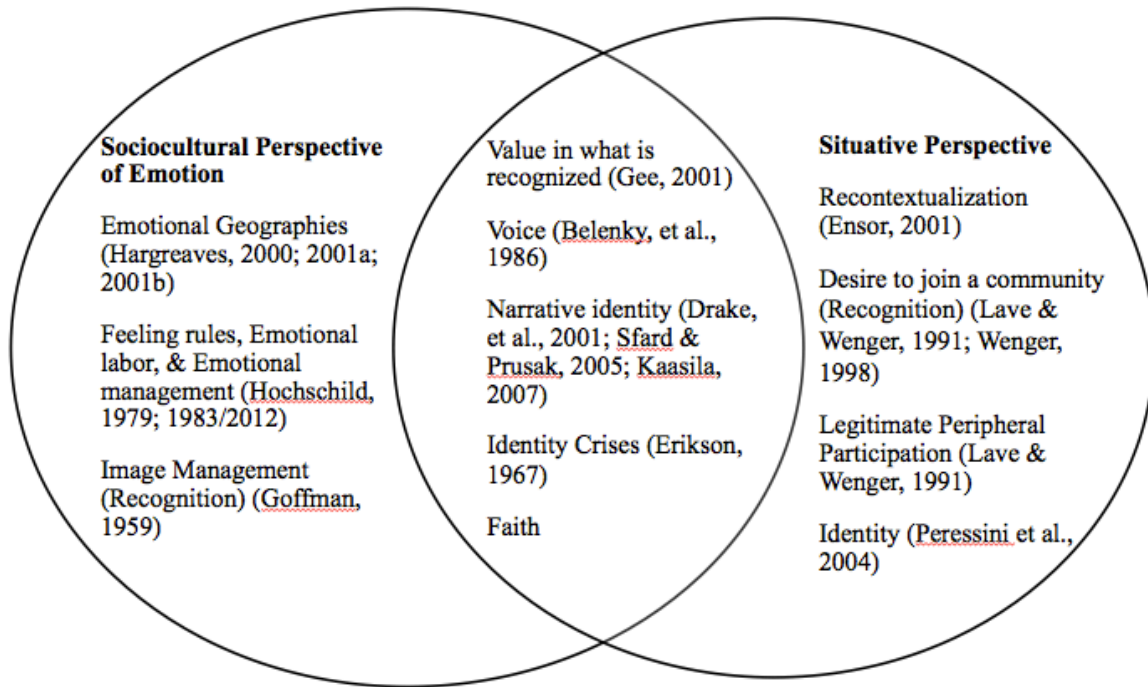


Figure 2. Theoretical and Conceptual framework constructs and overlapping Situative Emotionality constructs.

CHAPTER 3

METHODOLOGY

When an individual plays a part he implicitly requests his observers to take seriously the impression that is fostered before them.

- Erving Goffman (1959, p. 18)

Researcher Perspective

Qualitative researchers regard the "researcher" as part of the data collection instruments (Creswell, 2012). The researcher's beliefs, values, and knowledge will directly influence the decision-making processes when it comes to the design, implementation, and analysis of the data and subsequent reporting (Lankshear & Knobel, 2004). "Thus, in a qualitative study it is important to acknowledge the study has been conducted from the particular orientation or stance of the researcher, and therefore the study will always be partial and incomplete" (Lankshear & Knobel, 2004, p. 74). For this reason, it is important for the researcher to state his or her subjectivity when it comes to the topics of study. Recognizing my own beliefs about mathematics teacher education was important when I attempted to understand the development of a participant's identity as a teacher-of-mathematics.

I believe teacher education can be interpreted as a series of interventions with the intent of causing identity crises (Erikson, 1968) or turning points convincing the individual the beliefs, actions, strategies, or acts being demonstrated are important for being in a community of teachers. Attached to each of these turning points are emotional reactions and the emotionality of the individual, which in turn influences the decision-making processes of the individual because emotion is attached to rationality (Damasio, 1994/2005). Field components in combination with

coursework can be powerful catalysts in causing identity crises in prospective teachers. It cannot be assumed, however, an identity crisis always shifts individuals to positive or desired changes. The interventions can produce negative, undesired, or unexpected justifications of unproductive beliefs. The interventions could also not be strong enough to cause the identity crisis desired by the teacher educator.

I believe one aspect of mathematics teacher training is to demonstrate to prospective teachers the complexities of teaching (Borko et al., 1992; Lampert, 2001). The interventions chosen in teacher preparation programs, in part, aid the individual in thinking deeply about mathematics teaching and learning. This deeper reflection into the work of a teacher-of-mathematics complicates the images of mathematics teaching and learning constructed from the apprenticeship of observation (Lortie, 1975/2002). Teacher education programs hope to convince prospective teachers of the benefits of problems solving and inquiry based instruction by helping prospective teachers realize their apprenticeship of observation is not enough to be able to teach mathematics to all students. Prospective teachers may find it difficult to see the usefulness or value of their teacher education coursework without the realization of the complexity of teaching and learning mathematics. Consequently, prospective teachers will have issues with recontextualization (Ensor, 2001).

I recognize my perspective on teacher education influenced the way I theorized and conducted my research. When it came to the analysis of the data, I needed to be aware of my own subjectivity and desire to find data aligning with my desired outcomes. To aid with this endeavor, I conducted member checks with each of the participants (see Appendix B for the interview protocol including a member check). Member checks "seek to verify researcher constructions or representations of what happened, who was involved and so on" (Lankshear &

Knobel, 2004, p. 365). I asked them to review my interpretations of their emotional experiences during their practicum experiences. In particular, I focused on the aspects of teaching where they placed strong values. This helped in making sure my beliefs were bracketed and I did not infer beliefs or an identity differing from the participants' self-conceptualizations.

Context of Study: Learning to Teach Mathematics

Each participant was enrolled in a teacher education program at a large university in the southeastern United States. Prior to enrolling in the teacher education program, prospective elementary teachers are required to complete three courses focused on mathematical content for elementary teachers. Once accepted to the program, students take two mathematics pedagogy courses in consecutive semesters. The first methods course emphasized Cognitive Guided Instruction (CGI) (Carpenter, Fennema, Franke, Levi, & Empson, 1999) and focused on the number and operation content standards as stated by NCTM. A field component was attached to the first mathematics pedagogy course, consisting of the prospective teachers conducting clinical interviews (Ginsburg, 1997) with one student at a local elementary school. The interviews were meant to help the prospective teachers focus on the student's mathematical thinking and invented algorithms and strategies of the students.

The second methods course focused on the remaining content standards in the K-5 grade band: Algebra, geometry, measurement, and data analysis and probability. Additionally, topics such as assessment, differentiation, lesson planning, and problem solving were also discussed. The field component during the second methods course had the prospective teachers assigned to a K-5 classroom and a pre-K classroom. Each classroom was visited once a week for approximately 10 weeks. The prospective teachers were told to work with the assigned mentor teacher and complete assignments from their four university courses during the semester. For this

study, I focus on only the K-5 practicum experience. The participants rarely talked about the pre-K placements due to not seeing mathematics instruction occurring at the pre-K level.

Research Design

Denzin's (1984/2009) description of a social phenomenological and interpretive perspective on emotion aided in determining the type of data needed to investigate the deeper emotional meanings of prospective teachers. Denzin's framework stemmed from symbolic interactionism (Blumer, 1969/1998), which also influenced Goffman (1959), Hochschild (1983/2012), and Hargreaves (2000; 2001a; 2001b). The purpose of a study or inquiry into the emotionality of the individual is to find the deeper meanings of their emotional interactions.

Interpretive phenomenological investigation must cut through these [etiquette, good manners, and proper conduct] conventionalized expressions of meaning. Inquiry must display the underlying emotional meanings that are hidden, perhaps disembodied, masked, and even distorted by the constraints of convention and the contingencies of practical concern. The laying bare of these inner meanings will reveal not just the pragmatic but also the emotional meanings held by the person. It is these meanings that interpretive inquiry seeks to reveal, illuminate, interpret, and understand. (Denzin, 1984/2009, p. 265)

The emotional meanings held by the individual provide a way of capturing tentative manifestations of the developing identity of the participant because emotionality is attached to his or her phenomenological being in the world. "Emotionality is thus a basic underlying feature of human consciousness and human interaction" (Denzin, 1984/2009, p. 241). For this reason, a qualitative multiple-case study design was used to better understand their emotionality as the participants engaged in schools for the first time. A qualitative study is best for investigations that delve into a phenomenon as it occurs and understanding of the world from the perspective of others (Lankshear & Knobel, 2004).

Following Denzin (1984/2009), a phenomenological understanding of the participant was needed to infer her emotionality. A case study approach aided in understanding the perspective

of the participants and their decision-making processes. One can better explore these facets of the participant through writing (Van Manen, 1997). Thereby, constructing the case studies provided a deep understanding of the experience of *becoming* as each individual experienced it. Giving each participant her own case allows the reader to also understand the experience of becoming a teacher-of-mathematics (see Appendices E, F, G, H for case studies).

The case study approach also was needed to explore the feeling rules constructed by each participant was engaged peripherally in a community of practice. Feeling rules are socially constructed from the internal interpretations and external experiences of the individual. As a prospective teacher is placed within a classroom, his or her observations of student and teacher participation, along with his or her own interactions in the classroom, provide the basis for the construction of feeling rules. Therefore, the construction of feeling rules is a consequence of the individual's participation within a context, in this case the mathematics classroom. The interventions of the teacher education program will also influence the construction of feeling rules. As a prospective teacher is taught the "privileged strategies" (Ensor, 2001), it is left to the prospective teacher to see how those relate to his or her constructed feeling rules.

The main research question of this study (how are emotions involved in the development of prospective elementary teachers' identity as a teacher-of-mathematics?) can best be answered with a multiple-case study design. One advantage of a multiple-case study design is being able to investigate a phenomenon in-depth from different perspectives (Yin, 2014). In terms of this study, the phenomenon in question is the act of *becoming* a teacher-of-mathematics. Also, by considering multiple-cases, a "replication" of the cases can be investigated to better understand the phenomenon being investigated (Yin, 2014).

By looking at the range of similar and contrasting cases, we can understand a single-case finding, grounding it by specifying *how* and *where* and, if possible, *why* it carries on as it

does. We can strengthen the precision, the validity, and the stability of the findings. (Miles & Huberman, 1994, p. 29).

For my study, I constructed four individual case studies and present them in the Appendices (Appendices E, F, G, and H). These case studies are to help the reader and researcher in understanding the emotionality of the participants as they engaged in their practicum experience. Each case study is both descriptive and interpretive (Merriam, 1998). These cases will demonstrate the within-case analysis I conducted (Creswell, 2012). Chapter 4 will begin with brief biographies of the participants and a summary of the characteristics of their emotional geographies. From there I share my thematic analysis across the four cases or the cross-case analysis (Creswell, 2012). A cross-case analysis provides possible generalizations of the phenomenon being investigated by looking at the similarities and differences in each case. Each of the cases also provides the reader with the narratives of the participants. Each narrative is a part of the participant's larger narrative of becoming a teacher-of-mathematics. It was important to consider how all the narratives of the individual participant worked together to tell a greater story.

The narratives provided by each participant provided insight into his or her identity as a teacher-of-mathematics. Narratives have been used previously to explore the identity of the individual (Drake et al., 2001; Sfard & Prusak, 2005). Narratives are also used in investigating the reflective life world (Dahlberg, Dahlberg, & Nystöm, 2008) of the individual. Dahlberg, Dahlberg, and Nystöm (2008) describe a phenomenological and hermeneutic approach to investigating the experiences of the individual. The reflective life world is the way the individual describes being in the world and narratives can help in attaining tentative manifestations of the reflective life world of the individual. The narratives also provided insight into the "voice" of the individual.

Participant Selection

Participant selection was limited to the second elementary mathematics methods course (EMAT 3410). By concentrating on the second methods course, the cases would allow me the opportunity to explore the first time the selected participants each experienced the forces and pressures of teaching in schools (e.g. standardized testing pressures, parents, administration, and other political/social forces). Additionally, during the second semester practicum experience, the participants would then be involved in legitimate peripheral participation.

By this [legitimate peripheral participation] we mean to draw attention to the point that learners inevitably participate in communities of practitioners and that the mastery of knowledge and skill requires newcomers to move toward full participation in the sociocultural practices of a community. (Lave & Wenger, 1991, p. 29)

By engaging in legitimate peripheral participation, the prospective teachers became involved with the actions and practices of the community they desire to join. The teacher education program organized and took advantage of the practicum experience (the prospective teachers' legitimate peripheral participation) by assigning tasks for the prospective teachers to complete in order to highlight a pedagogical idea or concept (for example see de Freitas, 2008). The provided legitimate peripheral experience was a valuable space to examine the identity formation of the prospective teachers.

The students enrolled in the second mathematics pedagogy course were given a survey to aid with the purposeful selection of participants. The instrument used aspects of Raymond's (1994) survey focused on the beliefs about learning and teaching of mathematics. Hammerness' (2006) vision statement writing prompts were also added to the instrument. The last question of the survey asked for permission to see the prospective teachers' mathematics autobiography completed in their previous mathematics pedagogy course. The information from the survey would help in selecting participants with similar dispositions toward mathematics and similar

self-conceptualizations when it comes to mathematical ability. It was desired for the participants to have a positive disposition toward mathematics and see themselves as being good at mathematics. The entire survey can be found in Appendix A.

I wanted these two facets (disposition toward mathematics and self-conceptualizations of mathematical ability) of the individual to be similar in order to be able to investigate the ways the practicum experience and the teacher coursework was influencing their emotionality other than their concerns about their mathematical ability or negative feelings toward mathematics. Having these similarities was important to better understand the participants' developing professional identities as influenced by the experience of becoming a teacher-of-mathematics; thereby following a relativist perspective to a case study investigation. "The relativist application arises when a case study repeats a similar set of episodes, but from the perspective of different participants, accommodating relativist or constructivist approaches and the presentation of multiple realities" (Yin, 2014, p. 188).

Three elementary methods sections of the second methods course were offered during the Fall 2014 semester. I was the instructor of record for one of the sections. In order to avoid coercing the students in my section to participate in the study, they were not given the survey nor considered in the participant pool. The other two course instructors sent all of the students enrolled an invitation to take the survey previously described. The survey was sent electronically to approximately 45 students enrolled in the second mathematics methods course for elementary teachers through Qualtrics (2016). I also visited each class and discussed the aims of the study. Out of the 45 students who received the survey only two completed the survey and two partially completed the survey. The four prospective teachers who started the survey demonstrated the desired qualities described above. All four agreed to participate in the study.

The four participants, Anastasia, Elsa, Kida, and Sally (all pseudonyms), were all in the same elementary methods section. Anastasia and Elsa were partnered in their practicum experience while Kida and Sally had different partners. All participants were female and from middle to upper class families. Kida was of Hispanic descent and the remaining participants were White. More demographic and background information is provided in their respective case study presentations in Chapter 4 and the Appendices.

All of the participants' were assigned to Amos Moses Elementary School, which was in a neighboring county. Amos Moses Elementary is a Title I school in a county with 59.7% of the students in economically disadvantaged homes (District website, 2016). The county is also majority White with 12.6% African American and 15.3% Hispanic (District website, 2016). According to the district website, the district is a suburb of a large metropolitan city in the southeastern United States.

Data Collection Procedures

Data collection entailed multiple steps involving interviews and small group meetings. The participants were part of monthly small group meetings, lasting approximately 60 minutes (four in total). The small group meetings allowed participants to share narratives as well as reflect on and discuss their experiences in the classroom. Like Schultz & Ravitch (2013), I used writing sessions as part of the small group meetings to encourage participants to reflect on their experiences at Amos Moses. Writing sessions can provide the researcher a way to explore the participants' vantage point about learning to teach mathematics (Schultz & Ravitch, 2013). Prompts were given to the participants a day in advance of the writing sessions so they could reflect on their responses, which focused on their high and low experiences similar to Hochschild (1983/2012) and Hargreaves (2000; 2001a; 2001b) (see Appendix C for prompts). The narratives

provided insight into the participants' emotionality, emotion talk (Heelas, 1999), and professional identities (Drake, Spillane, & Hufferd-Ackles, 2001; Peressini et al., 2004; Sfard & Prusak, 2005). Focusing on the narratives of the participants also provided insight into the life worlds (Dahlberg et al., 2008) of the individuals.

The interview protocols were initially developed and piloted during the Spring 2013 semester. Four prospective elementary teachers were interviewed three times during a semester. The piloted interview protocols' questions focused on the vision of the participants and his or her beliefs about teaching and learning mathematics. Since then the interview guides were modified to include questions specifically asking for narratives. The small group prompts were piloted during the Spring 2014 semester. Four prospective elementary teachers met on a monthly basis for a semester. The prompts were modified to be more open, asking the participants' for highs and lows during their practicum.

First Interview

The initial interview with individual participants was conducted after four weeks of coursework and about one week of practicum experience. Sally was interviewed later due to some schedule conflicts and illness. The purpose of the first interview was to collect background information and explore each participant's beliefs about mathematics teaching and learning. For the background, I wanted to see how they interpreted mathematics being emphasized in their household, school, and community. Understanding how the larger social spheres influenced the participants' views of mathematics was important to better understand their self-conceptualizations. This was similar to Martin's (2000; 2006) exploration of the influence of larger societal circles. Additional questions focused on the participants' vision of teaching (Hammerness, 2006) and their first impressions working at Amos Moses.

First Small Group Meeting

The first small group meeting was attended by Anastasia, Kida, and Elsa. Sally did not participate due to her feeling ill. Sally also did not complete the writing prompt. The purpose of the first small group meeting was to discuss a positive experience from the first couple of weeks at Amos Moses Elementary. As with all the small group meetings the prompt was given to the participants 24 hours in advance. The first prompt's goal is to attain a narrative describing a positive experience occurring during the first couple of weeks at Amos Moses. Explicit directions about what to include in the narrative were included after the prompt was piloted. The prompt was the following:

Write a narrative (story) that describes a powerful moment that you have had during your field placement's math lessons. Describe the setting, the actors, the conflict, and resolution. Make sure to describe how you felt during the situation.

These initial narratives provided insight into the perspectives of the prospective teachers when responding positively to a person, event, and/or object in the mathematics classroom. The participants then shared their narratives with each other and responded to the narratives. I asked questions to verify and clarify aspects of the narratives and to better understand the participants' ways of thinking about their experiences.

Second Small Group Meeting

All the participants attended the second small group meeting (Anastasia, Kida, Elsa, and Sally). The purpose of the second small group meeting was for each participant to reflect on peak positive and negative experiences since the first small group meeting. The prompt was sent to the participants 24 hours in advance. This prompts were also piloted. The additions of the follow up questions to guide the narratives of the participants were included after the pilot. The objective of

the prompts was to attain narratives about the highs and lows the participants were experiencing at Amos Moses. The prompts sent to the participants read:

Write a narrative(s) that describes a moment or moments that produced a positive response (good feeling). What was the experience like? Who was there and how were they involved in the experience? Make sure to describe how you thought and felt about being in the experience.

Also write a narrative(s) that describe a moment or moments that produced a negative response (bad feeling). What was the experience like? Who was there and how were they involved in the experience? Make sure to describe how you thought and felt about being in the experience.

All participants submitted their responses. Again, the prompt was designed to have the participants share positive and negative experiences in order to be able to find the boundaries of their emotional geographies. This was in line with Hargreaves' (2000; 2001a; 2001b) and Hochschild's (1979; 1983/2002) methodology for exploring the emotionality of their participants. Additionally, these types of narratives allow better understanding of the value system of the individual. Each participant shared her narrative and opened the floor for discussion. Thereafter, I asked clarifying questions and follow-up questions about particular aspects of their experience.

Second Interview

The purpose of the second interview was to continue exploring the participant's perspective on her experience at Amos Moses Elementary and the relationship she saw with the teacher education program. Questions centered on the teacher education program, her vision of teaching, the connection between who she wanted to be and the teacher education program, and her peaks and lows in her practicum experience. Additionally, selections from her responses to the previous two prompts and/or the small group discussions were given to the participant to reflect on her previous position. After reading over a statement, the participant was asked, for her first impression to the previous statement. From there I would ask clarifying and follow-up

questions about her previous statement. All of these actions aided in better attaining the individual's perspective on her experiences and how they may have shifted her position since the previous interview. In other words, does she still agree with a previously held position? This opened up a space to discuss what influenced change or what may have hindered her at Amos Moses. The narratives provided insight into the emotionality of the participant.

Third Small Group Meeting

All participants were able to attend the third small group meeting. The purpose of the third small group meeting was to share narratives about working with students. I wanted them to explore the enactment of an activity or strategy from their teacher education coursework. The prompts were sent to the participants 24 hours in advance. The prompts given were as follows:

Describe an activity or strategy that you enacted that went *really well* (very successful) in a math period. Describe the strategy or activity and how you thought about enacting it? Did the student(s) respond positively or negatively? How did your mentor teacher respond? How did you feel about the experience thereafter?

Describe an activity or strategy that you enacted that went *really badly* (e.g. crashed and burned) in a math period. Describe the strategy or activity and how you thought about enacting it? Did the student(s) respond positively or negatively? How did your mentor teacher respond? How did you feel about the experience thereafter?

Peak experiences were also desired from the participants in order to explore the value system and emotionality of the individual. Discussions over the narratives shared occurred throughout the small group meeting. I also asked questions clarifying or connecting experiences. The prompt and subsequent discussion was an attempt to have the participants discuss the connections or attempts at recontextualizing (Ensor, 2001) concepts from their teacher preparation coursework. This prompt was created after the initial piloted prompts did not provide insight into the participants' attempts at recontextualization.

Fourth Small Group Meeting

All participants attended the fourth small group meeting. This being the last small group meeting, I centered the discussion and narratives on their perceived growth throughout the semester. Additionally, I asked them to provide a narrative of their most influential experience throughout the semester instead of since the last small group meeting. The prompt given read:

Write about the ways you feel you have progressed as a teacher of mathematics this semester. Describe where you started and where you feel you currently are as a teacher of mathematics. Additionally, describe how certain experiences during your field experience or coursework influenced you to think differently about mathematics education. What was a positive critical experience that influenced the greatest progression? What about this event was so powerful?

This writing prompt activity provided the participants the opportunity to reflect on the totality of their experience at Amos Moses and explore how they believe they have grown over the semester. They were also given the opportunity to respond to the others interpretation of their growth. As before, I asked clarifying questions and attempted to make connections between the participants' narratives. These narratives aided the researcher in the exploration of the participants' perspectives on their own growth and emotionality. The narratives also provided a portrait of their self-conceptualizations after their practicum experience.

Third Interview

The third interview was conducted at the beginning of the Spring 2015 semester. This provided the participants time to reflect on their past experiences and begin their next practicum experience at Claypool Elementary (with the exception of Elsa who at the time of the interview had not yet started her practicum experience). The purpose of the interview was to have the participant reflect on her experiences at Amos Moses Elementary. Additionally, she was asked to make comparisons to her new practicum experience and connections between her practicum experience and teacher education coursework. These questions were to provide insight into the

recontextualization of the program content and the relationship she saw between the program and the experiences at Amos Moses Elementary. At the end of the interview the participant was given selected statements from her writing prompts and small group discussions as previously done in the second interview.

Follow-up Interview

The follow-up interview was conducted at the end of the Spring 2015 semester after the participants completed the second practicum experience. The initial analysis of the participants' emotional geographies (Hargreaves, 2000; 2001a; 2001b) had been completed by the time of the follow-up interview. The questions asked the participant to describe ups and downs of her Spring practicum in order to see if they aligned with the analysis of the previous semester. Additionally, I wrote a portrait memo highlighting aspects of her emotional geographies for each of the participants. At the end of the interview, each participant was given the portrait memo to read over and write notes on. Then I asked the participant to discuss the memo in order to member check the findings of the initial analysis. The participant was also asked to confirm the accuracy of the portrait memo. All of the participants confirmed the portraits were accurate portrayals of their emotionality and value system while at Amos Moses Elementary. Each of the portrait memos can be found in Appendix D. Table 3 demonstrates the order in which the data was collected.

Table 3
Timeline of Data Collection for Each Participant

Data Collection Strategy	Strategy Description	Timeline of Data Collected			
		Anastasia	Elsa	Kida	Sally
First Interview	Asked questions about teacher's background and vision of teaching	Aug. 27, 2014	Sept. 8, 2014	Sept. 3, 2014	Sept. 22, 2014
First Small Group Meeting	Prompt focused on a positive affective experience	Sept. 10, 2014	Sept. 10, 2014	Sept. 10, 2014	N/A
Second Small Group Meeting	Prompt focused on a positive and negative affective experience	Oct. 6, 2014	Oct. 6, 2014	Oct. 6, 2014	Oct. 6, 2014
Second Interview	Asked questions about experiences at Amos Moses Elementary and connections with coursework	Oct. 27, 2014	Oct. 27, 2014	Oct. 20, 2014	Nov. 18, 2014
Third Small Group Meeting	Prompt focused on an enacted activity or strategy that produced a positive and negative affective response	Nov. 14, 2014	Nov. 14, 2014	Nov. 14, 2014	Nov. 14, 2014
Fourth Small Group Meeting	Prompt focused participants to reflect on how they progressed through the semester	Dec. 11, 2014	Dec. 11, 2014	Dec. 11, 2014	Dec. 11, 2014
Third Interview	Asked questions to aid in reflecting on overall experiences at Amos Moses and coursework	Jan. 15, 2015	Jan. 20, 2015	Jan. 29, 2015	Jan. 22, 2015
Follow-up interview	Interactive member check and follow up on new field component experiences	Apr. 23, 2015	Apr. 21, 2015	Apr. 28, 2015	Apr. 23, 2015

A part of conducting a multiple-case study is the importance of collecting data from multiple sources (Patton, 2002; Yin, 2014). From the reflective writings, small group meetings, and single interviews triangulation of the data was possible. I did not observe the participant

while they were at Amos Moses Elementary because I felt observing the participants would create my image of what had happened that could potentially conflict with the narrative the of the participant. I had to trust the narratives of the participants. As Gilligan (1982/2003) stated, "The way people talk about their lives is of significance, that the language they use and the connections they make reveal the world that they see and in which they act" (p. 2). If I construct a contradictory narrative from my observation, then it would be difficult to attain the perspective of the participant.

Data Analysis

It is important when conducting a qualitative study to manage the data in appropriate ways. All interviews and small group meetings were transcribed using Inqscribe (Inquirium, 2013). To begin the analysis I started with the within-case analysis of each participant before proceeding to the cross-case analysis. In general, I used a constant comparative methodology (Glaser & Strauss, 1967) to analyze the data. This requires several rounds of coding and revising the coding schemes.

Before coding could begin, the interview transcripts were separated into the narratives told by the participant. The narratives told by the participant became the unit of analysis for this study. According to Denzin (1989) a narrative is a story with a beginning, middle, and end.

A story has a beginning, a middle, and an end. Stories take the form of texts. They can be transcribed, written down, and studied. They are *narratives* with a plot and a story line that exists independent of the life of the storyteller or *narrator*. Every narrative contains a reason or set of justifications for its telling. (Denzin, 1989, p. 41, emphasis in original)

Some narratives were not included in the examined collection. These included narratives about things outside the teacher education program and field component, narratives about assignments for other courses, narratives about other students' placements, and narratives about the pre-K

placement. The narratives used for analysis had the participant place herself as the protagonist in the story.

The narratives, for the most part, provide the audience, the one being told the story, with a turning point or significant moment leaving a mark on someone's life (Denzin, 1989). The turning point is evidence of an identity crisis (Erikson, 1968) the participant went through. It was important to capture the narratives explicitly stating a turning point. Although, not all narratives have a turning point, narratives still play an important part in showing how the participant is attempting to convince the social other of ownership of some characteristic. The participant shared narratives to be recognized as belonging in some social setting (Gee, 2001; Goffman, 1959). This means there is an argumentation aspect to a narrative.

Narratives about becoming a teacher have an emotional component to it. Thereby, a narrative could be coded for providing insight into the participants' emotional geography (Hargreaves, 2000; 2001a; 2001b). "A narrative view of teacher education can be seen as an emphasis on the personal process of becoming a teacher and construing one's professional identity; an affective and emotional element is essential to these processes" (Kaasila, 2007, p. 205). Each narrative then has emotion talk.

Emotional talk turns on the use of three kinds of words: Emotional words themselves (for example, *anger, fear, love, hate*); ordinary words that surround emotional words and phrases, embedding them with interpretation, ambience, and subtlety; and the personal pronouns, especially *I, me, mine, you, your, yours, ours, we, they, them, and theirs*. Ordinary words locate emotional talk interactionally, by time, place, others, and the intentions of the speaker. (Denzin, 1984/2009, p. 267)

I was able to examine the narratives and code for the appropriate emotional geographies present because of the use of emotion talk and the individual's argued positioning,

For example, the participant Anastasia shared the following narrative:

They (students) had no idea what they were doing. And so I sat down with him and I drew strip diagrams... And I just worked it out conceptually for him. *And he was like wide-eyed* and I was like that's why it ends up being, you know, 4 and one-fourth... He thought it was doing something completely different than the 'J' method. Like they didn't even put two and two together. **So I think that seeing him succeed and then doing a couple more examples with him and seeing him being able to do the worksheet and get the right answers was—and then the next day or the next week still being able to do that and build upon that.** I mean that's what changed—made it such a priority to me. To do the conceptual with kids. (Anastasia, Int. 3, emphasis added)

The above narrative was coded as representing both a moral and professional geography. The italicized portion of the narrative represents the emotion talk within her narrative. Anastasia focused on the emotional reaction of the student when learning a conceptual strategy for converting an improper fraction to a mixed number. This provided her with an insight into her teaching of the mathematical concept. The feedback she received was also enough for her to see success in her actions. The bolded section demonstrates further evidence or the warrant from her experience to make her turning point or claim underlined making it a priority for her to teach conceptually. This narrative was coded representing her moral geography because it focused on her purpose behind teaching and learning mathematics. In Anastasia's case, the purpose of teaching mathematics was to have students learn conceptually (see Appendix E for more examples of Anastasia's moral geography). The narrative was coded for professional geography because the narrative was also about the work of a teacher. Total code counts for emotional geographies can be seen in Table 4.

Anastasia and Elsa both had high counts when it came to their professional geography codes and moral geography codes respectively. As can be seen in the individual cases (Appendix E and F) Anastasia and Elsa both had strong criteria and definitions of what it meant to teach and learn mathematics. This was different than Kida and Sally who both lacked a clearly defined vision (Hammerness, 2003; 2006).

Table 4
Frequency of emotional geography codes

Participant	Moral Geography	Professional Geography	Political Geography	Sociocultural Geography	Physical Geography
Anastasia	46	72	18	19	12
Elsa	71	37	12	6	5
Kida	47	32	5	14	3
Sally	35	43	7	20	2

The initial coding processes aided in shifting the codes to prospective teachers' emotional experiences because Hargreaves developed the emotional geographies framework from inservice teachers. Coding definitions were restated to coincide better with the context of the participants. All coding processes were conducted using HyperRESEARCH (Researchware, 2015). After the initial round of coding, followed by a second round of re-coding based on the contextual considerations, the portrait memos used for the member check interactions were written (see Appendix D for portrait memos). Writing is an important part of the research process as it aids the researcher in reflecting on the experiences of the participants.

Research and writing are seen to be closely related, and practically inseparable pedagogical activities. The type of reflection required in the act of hermeneutic phenomenological writing on the meanings and significances of phenomena of daily life is fundamental to pedagogic research. (Van Manen, 1997, p. 4)

After the follow-up interviews and member checks, all coding was checked to make sure the emotional geography codes aligned with the participants confirmed portrait. On a separate word file, notes were taken on the initial possible results of the within-case analysis.

Table 5
Frequency of open codes in participant narratives

Code Name	Number of Anastasia's Narratives Coded	Number of Elsa's Narratives Coded	Number of Kida's Narratives Coded	Number of Sally's Narratives Coded
Classroom Management	0	16	4	7
Communication	19	3	10	2
Conceptual Understanding	26	14	1	0
Differentiation	2	0	1	3
Emotional Labor	17	4	4	5
Engagement	0	2	7	2
Environment	10	2	2	1
Gender	5	0	0	1
Goals for Self	27	12	11	12
Mathematics	44	27	27	14
Mentor Teacher	19	28	15	19
Poverty	0	0	0	5
Program	21	17	18	26
Progress	17	18	2	11
Recontextualize	4	4	12	0
Role	16	19	11	8
Self- Conceptualization	4	26	24	19
Social Influence	21	4	12	13
Status	16	20	9	25
Student Image	37	40	37	34
Student Relationship	6	7	1	8
Teacher Decision- making/Imagery	28	29	22	26

I then broke up by participant the small group discussions and writing prompt responses. I made a word document highlighting each narrative described and the highs and lows to each. This document aided in verifying the themes that emerged from the emotional geography codes and portrait previously conducted. Additionally, this document along with the codes helped in finding disconfirming evidence of the previously found themes. Again as necessary, themes and emotional geography considerations were reviewed.

Finally, I used open coding (Strauss & Corbin, 1990) on each of the previously coded emotional geographies. Each emotional geography code was given additional sub-codes based on my previous reading of the interviews, writing prompt responses, and small group discussions. An iterative coding process continued until all the participants' emotional geography codes had some number of sub-codes (see Appendix I for the code book). Reports of corresponding emotional geography and sub-codes were printed and analyzed for further analysis. Throughout this process notes were taken on a word file to keep up with initial thoughts and conjectures about the participant's developing identity and emotionality. I then conducted a cross-case analysis. I looked for similarities and differences in experiences from case to case. I was aided in this endeavor by the sub-code reports. Table 5 shows the counts of the codes used.

Writing and qualitative research are inseparable (Van Manen, 1997). For this reason, as the cases in the appendices (Appendices E, F, G, H) were written, codes were refined and constructed as needed. This in turn meant returning to the interviews and recoding them. I continued to keep notes on conjectures and ideas about each individual. In general, the cross-case analysis was looking through the narratives to construct the greater narrative or the biography (Denzin, 1989) of the participants. From the individual biographies written commonalities in the experiences of the participants' narratives were found. This included three stages each of the

participants' biographies described: (a) Positioning oneself in the classroom, (b) seeking recognition, and (c) identity construction. Each of the narratives revolved around these three stages. Within each of these stages the participants went through were defining actions the participants' narratives described as trying to achieve. Various aspects of the individual and context influenced the defining actions. Each of the stages, defining actions, and influential components are further discussed in Chapter 4.

Validity and Reliability

In order for me to maintain a high degree of validity various actions were taken. First, triangulation of the data (interviews, small group discussions, and writing prompts) strengthened the validity of the study (Patton, 2003). I also included my subjectivity statement as a way to give the reader a better understanding of my perspective of teacher education. The subjectivity statement also helps the reader in understanding my perspective as I analyzed the collected data. So I hope the reader is able to better understand my decision-making processes.

Reliability as described by Yin (2014) means others are able to replicate the study described and have similar results.

The objective is to be sure that, if a later researcher follows the same procedures as described by an earlier researcher and conducts the same case study over again, the later investigator should arrive at the same findings and conclusions... the goal of reliability is to minimize the errors and biases in a study. (Yin, 2014, p. 48–49)

I hope by providing the details of my research design, data collection, analysis, and subjectivity I have provided enough information to aid those who may wish to replicate the study.

Furthermore, the individual case studies are provided, as opposed to just the cross-case analysis, to demonstrate reliability.

Limitations

Limitations could be consequences of the design, data collection, or analysis of the data. Research has to be reductive in some sense in order to examine the phenomena investigated. The selection of participants was limited to the initial four who submitted the survey. Even though they matched the criteria desired, they are all female. I cannot make a claim whether or not gender would have influenced the emotionality of the prospective teachers. I conjecture gender would influence the emotional geographies of the individual because of the differing gender norms attributed to demonstrating and discussing emotions. Moreover, the participants were not too diverse in their ethnicity. The discussion of emotions is cultural (Heelas, 1996). Therefore, a more diverse population of participants in future studies can aid in further developing the results in this study.

The design of the study is also limiting. For example, I chose not to observe the participants in their practicum experience to not construct contradictory imagery of their participation in the classroom. Observations, however, could have provided more pointed conversations about why certain experiences were not critical to the participants. This is also important when it comes to teacher education and construction of an identity as a teacher-of-mathematics. Additionally, the context was also limiting because the mathematics methods course instructors had no control over the practicum experiences. The mentor teachers at Amos Moses may not (and some do not) provide a learning environment promoting the same imagery of teaching as the methods course instructors. This reduced the opportunity for recontextualization.

The use of narratives was another limitation to the study. This is only one perspective on the developing identity of prospective teachers focusing more on the sociocultural aspect of it.

The design cannot make claims too strongly on the cognitive aspect of participants' developing identity. There are a variety of other perspectives (Bishop, 2012; Beijaard et al., 2004) focusing more on the cognitive aspect (Gujarati, 2013; Martin, 2000; 2006) of one's identity. Narratives provide insight onto the individual's life world (Dahlberg et al., 2008), but do not explicitly examine the cognitive aspects of the individual's identity. Using participant narratives as the unit of analysis did not provide data on the cognitive aspect of the participants' identity. The analysis using the emotional geography framework made it challenging to take into account beliefs.

Participant selection was also limited to the only four individuals who submitted, partially in some cases, the survey on beliefs about teaching and learning mathematics. The participant pool all attended a large research university. So it is likely the prospective elementary teachers have been propositioned previously to participate in studies. The students received the survey through e-mail before I visited the classes to discuss the study. This order of events may also have contributed to the low number of surveys completed. Furthermore, many of the potential participants were involved in many extra-curricular activities and may have found it difficult to make time to participate in a study. There may have been other possible biases to completing the survey and being involved in the study. For example, I am a male researcher asking a majority of females to participate in a study involving emotions.

CHAPTER 4

RESULTS: IDENTITY FORMATION STAGES

Creswell (2012) and Yin (2014) claim by looking across the experiences of the participants one can better identify patterns and themes emerging from the exploration of multiple cases interacting with a phenomenon. From the cross-case analysis, I observed each participant's emotionality influenced three stages of identity formation: (a) Peripheral participation (b) seeking validation, and (c) identity construction. At each of the stages, the participants were attempting to complete defining action(s). The participant was able to move on or look onto the next stage when the action was completed to the satisfaction of the individual. The cross-case analysis also provided evidence each defining action had influential components. I begin this section by providing a brief biography of each participant. Then I describe each of the stages, defining actions, and the influential components I have identified from the cross-case analysis of the experiences at Amos Moses Elementary. Figure 3 summarizes the findings from the overall analysis.

Participant Biographies

A biography is "an account of a life, written by a third person" (Denzin, 1989, p. 34). The purpose behind writing a biography is to position the character within larger ideas (Denzin, 1989). In this section, the participant's life history is given but also her relation to the emotional geographies and the stages of identity formation. Only a small part of the participants' experience is given in this chapter. The more extensive biography for each participant is included in the appendices (Appendices E, F, G, H).

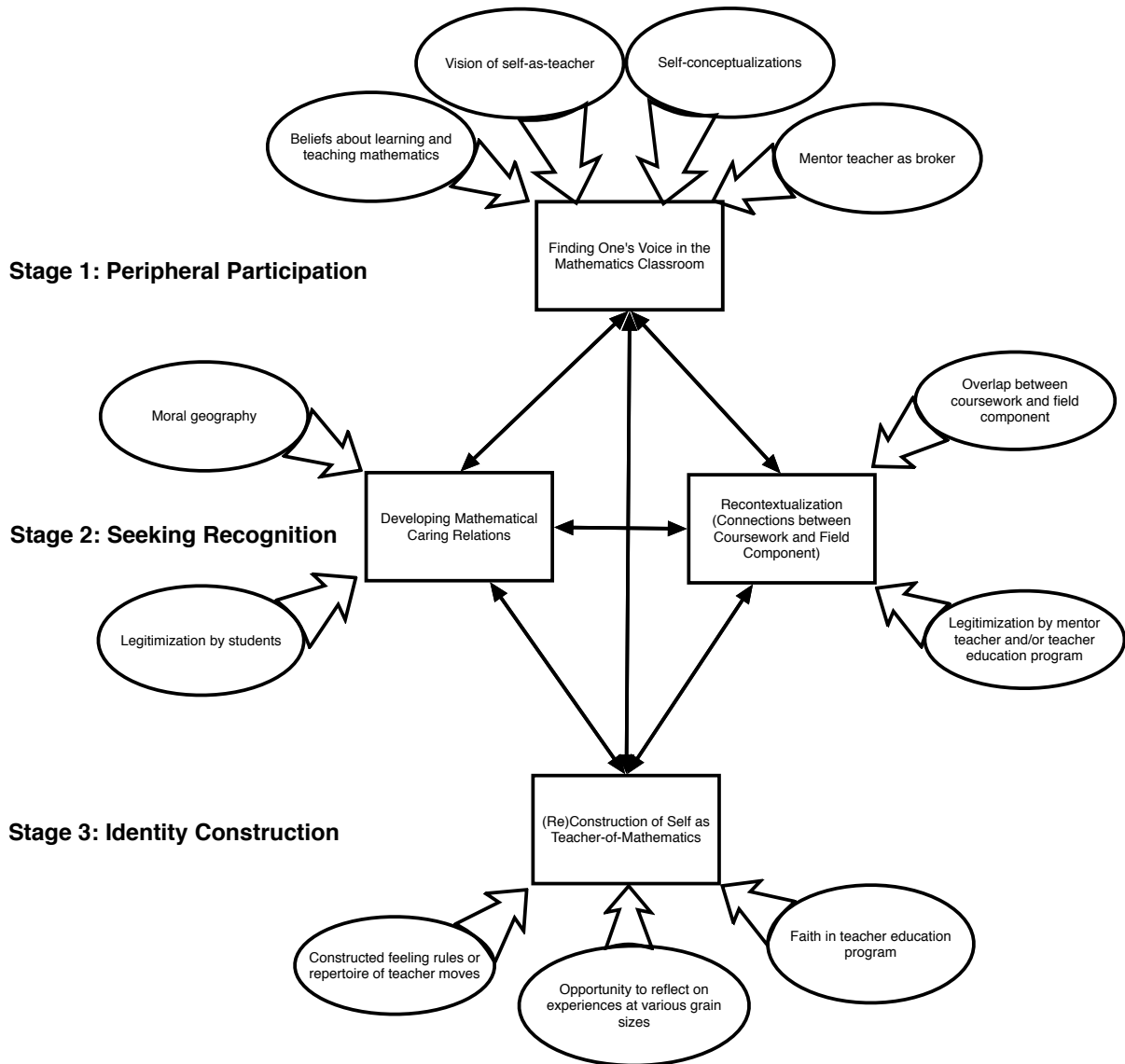


Figure 3. The stages, defining actions, and influential components for the prospective teachers at Amos Moses Elementary

Anastasia's Biography

Anastasia was a white female who grew up in the suburbs of a large city in the southeastern United States. She was in her early 20's at the time of the study. She wanted to be a teacher to be a positive influence in students' lives. A turning point or identity crisis she went through significantly influencing her perspective of learning mathematics occurred during her middle school years. She participated in a mathematics competition and concluded:

I was like this is what being... a math learner is all about. Because it was not just like what is four 'x' plus seven equal twelve. It was not like solve for x. It was like if this and this and this and there was so many different aspects to each question and you had to think like such strategically through each one. I loved it. (Anastasia, Int. 1)

This competition defined for Anastasia what it meant to learn mathematics. Anastasia's perspective of learning mathematics influenced her vision of self-as-teacher and shaped her experience at Amos Moses.

Anastasia was assigned to Ms. Blaileen's 5th grade class at Amos Moses Elementary. Ms. Blaileen taught the early intervention program (EIP) class for students who scored near passing on the previous years state standardized exam. Although Ms. Blaileen had 20 or more years of teaching experience, Anastasia did not agree with Ms. Blaileen's mathematics practices. Anastasia believed Ms. Blaileen was not teaching the students conceptually but focused heavily on procedure. Anastasia's disagreement with Ms. Blaileen's practice was partly because her practice contradicted what Anastasia was taking from her coursework. "I just thought that was really interesting cause in all of our classes we talk about critical understanding and not just rote memorization" (Anastasia, Small Group 1 [SG1]). Anastasia used Elsa's metaphor of a "gray space" to describe the awkward feelings and uncertainty with her expectations in the classroom. Anastasia desired to teach conceptually but at the beginning of her practicum experience she felt constricted by Ms. Blaileen. Anastasia felt her desired ways of teaching were not being supported or legitimized by Ms. Blaileen.

As Anastasia's weekly visits continued, she began to feel like she had escaped the gray space. She felt she had transitioned from an observer to an active participant. Although she still had feelings of awkwardness toward Ms. Blaileen's practice, Anastasia found a space where she could conduct mathematics teaching how she envisioned was best for students but also was in line with her interpretation of Ms. Blaileen's expectations. Anastasia attributed finding her voice

in the classroom to the overlap between her coursework and field component. Anastasia's identity as one-who-teaches-conceptually in the classroom began to become more of her own after having found her voice in the classroom. Practicing her teacher moves with students in an "actual classroom setting" (Anastasia, Int. 2) allowed her to grow as a teacher. She attributed her newfound position to being able to ask questions to those in her support system (professors, partner, other student teachers, etc.). In other words, Anastasia felt others legitimized her ways of teaching mathematics and could support her in enacting them in Ms. Blaileen's classroom.

Anastasia also started to become more aware of other issues of the profession. In general, Anastasia began to confront the complexities of teaching mathematics. One issue raised throughout her second and third interviews was what she referred to as a teacher knowing about which "corners to cut." What Anastasia meant with this phrase was the complex nature of teachers' decision-making processes. Anastasia became aware of the pressure of time and how difficult it is for a teacher to make the best decisions (in her case about teaching conceptually). The particular context Anastasia was in, an early intervention class, placed additional pressure on Anastasia. To Anastasia it was her responsibility to develop the students' "lacking" mathematical skills while at the same time preparing them for the mathematics of the next grade. To Anastasia, however, feeling frustration was part of the process of becoming a teacher.

After completing her field experience, Anastasia was asked to consider her progress as a teacher-of-mathematics. She claimed to feel more confident in her abilities to teach mathematics in her desired ways. "I feel I could realistically walk into a classroom and design mathematics instruction for a wide variety of topics and grades. I do not freak out at the thought of a student asking me a 'hard' question" (Anastasia, Writing Prompt 4 [WP4], Lines 8–19). Anastasia referred to her teaching converting improper fractions to mixed numbers as a turning point

(identity crisis) during her time at Amos Moses elementary. When reflecting back on her experience with the student, Anastasia emphasized the success of the student as further justification of her desired ways of teaching. She recognized how working with this student "made it a priority" to teach conceptually. The validation she received from the student's success further legitimized her desire to teach conceptually.

Throughout all her experiences at Amos Moses elementary, Anastasia was able to persevere with her desire to teach mathematics in a conceptual manner. Although her mentor teacher did not validate her teaching methods, she was able to find validation through her teacher education program and her students. I believe Anastasia's trust in her teacher education program was strengthened by Ms. Blaileen's unsupportive actions. Anastasia found legitimization in her teacher education program because she no longer sought legitimization from Ms. Blaileen.

Anastasia's Emotional Geographies

Moral Geography. Anastasia's moral geography was characterized by her desire to teach conceptually. Throughout her experience at Amos Moses Elementary, Anastasia's purpose was to teach mathematics conceptually to the students. This is evident from the amount of frustration, anger, helplessness, etc. she felt when observing Ms. Blaileen teach and the pride and validation she experienced when seeing students' success in learning conceptually. To Anastasia, Ms. Blaileen taught in a procedural manner. She disagreed and criticized Ms. Blaileen's actions early on in the study. Ms. Blaileen's practice pushed Anastasia to lean heavily on her partner and her teacher education program as a way to validate her identity as a teacher-of-mathematics. Her desire and believed purpose of teaching mathematics was so strong she broke through Ms. Blaileen's authority and taught the students conceptually regardless of the ways of teaching

Anastasia observed. Anastasia distanced herself from Ms. Blaileen and attempted to find her own voice within the classroom

Professional Geography. Anastasia's professional geography was characterized by two main themes: (a) Curriculum decision-making processes and (b) Being able to communicate the mathematics to students. Anastasia saw both of these aspects as being influential to her capacity to teach mathematics conceptually. She also saw both of these characteristics as limitations in her current position as a developing teacher. She felt both aspects of her professional geography needed further development, and she saw the teacher education program as supportive of her desired trajectory. Anastasia became more aware of the ways teachers need to "cut corners." Anastasia often felt confused, uncertain, and overwhelmed by the ways Ms. Blaileen and others made curricular decisions. She described these feelings during her second and third interviews. She often referred to them as what "corners" to cut. She became concerned about this aspect of knowing while at Amos Moses. Anastasia also focused her professional growth on being able to communicate the mathematics to her students. This was important to her because she felt she was not a good communicator. She described the ability to communicate as a characteristic of her ideal teacher, and she agreed her program was supporting her in attaining her ideal teacher image.

Political Geography. Anastasia's political geography was characterized by the power struggle between Anastasia and Ms. Blaileen. Anastasia's position in the "gray space" was the first power conflict between the two. Ms. Blaileen's authority in the classroom influenced Anastasia's decision-making processes. Many times Anastasia made statements similar to, "at the end of the day it is her classroom. So I can only do what I think is best for the kids within her parameters. And there is pretty much no getting around that" (Anastasia, Int. 3). Anastasia

concluded her decision-making processes needed to take into consideration the parameters she was in. When she felt she pushed these boundaries, which she referred to as teaching "under the radar," there was hesitation and the need to attain permission from Ms. Blaileen.

Sociocultural Geography. Anastasia's sociocultural geography was limited to her awareness of issues of gender in mathematics. This was particularly relevant when Anastasia reflected on her experiences in elementary and middle grade mathematics. When reflecting back on her turning point with mathematics, Anastasia referred to being selected for her schools mathematics team and being the only female on the team. As the only female on the team, Anastasia felt pride for being selected and took to heart her position as seen by the powerful moment she had while working on mathematics at the competition described earlier. The social standing achieved by being good at mathematics at her school may also have validated her feelings of pride.

Physical Geography. Anastasia's physical geography was characterized by her limited presence in the classroom, a consequence of the design of the field experience in the teacher education program. Anastasia felt her limited amount of time in the classroom was problematic. For example, when it came to making curricular decisions, Anastasia claimed one reason she was not comfortable making those decisions was because she was not in the classroom enough. "I just do not feel I see the kids enough" (Anastasia, Int. 3). She was also not able to see how lessons were working together or what decisions Ms. Blaileen made. "I think it was frustrating but I have to trust I am only there once a week" (Anastasia, Int. 2). The physical geography became more apparent in the second and third interviews, when Anastasia started becoming more aware of the pressures of time and curricular decision-making. Anastasia also claimed

going to the classroom one day a week was a possible reason for Ms. Blaileen's lack of trust with Anastasia teaching mathematics conceptually.

Elsa's Biography

Elsa was a white female in her early 20's who grew up in a small town in the northeastern United States. Her family moved to the southeastern United States her first year of college. Elsa emphasized *progress* as why she wanted to be a teacher. She related progress with her actions and activities as a teacher. Elsa early on saw the purpose of teaching as helping students progress in their lives. She stressed the transformable nature of elementary students and the impact she could make on them as a teacher. She described looking forward to her field placement because she would be part of the growth of students. "I'm really excited... to really see them grow and to see their ideas develop... there is a lot of potential in that class" (Elsa, Int. 1). She enjoyed her volunteer work with an elementary student at a local school because she was an agent of progress. She interpreted students' progress as legitimizing her identity as a teacher-of-mathematics.

Elsa was partnered with Anastasia in Ms. Blaileen's 5th grade classroom at Amos Moses Elementary. Elsa early on was confused by the idea of the EIP classroom. A student who struggled with long division instigated Elsa's confusion. Elsa noticed the student struggling and assisted the student, but she felt the assistance was not enough. Elsa believed a 5th grade student should not struggle with the idea of long division. To Elsa it was evidence the student was not given the opportunity to progress. Elsa's perspective of the EIP classroom structure was in contrast to her notion of student progress. To Elsa, the students were progressing, but she foresaw issues in the students' progress in the coming years of school mathematics. She was unsure of how the students would be able to catch up with their fellow peers. Elsa desired to be

recognized as the one-who-can-help students in progressing. She described her position, however, as being in a gray space. Elsa used this metaphor to convey her uncertainty in her expectations in Ms. Blaileen's class and the awkwardness existing between Ms. Blaileen and Elsa.

After a couple of weeks visiting Ms. Blaileen's class, Elsa began to find her voice in the classroom. She felt she had broken through the gray space she was positioned in and found her role in the classroom. Although Elsa's expectations were not clearly defined, she was still able to escape the gray space where she felt previously positioned. Elsa co-constructed her position with Ms. Blaileen by letting Ms. Blaileen know of her intended and desired position in the classroom. She sought to be legitimized by the authority. Elsa sought to use her voice in Ms. Blaileen's classroom, but she needed to have Ms. Blaileen's permission. Elsa also attributed her teacher education program with aiding her in escaping the gray space. She was able to make connections with what the students were learning and what she was experiencing, but she also became aware of the differences between her past experience in school and the experience of modern students. She resolved the differences by positioning herself as a learner, and claiming both perspectives are important in the classroom. This perspective allowed Elsa to feel more comfortable in enacting strategies she was learning in her teacher education coursework. To Elsa, the practicum experience was her time to reinforce what she was learning in class.

Elsa refused to position herself as a teacher. Instead she focused on her in-betweenness or her "teachery" position. To Elsa, to break through the "teacherish role" she had taken, she would need to teach a lesson and be responsible for the students' outcomes. When it came to discipline, however, Elsa felt more comfortable enacting her teacher identity. Elsa described how when it came to classroom management, she had seen a shift in her role in Ms. Blaileen's classroom.

Being in a position of power was important to Elsa because the students seeing her as a figure of authority was necessary to being a teacher and moving out of the gray space. Elsa was still in search for her position in the classroom. She wanted to fulfill her desired identity as one-who-can-help but had not yet been able to accomplish this. She did find a niche where she could help with classroom management, which provided her with a sense of authority she desired.

Once Elsa's field experience at Amos Moses was completed, she was asked to reflect on how she had progressed as a teacher-of-mathematics. In her writing final writing prompt, Elsa emphasized how comfortable she had become working with the students. She stressed how she was more confident about answering student questions and teaching a center, but not a whole class. Part of developing her confidence working with students was Elsa felt she could "break down" the mathematics for the students. Elsa also discussed in the third interview, how she could empower students by showing the why behind the mathematics. Previously, Elsa was concerned students were not learning the material deeply enough to succeed in their next year's mathematics class. Elsa confessed during her third interview she was most concerned about what she referred to as *knowing*. "I guess kind of just knowing... So like being able to really get into the standards and what I would have to teach and really knowing what I would be teaching" (Elsa, Int. 3, 0:18:03). Elsa wanted to gain a deeper understanding of the content, of knowing how to interpret standards, and knowing what to teach. This also included knowing how to respond to control of the classroom.

Throughout her experiences at Amos Moses elementary, Elsa focused on being able to help students' progress as doers-of-mathematics. Even though Ms. Blaileen did not validate Elsa's identity as a teacher-of-mathematics, Elsa was still able to find legitimization through her teacher education program and the students' successes.

Elsa's Emotional Geographies

Moral Geography. Elsa's moral geography was characterized by her desire to be a catalyst to students' progress. Throughout her experience at Amos Moses Elementary, Elsa's purpose was to teach mathematics so students could progress successfully. This was evident from the frustration, anger, helplessness, and other negative emotion she felt when observing Ms. Blaileen teach and the joy she experienced when seeing students' succeed in mathematics. Also the frustration Elsa experienced when envisioning the students' ability to be successful in 6th grade after being in the EIP class was evidence of her focus on students' progress. Elsa's voice as the one-who-can-help needed to be developed in order for her to impact the students' mathematical progress. Evidential of Elsa's focus on progress was her growing frustration with the curriculum of the EIP classroom and the ways it left students unprepared for the next grade. This contrasted with her notion of being the one-who-can-help the students progress. She believed to be a teacher meant to help students be successful and if they are not going to be prepared for the next grade's curriculum, then she was failing at her position. Elsa's frustration with her position was consistent throughout her interviews.

Professional Geography. Elsa's professional geography was characterized by her desire to know. Her description of someone who knows was not limited to mathematical content, but included knowing appropriate teacher moves, best classroom management strategies, and having knowledge of the standards and curriculum. Knowing was important to Elsa because otherwise she would not be able to be the one-who-can-help in the classroom. Elsa acknowledged her knowing needed to be further refined. Elsa's image of an ideal mathematics teacher included knowing the previously stated aspects of teachers' work. When it came to mathematics, to be her

ideal teacher, Elsa knew she had to revisit the content, but also know how the students' mathematics is connected.

I mean I would definitely have to go back and—I mean math was always kind of one of my favorite subjects so I liked to do it... Still when they are giving me a problem and I am like, oh that is how I did it. Or like I can kind of remember it but I really think by going—it is still kind of the same, like knowing what the students know kind of what they need before so then to give them all like a plane, even field of what they need to know by the end of it. (Elsa, Int. 3)

To Elsa, knowing was important in order to be the one-who-can-help. Her professional geography was concerned with her transitioning from not knowing to knowing what to do in a teaching situation. But she also wanted to know about the prerequisite knowledge and abilities students would need to succeed in the mathematics classroom.

Political Geography. Elsa's political geography was characterized by the power struggle between Elsa and Ms. Blaileen. Elsa's position in the "gray space" was the first power conflict she described having in Ms. Blaileen's classroom. . Elsa could not win over Ms. Blaileen because of her position as a student. Elsa conceded it was not her place to *be* the teacher in the classroom.

I guess I never thought it was my place to feel like a teacher. I could go and tell them like, yes it is okay to go to the bathroom or explain how to them—how to do a problem. Or if they are acting out like go and stand by them. But I never felt I had the authority of the class. But I do not think it was ever really given to me either. (Elsa, Int. 3, 0:13:32)

Elsa claimed to being given some authority over the students, but she did not feel she had the authority of the class. Elsa described her not-teacher-but-not-student position as a teachery position. This teachery position demonstrates how Ms. Blaileen's authority influenced Elsa's decision-making processes. Elsa had to take into consideration Ms. Blaileen's authority when deciding what she could or could not do in the classroom. Elsa wanted to avoid "stepping on her toes" when she was in classroom. She was respectful of Ms. Blaileen's authority and had to creatively construct a space to use her voice.

Sociocultural Geography. Elsa's sociocultural geography did not have a significant theme emerge. When Elsa discussed social aspects of teaching (e.g. issues of race, gender, socioeconomic status, etc.) it was in a general sense. These issues also did not arise unless specifically brought up by others in the small group meetings or by the interviewer. There was no evidence from her interviews, small group meetings, or writing prompts Elsa was attuned to any particular social aspect.

Physical Geography. Elsa's physical geography was characterized by her limited presence in Ms. Blaileen's classroom. Elsa felt being at the school once a week was limiting her experience. For example, she described in her next practicum she would be better at finding her position in the classroom because she will be at the school more often.

I think it is going to be a little bit harder to make that place, but I think it will also be easier in terms of you do not have these two people coming in once a week cause that is also uncomfortable. That is also not normal. (Elsa, Int. 3)

Elsa recognized the constraints of her limited presence, specifically in finding her position and becoming comfortable with the students.

Kida's Biography

Kida was a Hispanic female in her early 20's who grew up in a suburb of a large metropolitan city in the southeastern United States. Kida focused on the differences in language between the mathematics she will be teaching and the mathematics she learned. Kida believed the ways of talking about the mathematics had changed since she was in school. Consequently, Kida interpreted part of learning to teach as becoming acquainted with the new mathematics language. She was concerned about this new language and her ability to use it appropriately. Furthermore, she did not want to fall back on the ways she learned mathematics.

Kida was placed in Ms. Del Davis' 1st grade class at Amos Moses Elementary. Kida related to Ms. Del Davis because she was an alumna of Kida's teacher education program. Kida saw Ms. Del Davis as someone who had successfully transitioned from "not being an actual teacher to actually having your own classroom" (Kida, Int. 2). Having already gone through the program gave Ms. Del Davis some clout Kida valued. Kida trusted Ms. Del Davis as being more in-the-know about what it meant to be a teacher than her program instructors. Kida took advantage of time in Ms. Del Davis' classroom to change students with negative dispositions toward mathematics to positive. She did this by attempting to engage the students in mathematics in more interactive ways. In particular, Kida shared a narrative about Seth, a student Kida was able to engage in mathematics by creating a superboard (four white boards put together). Kida was successful in changing Seth's disposition because she had found a novel way to engage the student with the mathematics. This event legitimized Kida's desire to change students' disposition toward mathematics.

Kida continued to find spaces to use her voice in Ms. Del Davis' classroom. She provided no evidence of pushback from Ms. Del Davis for enacting her desired ways of teaching. For the most part it seemed Kida was able to project her identity as a teacher-of-mathematics without going against Ms. Del Davis' authority. Kida continued to focus on the students' productive disposition toward mathematics. In the second interview, she emphasized students seeing the importance of learning and doing mathematics. In her opinion students do not like mathematics because it is a foreign language and they do not see the applicability of the mathematics in their lives. Therefore, to have students engage in the mathematics it was necessary for the teacher to make the mathematics meaningful.

Kida, in the second interview, also became aware of a more frustrating disparity. When asked what obstacles she foresaw in becoming her ideal image of a mathematics teacher, Kida described the differing imagery of teaching she interpreted from her teacher education program and her experiences at Amos Moses. Kida's mentor teacher and the other 1st grade teachers further justified the divide. Kida held Ms. Del Davis and the other 1st grade teachers in high regard because they were members of the community of practice Kida desired to join. Kida did not see her professors as understanding the work of a teacher any more. The members of the community had more power in influencing Kida's ideas about teaching and learning mathematics. Kida sought to be legitimized by Ms. Del Davis and the other 1st grade teachers. Their position, as working teachers, highly influenced Kida's views of her teacher education program.

After completing her practicum experience at Amos Moses, Kida was asked to reflect on her time there and how she had progressed. Through Kida's reflection it was evident the students in Ms. Del Davis' classroom legitimized Kida's identity as a teacher-of-mathematics. When asked to describe an event having the greatest positive impact on her perspective of students' mathematical thinking, she retold the story of Seth. In her retelling, Kida added the following:

Seeing how applying that time or dedicating that time to work with him was actually beneficial and so I do not know if he is doing—keeping up with it this semester, but I would hope that he was. And regardless I will always remember just my work with him because it was proof to me that I can make a difference in children's feelings about math and just feelings about different subjects in education. And like working to present content in a variety of ways is very valuable and it definitely does change their perceptions about it I guess more or less. (Kida, Int. 3, 0:19:44)

Kida found her identity as a teacher-of-mathematics to be legitimized by her experience in changing Seth's disposition.

Throughout Kida's experience at Amos Moses Elementary her narratives were guided by her desire to provide students with engaging and valuable activities to influence them to see mathematics as useful. Although Kida saw her teacher education program and her field experience as disconnected, she still found legitimization from the students and teachers at Amos Moses Elementary.

Kida's Emotional Geographies

Moral Geography. Kida's moral geography was characterized by her strong desire for students to have a positive disposition toward mathematics. Her purpose as a teacher-of-mathematics was to change and maintain students' productive disposition toward mathematics. Many of Kida's desired teacher moves revolved around aiding students in learning and doing mathematics in a "fun" engaging way. The mathematics itself was never what was engaging; instead Kida focused on the actions the students would participate in to engage them in the activity of doing mathematics. Kida's key example was the student Seth and the superboard she created for him. Kida's actions in Ms. Del Davis's classroom revolved around the notion of students' productive disposition. She enacted particular teacher moves in an attempt to have students engage with the mathematics in meaningful ways from Kida's perspective.

Professional Geography. Kida's professional geography was characterized by two strong concerns. The first was her desire to put to use the appropriate mathematical language in her actions as a teacher. From the beginning of her participation, Kida referred to the metaphor of language as a way make sense of the perceived differences between her ways of learning and doing mathematics and the ways students were learning and doing mathematics at Amos Moses. The act of unlearning was frustrating to Kida in part due to her desire to be the one-who-knows.

This seemed to have subsided with time as she became more comfortable in the uncertainty of knowing as a teacher.

Kida's second characteristic of her professional geography was the growing disparity between her teacher education program and what was happening in the field. The disparity frustrated Kida because she desired to see more cohesion between her program and the work of the teacher. She began to lose her confidence in the program as she positioned the professors as being outside the community of teachers she desired to join. Kida's frustration focused on her not learning concepts beneficial to her as a teacher. The discrepancy between the two was problematic to Kida who wanted to learn how to teach. She wanted there to be more communication between the two components of her education. Kida did not want to have to pick and choose between the voices of authority.

Political Geography. Kida had no major theme within her political geography. Throughout her time at Amos Moses, she did not have any power struggles with Ms. Del Davis, nor did Kida's envisioned ways of teaching and doing mathematics clash with Ms. Del Davis'. Kida was able to enculturate herself into Ms. Del Davis' classroom with no issues. This may be due to Kida's recognition of the different ways students learn and do mathematics in schools compared to how she had learned and did mathematics. With this in mind, Kida was more open to the actions of the teachers and students in the classroom.

Sociocultural Geography. Kida also had no major theme emerge from the data of her sociocultural geography. The only times Kida discussed larger social issues were when other participants or the interviewer directly asked her. Kida had no particular social aspect she mentioned in her narratives when answering to the others. She often continued in the same vein or answered vaguely.

Physical Geography. Kida rarely mentioned the amount of time or the physical proximity she shared with Ms. Del Davis. It was not problematic to her as a student or someone who is in the stage of becoming to only be at Amos Moses once a week. Though Kida valued the field experience component, she was content with the time spent there. There was no evidence of her desiring more time at Amos Moses or with Ms. Del Davis.

Sally's Biography

Sally was a white female in her early 20's who grew up in the suburbs of a major metropolitan city in the southeastern United States. She claimed to have grown up in an upper-middle class neighborhood. Sally decided to be a teacher because of her work at a mathematics-tutoring center. This experience was very influential in forming her beliefs and narratives about teaching and learning mathematics and her perception of her teacher education program.

Sally was assigned to Ms. Krinkle who taught 5th grade mathematics, but Sally rotated with an assigned group of kids because the 5th grade teachers at Amos Moses each taught one content area (mathematics, science, reading, language arts, and social studies). Although, Sally interacted with five different teachers throughout the day, Ms. Krinkle made the strongest impression on Sally because of Ms. Krinkle's perceived status. Sally praised Ms. Krinkle's command of the classroom and the love she received from students. Ms. Krinkle being the students' favorite teacher was also valuable to Sally. Sally positioned Ms. Krinkle as having high status, not only with students, but also with other teachers in the school.

To Sally, students learning mathematics conceptually was not a major concern. On the other hand, the students attaining correct answers in an efficient manner was important to her. Her attention was more on the students getting the correct answers as quickly as possible. Once the students had shown enough expertise with the strategies as stated in the standards, Sally

would teach them the tricks and techniques she thought were best for them. Sally also did not see herself learning much from her mathematics education courses. She already saw herself as having a strong mathematics content and pedagogical background because of her work at the mathematics-tutoring center. This is why she stressed efficient strategies leading students to the correct answer.

After a number of weeks at Amos Moses, Sally thought of Ms. Krinkle's class as providing her with agency and the opportunity to work with students on her own. This allowed Sally to teach mathematics in the way she envisioned without any pressure to conform to the strategies stated in the standards. She showed the students multiple strategies until one clicked with the child. The students in Ms. Krinkle's classroom legitimized Sally's voice as a teacher-of-mathematics. The students' success, which for Sally appeared to be synonymous with correctness, justified Sally's beliefs about teaching mathematics. By focusing on the students' ability to get the correct answer, Sally continued to see her job as finding the strategy that works for each individual student.

Sally had a strong desire to be an administrator. She planned to teach for three years and then proceed to get her Ph.D. in administration. As such, she focused more on the social dynamics occurring around her at Amos Moses rather than her learning to be a teacher. Sally was intrigued by the relationship the teachers had with one another. She found the relations between the teachers to be a way her time at Amos Moses was a preview of her own future teaching. She not only focused on the social dynamics of the teachers but also on the social habits of the students. Her desire to be an administrator provided her a space to see larger social issues, specifically SES, as influencing her students' learning in Ms. Krinkle's classroom.

Once Sally had completed her practicum experience at Amos Moses, she was asked to reflect on her time there and how she had progressed. She had hoped to learn more about teaching larger groups of students in situations not one-on-one, which was a concern of hers previously. She also hoped to learn how to make the learning of mathematics fun for students. She continued to praise Ms. Krinkle for the ways she taught because Ms. Krinkle's teaching was perceived as similar to what Sally envisioned for herself. Finally, the practicum experience had given Sally more confidence in her vision of self-as-teacher because she interpreted making a positive impact on Ms. Krinkle's students. Thereby, justifying what she desired to do as a teacher.

Sally not only saw success in her ways of teaching when students showed positive affective responses to mathematics, but also when they saw her in a favorable light. When students positioned Sally in a positive way it was equivalent to increasing her status. Sally wanted students to like her. She demonstrated great pride when students provided evidence of her impact on them in positive ways. To Sally as a teacher success meant attaining a favorable position with the students. When asked to share an event having a powerful impact on her thinking about teaching and learning of mathematics. Her narrative focused on her success in making mathematics fun and how the students in Ms. Krinkle's class raised her status.

I would sit down and kind of talk to them and then there would be an example. And I would be like, okay well think of it this way. And we would go through that. And then some of the kids would be like, oh my gosh like this was the best math class ever. You just made it so fun. And I worked with them one time and they always came up to me in the hallway and give me hugs and they were so happy. They are like, oh yeah you are a fun math teacher, from a 10 minute mini thing that I did with them. So that—I mean it stuck to them and it is something that they remember. I mean on the last day they were like, oh my gosh we are going to miss you so much. I literally taught them for 10 minutes. So that was just something that really stood out to me. Like okay, I can make a difference and I can teach them something that is going to stick out to them. (Sally, SG4, 0:09:54)

Sally succeeded in making mathematics fun for the students. She showed them various strategies until the one that "clicked" was found. Then the students legitimized her actions when they hugged her and exclaimed how much she would be missed.

Sally's perspective on becoming a teacher was influenced by her overall objective of being an administrator. To Sally this was the highest status that one could achieve with a career in education. Teaching at the elementary school level was a stepping-stone in accomplishing her goal. Her desire led her to see her field component in a different way than the other participants. For example, student achievement was more about success in getting the correct answer than it was on having a conceptual understanding.

Sally's Emotional Geographies

Sally's moral geography was characterized by two strong desires. The first was her desire to develop students' productive disposition toward mathematics. Sally viewed mathematics as applicable to everyday life. This belief influenced her determination to have students see mathematics as useful, particularly when it comes to surviving as an individual. Sally's strong values about the application of mathematics influenced her decision-making processes in Ms. Krinkle's classroom. Sally did not discuss negative emotions except for moments clashing with her views of teaching and learning mathematics. This occurred most often when discussing mathematical strategies students were being taught in Ms. Krinkle's classroom. Sally focused on the strategies because she did not see them as beneficial to students in attaining the solutions in efficient ways. The strategies also conflicted with the ideology of the mathematics-tutoring center where she had worked. Sally held her experience at the mathematics-tutoring center in such high regard she used those experiences to justify her resistance of the new ways of teaching.

Sally's second influential desire was students should get correct answers. When she discussed her role in Ms. Krinkle's classroom, it involved Sally teaching mathematics in a particular way, which she disagreed with. Sally tried to be her image of an ideal mathematics teacher.

Someone who cares and goes through and gives different solution or different options until everybody understands. And everybody actually knows what is being—or what is expected of them. And what is being asked of them and how to solve the problems.
(Sally, Int. 2)

This involved showing students multiple strategies until one clicked and the students then understood the mathematics (i.e. got the right answer). Sally emphasized correctness in mathematics. This was her role and purpose in the mathematics classroom, and was central to her identity as a teacher-of-mathematics.

Professional Geography. Sally's professional geography was characterized by her aspiration to be an administrator and her desire to have strong student-teacher relationships. Both of these aspects tinted her perspective of the job of a teacher to be about status in the classroom, school, and community. To begin with her long-term goal of becoming an administrator, Sally saw her prospective years of teaching as prerequisite to her real career. Her objective of being an administrator guided her to focus on the social dynamics between teachers. "My end goal is to work in administration and stuff. So it is very interesting to see all the different things. There is so much collaboration" (Sally, Int. 3). Sally's second influential desire as a teacher-of-mathematics was to be held in high regard by the students. It was important to Sally the students liked her as a person. She wanted to be seen as a caring and loving teacher. For example, Sally was proud of her work with students in Ms. Krinkle's class. One turning point occurred when she taught a 10-minute lesson and she felt beloved by the students. She professed great satisfaction

with her teaching ability for the positive affective reactions students had to her teaching. The students' affective reactions were enough evidence to legitimize Sally's voice and identity as a teacher-of-mathematics.

Political Geography. Sally's political geography was dominated by her desire for status. This particular emotional geography was encompassed in many of the other geographies. It seemed Sally's desire to be the one-with-status encompassed many of her decision-making processes. Sally's strong desire to be the one-with-status led to conflict in two situations at Amos Moses. Sally's first power struggle was with a substitute teacher and the other with a paraprofessional in Ms. Krinkle's class. In both situations Sally's authority was put into question. In both situations, Sally sought out Ms. Krinkle for her status and authority to see what is the best appropriate action to take.

Sociocultural Geography. Sally's sociocultural geography was focused mostly on the issues related to socioeconomic status (SES). This focus on SES was influenced by her concentration on status and her background growing up in a high SES area. A student at Amos Moses informing her of the lack of heat at his home first brought low SES issues to Sally's attention. From there she was able to share other stories of students' education being affected by their low SES status. Sally had decided to become a teacher because she wanted to give students the same opportunities to learn she had growing up. But as she continued to work at Amos Moses Sally realized working with low SES students meant the opportunities she was given were harder to provide to them. Overall, Sally's focus on status also influenced her interaction with students with varying SES.

Physical Geography. Sally's physical geography was characterized by her limited presence in Ms. Krinkle's classroom. Her limited presence in Ms. Krinkle's classroom was not

problematic to Sally. My conjecture is because Sally and her partner were in Ms. Krinkle's classroom at the same amount of time; Sally's status was not put into question. This was different from her next practicum experience. Sally felt conflicted by the presence of someone with higher status in her next practicum experience.

The fact that last semester my partner and I were on the same level. We were there. Same experiences. Same everything. But this semester, the girl, the student teacher, she is there five days a week. And has been with them many many more days than I have.... I mean she was there from August through December, twice a week last (.) so that's maybe like 30 - 40 times plus. And now she's there 5 days a week everyday. I've been there 4. So she's been there 60 times and I've been there 4... What am I going to do? Be like, oh I know the way this classroom should be run. When she has been there almost everyday.... I was really concerned and I sent out an e-mail and I was like, I do not know how I feel about this. And they [University supervisors] were like, no it will be fine.... I mean it has been a month and a half, but I still don't feel comfortable. I am not really okay with the fact that they did that. I just do not think that it is good for her or for me? (Sally, Int. 3, 0:22:20)

Sally's competitive nature emerged because she was no longer the one-with-status. Her limited presence no longer allowed her to compete with the student teacher. This was not the case in Ms. Krinkle's classroom, but Sally did not feel her status was in danger.

Characteristics of Emotional Geographies

Throughout the experiences at Amos Moses Elementary, the participants interpreted the events, objects, and people in different ways (Ortony et al., 1988). The emotional geographies aided in exploring the interactions and relationships the prospective teachers were developing at Amos Moses Elementary. The bonds (or distances) they constructed with their mentor teachers were influential at first, but as time progressed the participants split on which interactions they saw as more beneficial. Anastasia and Elsa sought out the teacher education program for legitimization of their geographies, while Kida and Sally felt a stronger bond with the teachers at Amos Moses (e.g. being a member of a community of practice (Wenger, 1998)). For each

participant, however, the students legitimized her voice. How to interpret the success of the student was dependent on the goals, objectives, and beliefs of the participant.

Table 6
Characteristics of Participants' Emotional Geographies

Participant	Moral	Professional	Political	Sociocultural	Physical
Anastasia	Learn mathematics conceptually	“Corners to cut” Communicate the mathematics to students	Under the radar The teacher's classroom	Females as doers-of-mathematics	One day a week
Elsa	Progress Multiple ways of doing mathematics	“Knowing” Classroom management	Teachery position (No authority)	N/A	One day a week
Kida	Positive disposition toward mathematics	Mathematical language Program and field disparity	N/A	N/A	N/A
Sally	Positive disposition Getting the correct answer (Tricks are good)	Administrator career goal Strong student-teacher relationships Learning to teach happens in the field	Desire for status	Interaction with low SES students	One day a week Lack of presence

Peressini and colleagues (2004) described the professional identity of the individual as the framework one uses to make sense of his or her practice. The emotional geographies (Hargreaves, 2000; 2001a; 2001b) provided insight into the components of the framework

described by Peressini et al. (2004). Furthermore, the stages of identity developed in this study provide further insight into the construction of prospective teachers' professional identity. Consequently, the teacher education program fulfilled one of its goals, the modification of beliefs (Conner et al., 2011; Orton, 1996; Skott, 2009). The moral geography was influenced by the interventions of the teacher education program.

Moral Geography

This emotional geography encompassed the purpose behind learning to teach mathematics, as well as the purpose behind the students at Amos Moses learning mathematics. For this reason, the moral space influenced the decision-making processes of the participants as they enacted their identities as mathematics teachers. The acts and activities the participants enacted were consistent with the individuals' believed in purpose for teaching mathematics. Like the case of Miss T (Philipp et al., 1993) the prospective teachers in this study did assimilate beliefs about students thinking and learning from their teacher education program. The reasoning and evidence of focus on student thinking aligned with the moral geography of the participant. For this reason, the moral geography was one of the most influential of the emotional spaces of the participants.

The characteristics of the moral geography were primarily about what it meant for the students to do well in mathematics. This was defined by the participants' beliefs about learning and teaching of mathematics, and heavily influenced by their backgrounds as Raymond (1997) reported. Kida and Sally both leaned more toward disposition about mathematics, while Anastasia and Elsa emphasized mathematical understanding. Sally was more of an extreme characterization because to her the "tricks" or procedural understanding was enough for students.

Additionally, Elsa did not focus as much on conceptual understanding as Anastasia, but Elsa did consider showing students multiple strategies as a way to help kids progress.

Each of these characteristics aided the participants in determining what was to be taken as evidence of their success in enacting their identity. The chosen discursive moves of the individual were selected to convince the social other of their position in a context (Gee, 2001; Goffman, 1959; Snow & Anderson, 1987). The participants judged the success of their argument by the evidence from the students' feedback. This evidence included demonstrating conceptual understanding of a mathematical concept, attaining a correct answer, or showing progress. For example, Anastasia sought for the students to learn mathematics conceptually. Her work with a student converting improper fractions to mixed number was significant because the child was able to do these kinds of problems using the more conceptual strategy Anastasia showed him. Kida was also recognized or legitimized when she created the superboard for the student, and saw how he became more engaged in the mathematics because of her intervention. The moral geography aided the participants in recognizing when students were legitimizing their identity.

Professional Geography

This emotional geography encompassed the actions and activities conducted by a professional teacher and, after moral geography, the second most influential emotional geography to the participants. These include the teacher moves and ways of doing what the participant believed to be the work of a teacher-of-mathematics. The professional geography was influential to the decision-making processes of the participant because it defined how to be recognized (Gee, 2001) as a professional. The professional geography defined the actions and activities one would need to enact in order to belong to the community of practice (Wenger, 1998). Even though the University was providing the participants with peripheral participation

(Lave & Wenger, 1991), the participants wanted to feel and be seen as teachers while at Amos Moses Elementary. They felt the need to participate in ways they believed teachers of mathematics work in the classroom and each constructed an argument to convince the social others of her membership.

Each of the participants focused on the skills or abilities she needed to develop as the characteristics of her professional geography. The more time the prospective teachers spent at Amos Moses, the more they became aware of issues of teaching and learning they felt unprepared to handle. These concerns emerged as the participants started to become more immersed in the community of practice. The peripheral participation made the participants more aware of the flaws or gaps in their arguments about belonging. In line with Nicol (1999), the prospective teachers claimed to have brought up these issues in teacher education courses to discuss the pedagogical problems they saw in the field. The concerns the participants highlighted related to their moral geography. For example, Elsa desired to have the students progress in mathematics successfully, but she could not see that happening without her being able to "know" as a teacher. Elsa described her desire to "know" as being able to make the best decisions based on what she knows about the students. Without "knowing" she could not help students in progressing their mathematics. The notion of classroom management was also important to Elsa in accomplishing her purpose as a teacher.

The professional geography also emphasized the relationship between the participant's teacher education program and the field component. Sally and Kida did not see much of a relationship between the teacher education program and what they were experiencing at Amos Moses. They also were not successful at recontextualizing (Ensor, 2001) their coursework either because of the lack of an overlap between the two or resistance to learning. They both felt

learning to teach was going to happen more while out in the field because they sought a sense of belonging to the profession. Anastasia, and to some extent Elsa, believed in their teacher education program and were more legitimized by the program than their mentor teacher, Ms. Blaileen. Sally and Kida, due to their distancing from the teacher education program, were legitimized by their mentor teachers.

Political Geography

The political geography was the third most influential geography to the participants' decision-making processes. This emotional geography encompasses the power struggles and status desires of the individual. Three of the participants (Anastasia, Elsa, and Sally) demonstrated significant characteristics when it came to the political space at Amos Moses. The participants who shared narratives about power and status focused on the relationship between themselves and the mentor teacher. As an authority figure, the voice (Belenky et al., 1986/1997) of the mentor teacher was a powerful force to the participants. Some had to learn to work within a space, using creative insubordination (Gutierrez, 2013; 2015), to find their own voice in the classroom. This required a compromise between one's desired voice and the voice of the authority. Britzman (2003; 2009) claimed all prospective teachers face a similar conflict when they enter the field. Although the participants' political space emphasized the relationship between mentor and mentee, there were no power struggles with students or administration. The only exception was Sally, who in her search for status, had power struggles with a substitute teacher and the classroom paraprofessional.

Anastasia and Elsa's power struggles with Ms. Blaileen were due to the clashes in their desired ways of teaching and Ms. Blaileen's practice. In other words, Anastasia and Elsa interpreted their moral geographies and professional geographies as differing from Ms. Blaileen.

This could also be seen as a clash between visions of teaching mathematics (Hammerness, 2001; 2003; 2006). The clash was evident from Anastasia and Elsa's described positioning in the "gray space." They were unable to determine their role in the classroom due to the interpreted differences. For this reason, Anastasia and Elsa's political geography was focused on their position in Ms. Blaileen's classroom and how they could enact their desired ways of teaching and learning mathematics. Anastasia and Elsa were empowered by their teacher education program to find or construct spaces where they could use their voices. Anastasia extrapolated her experience with Ms. Blaileen claiming her power struggle with Ms. Blaileen was a "telling analogy" of her future career.

Sally, on the other hand, was more focused on her status in the classroom at Amos Moses. Her desire for status influenced many of her interactions with her mentor teacher. Sally wanted to be seen as the one-with-status, and worked toward becoming the high status individual in the classroom. This is evident from her praise of Ms. Krinkle's status and her positive affect for being mentored an individual with high status. Her desire to be an administrator also influenced many of her interactions with the social other. Sally emphasized teacher-teacher relationships in her narratives. Sally wanted to go beyond recognition in the group; her power struggles were mainly about achieving status in the community of practice. This is a facet not explored by Lave and Wenger (1998).

Sociocultural Geography

The sociocultural and physical geography were not explicitly as influential as the other geographies. The sociocultural geography encompassed the greater social aspects (e.g. socioeconomic status, gender, race, etc.) influencing interactions with students, teachers, administrators, or the content. Anastasia and Sally were the only participants who demonstrated

a significant characteristic in the sociocultural geography within their narratives. For Anastasia and Sally the characteristic emerging was due to their highly influential background experiences. Both of these participants were aware of particular master narratives, however, the teacher education program did not develop their awareness. They did recognize the master narratives influenced their views of teaching and learning mathematics, as DiME (2007) claimed was important for prospective teachers.

Anastasia described from an early age looking for a female who had positive disposition toward mathematics. Her fourth grade teacher stood out to Anastasia because the teacher was the first teacher Anastasia had with a positive mathematics disposition. Additionally, Anastasia was showed great pride in being the only female in her Math Counts team in middle school. Anastasia was aware of the lack of females favoring mathematics. Anastasia recognized mathematics as being a masculine content (Mendick, 2006) and by seeking out a female doer-of-mathematics and status as a successful mathematics student, Anastasia was searching for participants like her in a community of practice. She did not, however, provide any evidence of focusing on gender issues in the mathematics classroom while at Amos Moses. Most of her narratives were retrospective and did not explicitly discuss a change or shift in worldview.

Sally did not discuss much of a worldview shift or change, but did become more open to other social issues as she progressed. Her background growing up having a high socioeconomic status (SES) influenced her perspective when it came to realizing issues of poverty at Amos Moses. Her interaction with low SES students influenced her constructed feeling rules and how she "coped" with the realization of the lives of the students. She shifted her ways of behaving with the students. It is not evident if she had a deficit perspective of these students, but Sally did begin to emphasize differentiation more and more as she interacted with the students at Amos

Moses. As Weissglass (2002) stated, "the racism and classism pervasive in U.S. society influence the attitudes that people develop. Teachers carry these attitudes with them into their classroom" (p. 36). Sally and Anastasia carried their biases into the mathematics classroom, and through their practicum experience were able to work within the particular sociocultural spaces to further develop their identities as mathematics teachers.

Physical Geography

The physical geography encompasses the proximity the participants had with those at Amos Moses. Three of the participants brought up the lack of proximity, being at Amos Moses only one day a week, but being there one day a week was an institutional decision. The lack of proximity to the participants prevented them from seeing the acts and activities the mentor teacher would use after their observation day. At times this was problematic to the participants, but they recognized it was a limitation of the program. Sally was the only participant to look beyond one-day-a-week participation, and focus on the lack of presence she had in the classroom. Her desire for status influenced her perspective that she lacked a presence in the classroom. This is evident from her desire to be liked by students. Also her struggles with the paraprofessional and substitute teacher demonstrated Sally's desire for being a presence in the classroom.

Altogether the emotional geographies overlapped and were influenced by one another. In particular, the moral geography seemed to have the strongest influence on the other emotional geographies followed by the professional. This is due to the moral geography being constructed from the beliefs about learning and teaching mathematics. The professional geography was also influential because it provided the individual with the actions and activities necessary to convince the social other of belonging to a community of practice (Lave & Wenger, 1991).

Furthermore, the professional geography influenced the participants in deciding on the more appropriate actions to take while interacting with students. These actions were taken to have their identities legitimized (Goffman, 1959). The political geography, on the other hand, emphasized more the relationship and interactions between mentor teacher and participant, while the sociocultural geography was not directly influential to any of the participants. All the geographies, however, were interconnected and fit within the narratives of the individual.

Stages of Identity Formation

The biographies of the participants had patterns of experiences or commonalities in narratives demonstrating three stages of identity formation. Focusing on the important turning points or identity crises (Erikson, 1968) the participants' shared, particular actions were important for them to accomplish throughout the semester. These actions or activities were important in providing recognition and legitimization of their identity as mathematics teachers. The exploration of the narratives and the emotional geographies led to the understanding of the identity formation stages. The emotional geographies provided insight into the decision-making processes of the participants. Thereby, allowing themes to emerge within the narratives of the individuals. In the following sections I discuss each of these stages and how the participants' identities formed.

Stage 1: Peripheral Participation

In general, each of the participants began their experience in the classroom by attempting to determine their role or position as a teacher-of-mathematics. As peripheral participants, however, the participants needed to take the time to become knowledgeable with the practices of the classroom. The first stage then for each of the participants involved being peripheral participants in the mathematics classroom. The participants had to find a space where they could

enact their desired ways of teaching as part of learning the ways of doing in the mentor teachers' classroom. Others could be brokered into the classroom without any tensions or problematic occurrences. Anastasia and Elsa had difficulty finding how to participate because of the differences in their vision of teaching and the practice of Ms. Blaileen. They found it difficult to know when to enact their desired teacher actions or activities. On the other hand, Kida and Sally did not struggle with this endeavor. Without evidence of any strong negative emotional responses, Kida and Sally found a way to participate in the classrooms without any interpreted pushback from the mentor teacher or students in the classroom. Finding one's voice in the classroom was an important part of the participants' peripheral participation.

Finding One's Voice in the Mathematics Classroom

The beginnings of the participants' field experiences were defined by their attempts to use their voice. Participants were successfully able to use their voice in the assigned mathematics classroom. Anastasia was concerned with the students' conceptual understanding and desired to use her voice to help students in attaining a conceptual understanding of the mathematics. Elsa wanted to project a voice of someone who can help. She wanted to be seen and heard as a teacher who can help students make progress in learning mathematics. Kida concentrated on the students' disposition toward mathematics. Finally, Sally sought out status, and wanted to be heard as an authority and liked as an individual in the classroom not only by the students but also by other teachers.

Each of the voices desired by the participants was a projection of their identity as a teacher-of-mathematics. The voice they used in the classroom correlated with how they wished to be heard and seen as a teacher-of-mathematics. Therefore, their voices were part of the

narratives they envisioned for themselves as mathematics teachers. Table 7 shows the participants voice and an example showing the desire to develop a particular voice.

Table 7
Participants' Desired Voice and Example

Participant	Voice Description	Example of Desire to Develop Voice
Anastasia	One-who-teaches-conceptually	It sounds like what a lot of people learned when they were little was memorize this step, this step, this step. <i>And I guess you can call that learning math but not really.</i> Because I consider more like...understanding why it works to do the division algorithm. (Anastasia, Int. 2)
Elsa	One-who-can-help	So I think that has helped a lot for them to kind of realize why we are there. And not—we <i>are there to help them and not just sit there and observe in the back. And help them on little things.</i> So I think that has been a good benefit from it. (Elsa, Int. 2)
Kida	One-who-changes-dispositions	Cause I would like to teach in the earlier grades. And so I do not want them— <i>me to give to them a negative taste of mathematics</i> from the get go... Just being able to allow the students to teach each other and be hands on in math cause it can be extremely boring to do numbers and numbers. So like manipulatives especially early on.... <i>Just align the kids to engage more that way. So it is not like uh (disgruntled sound) math.</i> It can be a positive experience. (Kida, Int. 1, 0:37:51)
Sally	One-with-status	Last semester <i>my partner and I were on the same level.</i> We were there. Same experiences. Same everything. But this semester... the student teacher, she is there five days a week...What am I going to do? Be like, oh I know the way this classroom should be run. <i>When she's been there almost every day.</i> (Sally, Int. 3)

In attempting to find their voice in the mathematics classroom, the participants were influenced by some internal and external aspects. Each of the participants ability to find their voice in the classroom was influenced by the following aspects: (a) Beliefs about learning and teaching mathematics, (b) their vision of self-as-teacher, (c) self-conceptualizations, and (d) the mentor teacher's ability to be a cultural broker (Aikenhead, 1997; Jegede & Aikenhead, 1999).

Beliefs about Learning and Teaching Mathematics. Previous research has shown there is some connection between teachers' beliefs about mathematics teaching and learning and their decision-making processes in the classroom (Cross, 2009; Philipp, 2007; Raymond, 1997; Thompson, 1992). Kida and Sally rarely mentioned conceptual understanding as opposed to procedural understanding. There were 0 and 1 narrative coded for conceptual understanding for Kida and Sally respectively compared to 26 and 14 narratives coded as conceptual understanding for Anastasia and Elsa. Kida and Sally focused more on the disposition of the students and keeping them engaged in the mathematics through fun or applicable activities. For them, understanding the mathematics meant students get the correct answer. On the other hand, Elsa and Anastasia wanted to teach students conceptually and found more benefits from working with students to develop the "whys" behind the mathematics.

The participants attempted to enact certain ways of teaching and learning mathematics as they entered the classrooms at Amos Moses because of their beliefs. The enactment of practices, or lack thereof, and how the practices were accepted in the classroom influenced the participants' voices in the classroom. For example, Anastasia did not interpret Ms. Blaileen as working with students to develop conceptual understanding of the mathematics. Anastasia focused in the interviews on when Ms. Blaileen taught the students to use a "j" to convert improper fractions to mixed numbers. Ms. Blaileen's method clashed with Anastasia's beliefs about mathematics teaching and learning. Therefore, Anastasia began to devalue Ms. Blaileen's authority of mathematics teaching. Eventually Anastasia decided she was going to do what she thought was best for students. Elsa sought Ms. Blaileen's permission to construct a space to use her voice, but Ms. Blaileen was not sought out to legitimize her actions as a teacher-of-mathematics.

Sally and Kida did not struggle with finding their voice in the classroom because their enacted actions in the classroom were not in contrast with the learning and teaching of mathematics they observed. The beliefs about teaching and learning mathematics of both of them were not perturbed by what they saw. Furthermore, neither Sally nor Kida demonstrated evidence of disagreeing with their mentor teachers teaching of mathematics. They did not find it problematic to use their voice in certain spaces (one-on-one with students, small group interactions) because they agreed with the actions in the classroom. Their focus on disposition and engagement of students took precedence over the students' mathematics. There was no evidence of any concern about the students learning only procedurally. The mentor teachers' environment matched what Kida and Sally believed was necessary to learn and teach mathematics.

Vision of Self-as-Teacher. The participants' vision of self-as-teacher was also influential in how the participants were able to find their voice in the mathematics classroom. Hammerness (2001) stated vision “consists of images of what teachers hope *could be* or *might be* in their classrooms, their schools, their community and, in some cases, even society” (p. 145, emphasis in original). In other words, one's vision is the narrative of future-self. Each of the participants shared their vision in the first interview with the completion of the vision questionnaire used by Hammerness (2006). Within each of their visions the participants shared what they envision their classroom to look like along with the roles they envisioned for themselves. Similar to their beliefs, the described visions differed not only in content but also in clarity. For example, Anastasia shared specific details about wanting to make her classroom feel like a community by having students talk to one another about the mathematics they were learning. This required students to be sitting in small groups and not in individual desks. She also described her role as a

guide or facilitator. On the other hand, Sally admitted to not having a clear vision claiming, "I do not really go that far into it" (Sally, Int. 1). She had not constructed her own imagery but instead took images from her past teachers with whom she had strong positive experiences. Her described role was of teacher. "I would be the teacher so (laughs) I mean obviously I would be the teacher. So just kind of standing up there and talking about whatever the lesson for the day is and then doing the activity" (Sally, Int. 1).

One's vision is constructed from the beliefs one holds about the teaching and learning of mathematics along with the desires one has for working within a community of practice. Hammerness (2003, 2006) argued if one feels their vision is not supported by the context they are working within or feels their vision is unrealistic where they work, then the individual either compromises their vision to fit within their context or seeks out a different context to better align with their vision. The participants upon entering the mentor teachers' classrooms attempted to see if their vision of self-as-teacher fit into the context. For Anastasia and Elsa, their vision did not fit into Ms. Blaileen's classroom. They both had trouble positioning themselves in the classroom because of the contrast in vision both had about themselves as teachers compared to what they experienced. Both took up the metaphor of the "gray space" to explain the disparity in their visions to Ms. Blaileen's practice. Both were able to feel they had passed the awkwardness of the gray space only once they had found a way to make their vision of self-as-teacher work within Ms. Blaileen's classroom.

The participants' visions of self-as-teacher influenced how they would compromise their voice within the classroom. They each sought a space their voice could be used and their vision could be made a reality within their context. For the most part, the constructed spaces were the only places where the participants felt they could enact their vision of self-as-teacher. None of

the participants described situations where they were allowed to use their voice with the whole class.

Self-Conceptualizations. The participants' self-conceptualizations influenced how they found their voice in the classroom. The participants' choice in how to use their voice in the classroom was influenced by how they conceived of their own mathematical abilities and themselves as a learner and teacher. The participants' self-conceptualizations provided them with a sense of self and the foundations for them to work within the classroom. This could be aligned with their actual identity (Sfard & Prusak, 2005) or their identity in the present. How one positions him or her self in their narrative influences the ways of being within a space.

Sally and Anastasia had the most influential self-conceptualizations. Both of their backgrounds strongly influenced their perspectives on their positions held or their role in the mentor teachers' classroom. Their self-conceptualizations also influenced how they interacted with students. As Gu and Day (2007) found, the most resilient teachers were those who leaned on positive experiences in their background. Sally's work at the mathematics-tutoring center influenced her resisting her teacher education program, while Anastasia's experience at the mathematics competition, combined with her trust in her teacher education program, allowed her to resist Ms. Blaileen's authority and find her voice in the classroom.

Elsa and Kida did not have as influential background experiences that were as influential as Anastasia's or Sally's. Elsa and Kida both had more roller coaster (Drake et al., 2001) narratives about their experiences with mathematics. Each of them shared negative and positive experiences as students that influenced their perspectives as mathematics teachers. Lacking positive experiences in mathematics made it more challenging for each of them to resist the authority of the mentor teacher. It was more difficult for Elsa to find her voice in the classroom

because of her desire to work with the authority while still implementing her own actions as a teacher. For Kida, on the other hand, her lack of positive experiences made her lean more heavily on her field component to develop her voice than her teacher education program. In the end, Kida saw a disparity between her program coursework and the field component.

Mentor Teacher as Broker. According to Aikenhead (1997), teachers are cultural brokers whose responsibility is to see students as needing a guide into the culture of doing science.

Students are 'tourists' in a foreign culture and depend on teachers to be 'tour guides' or 'travel agents' who take (or send) students across cultural borders into Western science and direct the use of science and technology in the context of the students' everyday work. (Aikenhead, 1997, p. 231)

Teacher educators and mentor teachers play the same as cultural brokers for prospective mathematics teachers. As teacher educators, we aid prospective teachers in enculturating into the community of teachers. The inservice teachers selected as mentors also play an important role in brokering prospective teachers into the mathematics classroom. Each of the mentor teachers in this study, Ms. Blaileen, Ms. Krinkle, and Ms. Del Davis was a "tour guides," for the prospective teachers entering their classroom. The mentor teachers' helped Anastasia, Elsa, Kida, and Sally learn about the norms constructed and the role they could take in the mathematics classrooms. Not every mentor teacher, however, was a successful cultural broker.

Ms. Blaileen was not successful in brokering Anastasia and Elsa into the classroom. This is evident from their positioning in the "gray space." Anastasia and Elsa characterized the gray space as being a position where they lacked an understanding of their expectations in the classroom. Additionally, they felt unsure of what actions or activities as teachers they were able to enact. This positioning was also due to the clash between Ms. Blaileen's practice and Anastasia and Elsa's desired ways of teaching. These conflicts may have been avoided if Ms.

Blaileen had attempted more explicitly to broker in the prospective teachers. Instead, Anastasia and Elsa felt Ms. Blaileen did not recognize or hear their voices. Therefore, Anastasia and Elsa had to construct their own space within Ms. Blaileen's classroom where they could use their respective voices as mathematics teachers. Anastasia and Elsa constructed this space within small group activities and centers where they felt Ms. Blaileen's authority was not as strong. Elsa, unlike Anastasia, still sought out the permission of Ms. Blaileen to use her voice in her constructed space.

Kida and Sally both had different experiences with their mentor teachers, Ms. Del Davis and Ms. Krinkle compared to Anastasia and Elsa. Kida and Sally each did not feel they were positioned within a gray space. From their experience, Kida and Sally's roles were well defined in the classroom and they knew what was expected of them as mathematics teachers. They each claimed the teacher made them feel welcome into the classroom. Moreover, their brokering into the classroom was aided by the cohesiveness of Ms. Del Davis' and Ms. Krinkle's practice with Kida and Sally's desired ways of teaching. Kida and Sally felt they could use their voice in the classroom without pressure from the authority in the classroom. This did mean, however, Sally and Kida were not perturbed by the practices or set norms of the classroom teacher.

Stage 2: Seeking Recognition

The second stage of identity formation for each of the participants involved seeking recognition of their voice within the mathematics classroom. As Gee (2001) and others (Goffman, 1959; Snow & Anderson, 1987) have argued the identity of the individual needs to be recognized by others in order for value to be attributed to their actions, characteristics, or chosen discourse. In the case of each of the participants, once her voice had been developed in her respective classroom, each sought out legitimization or recognition of her voice and identity as a

teacher-of-mathematics. Legitimization came from two aspects of their experience, the classrooms they visited and their teacher education program, specifically the mathematics education coursework and professor. There were two defining actions to this stage. The first was developing mathematical caring relations (Hackenberg, 2005a; 2005b; 2010) with the students in the classroom. This action had two influential components: (a) the participant's moral geography and (b) legitimization by students.

The second defining action was the participants determining the connections between their coursework and the field component or their ability to recontextualize (Ensor, 2001). The practicum at Amos Moses Elementary was the first time the participants were experiencing school during their teacher education program. Before their time there they had only worked with students one-on-one directly under the supervision of a mathematics methods instructor. At Amos Moses Elementary, the prospective teachers were no longer supervised directly by the mathematics education department. The mentor teacher took over as aiding the prospective teacher in their endeavor to learn to teach. Therefore, it was up to the prospective teachers to decide on the relationship between the field component and what they were learning in their courses. Consequently, making these connections was influenced by two factors: (a) overlap between coursework and field component, and (b) legitimization by mentor teacher and/or teacher education program.

Developing Mathematical Caring Relations

Caring is considered by Hackenberg (2005a, 2005b) to be more than just an affective response to working with students. Caring goes beyond to the construction of cooperative relationships in which student and teacher learn about each other's mathematical reality. If a caring relation is to emerge then the teacher must be involved in "stretching students' worlds and

working cooperatively with students so that they realize competence in those worlds” (Hackenberg, 2005a, p. 46). Caring, however, is not unidirectional. Hackenberg (2005a) argued once the students have been the cared-for and have been endowed with a restored engagement in mathematical activity then the teacher becomes cared-for by the student. Due to the mathematical caring relation carried out by the teacher the student transforms into the carer for the teacher. It is subtle but the student becomes a source of hope, providing a positive affective response from the teacher (Hackenberg, 2005a). The teacher becoming the cared-for motivates him or her to continue working, having experienced the rewards of teaching.

Caring relations could fail. Hackenberg (2005b) claimed if a student is resistant to the teacher then it is up to the teacher to work toward understanding “better what activities and interactions are stimulating for the students.... Such activities might be radically different from the teacher’s initial ideas and might involve cessation of mathematical activity” (Hackenberg, 2005b, p. 32). Thus it is imperative for the teacher to keep trying to connect and construct mathematical caring relations with the student no matter how resistant the student might be. For this to happen a teacher must get to know the student as more than simply being a member of a class, but as a multifaceted individual.

Each participant attempted to construct mathematical caring relations with the students in the classroom at Amos Moses. By developing mathematical caring relations the participants were attempting to legitimize their identity as a teacher-of-mathematics. The participants' moral geography and the ways they were legitimized by students influenced the development of mathematical caring relations.

Participant's Moral Geography. When it came to developing mathematical caring relations with students, the moral geography of the participant influenced how she defined caring

for the students' mathematics. The moral geography is bordered by the purpose behind one's work or interactions. Therefore, what it means to care for the students' mathematics would be in line with the purpose one has for learning mathematics. This was shown by each of the participants.

Anastasia's moral geography was characterized by her desire to teach students mathematics conceptually. When it came to her interaction with students she sought out ways to show them the conceptual way of doing the mathematics. For example, she often shared the narrative of teaching a student how to rewrite an improper fraction as a mixed number as evidence of her success with teaching mathematics conceptually. This narrative fit into her purpose of teaching mathematics. To Anastasia, therefore, to care for the students' mathematics meant to teach them conceptually because she felt the students would be prepared for future success.

Elsa's moral geography was defined by her desire to help the students progress in their mathematics. By the end of her time at Amos Moses, she found by emphasizing the why behind the mathematics she could aid students progress in the classroom. Elsa also became more critical of Ms. Blaileen's practice for not helping students see the why behind the mathematics. In order to care for the students' mathematics, it meant taking the time to show students the why and help them in progress successfully in the classroom. Elsa constructed her voice in such a way she was able to accomplish showing her ways of caring to the students.

The central theme of Kida's moral geography was developing students' positive disposition toward mathematics. She shared the narrative of creating a superboard as an example of her success in Ms. Del Davis' classroom. To her, the work she had done as a teacher-of-mathematics was helpful in shifting the student's disposition from negative to positive. The

mathematics itself was not a central part of the story. Instead, the engagement and positive affective reactions were enough to demonstrate success for her. To care was to help the student in developing this positive disposition toward mathematics.

Sally's moral geography was characterized by her desire for the students to get the correct answers. Her purpose as a teacher-of-mathematics was to help students find the strategy that worked best for him or her to get the right answer. Sally attributed getting the correct answer with demonstrating success in mathematics. Sally's narratives showed she cared for students' mathematics by helping them in finding the correct strategy. She developed the notion: To teach mathematics means to show students different strategies until the right one for him or her is found. Sally developed mathematical caring relations by aiding students in learning tricks or procedures.

Overall, the moral geography defined what it meant to care for the students' mathematics. Therefore, the actions and activities enacted in the classroom were evidence of the participants' caring for the students. There was no evidence the mentor teacher had a role in developing these ideas of caring. Each of the participants brought these notions into the classroom. The ideas of the moral geography were further developed as they continued their practicum at Amos Moses. Consequently, the actions and activities of caring were further justified and legitimized as they worked more with students.

Legitimization by Students. As part of developing mathematical caring relations, the participants needed to see their actions as being recognized or legitimized by the students. If they were not receiving the feedback they wanted, the actions or activities needed to be changed or modified. Being legitimized by the students was important to the participants because it allowed them to place value on their actions and voice as mathematics teachers. These actions were

dependent on the moral geography of the participant. Their actions needed to fit within their believed purpose of doing and learning mathematics.

For example, Anastasia was legitimized when teaching students conceptually and seeing the student was still successful days and weeks after she taught him a more conceptual way of changing improper fractions to mixed numbers.

They had no idea what they were doing. And so I sat down with him and I drew like strip diagrams.... And I just worked it out conceptually for him. And he was like wide-eyed and I was like that's why it ends up being, you know, 4 and one-fourth... He thought it was doing something completely different then the 'J' method. They did not even put two and two together. So I think that seeing him succeed and then doing a couple more examples with him and seeing him being able to do the worksheet and get the right answers was—and then the next day or the next week still being able to do that and build upon that. I mean that's what changed—made it such a priority to me to do the conceptual with kids. (Anastasia, Int. 3, 0:13:37)

Anastasia's seeing the student was successful, legitimized her desired ways of teaching.

Therefore she continued to care for the students' mathematics in the previously described way, by focusing on students learning conceptually.

Elsa, Kida, and Sally shared similar experiences allowing students to recognize their identities as mathematics teachers. Kida had the superboard narrative, while Sally and Elsa had the students' success in problem solving as legitimizing their identities. The act of having their actions being legitimized by the students provided evidence the actions and activities being conducted were working for the students. Therefore, their notions of caring developed in the moral geography were accepted by the students. This meant, as Hackenberg (2005a; 2005b) described, the teacher became the cared-for and found hope in their desired ways of teaching. In the end, having legitimized their voice and ways of showing care, the participants continued their formation of their identity as mathematics teachers.

Recontextualization (Connections between Coursework and Field Component)

In order to find value between coursework and the field component, the ability to recontextualize was very influential. Recontextualization, according to Ensor (2001), is the application of a discourse from one setting to another. In other words, could the participants take what they were learning in their mathematics methods course and reapply it in the mentor teachers' classrooms. As the participants continued with their experiences at Amos Moses, the relationship between their coursework and field component came into question. Although the participants shared similar ideas about the purpose of the field component, they differed on how the coursework and field component worked together when learning to teach.

Each of the prospective teachers came to a decision about the relationship between what they were learning in their coursework and what they were seeing in the field. Their ability to recontextualize influenced the value they placed on their teacher education program.

Additionally, recontextualization influenced how much influence those at Amos Moses had in the participants' vision of self-as-teacher. Two aspects influenced the way the participants saw the connection between coursework and fieldwork: (a) overlap between coursework and field component, and (b) legitimization by mentor teacher and/or teacher education program.

Overlap between Coursework and Field Component. Anastasia and Elsa, who were placed in a 5th grade classroom, believed there existed some overlap between coursework and their practicum experience. Anastasia and Elsa both had six narratives demonstrating their attempts to recontextualize material from their courses. Kida had twelve codes but the majority of these were about the disparity between her coursework and field placement (the lack of recontextualization). Sally had no narratives coded for recontextualization. The overlap Anastasia and Elsa described made transitioning discourses from their teacher education coursework to Ms. Blaileen's classroom smoother than for some of the other participants who

were in different grades or had different views of learning to teach. Elsa explained how advantageous it is the course material is overlapping with what happened with Ms. Blaileen.

Well as I said we are doing a lot of the fractions in math class and at [Amos Moses] so that helps a lot. Just drawing easy connections, we are doing some of the same things with mixed numbers and fractions and all that. So that is pretty cool. And then I feel like it helps me to be a better student because if I am trying to—if I am trying to teach something for me to remember what went down on a test, like that is going to be great information for the test but then most likely I probably will not remember it a few months down the road. But if I am remembering it to teach it to a—different way and like teach it to a classroom. It is going to help me to be a better student because I am going to care more about what I am doing. And I can see it being applied. (Elsa, Int. 2, 0:03:30)

Elsa was not only able to continue developing her notion of self-as-teacher but also develop herself as a student learning to teach. The experience at Amos Moses and her coursework complemented each other. This aided her in recontextualizing concepts and ideas from the course to the classroom at Amos Moses. Anastasia shared similar experiences.

Kida on the other hand was not placed in a classroom where much overlap with her coursework existed. This hindered Kida's ability to recontextualize. She had trouble finding the connections between her coursework and the 1st grade field practicum. To Kida, the mathematics methods course and her 1st grade practicum had very little in common. She even had trouble taking the larger ideas of the course (e.g. assessment, discourse, etc.) and applying them to the classroom at Amos Moses. Kida was adamant about the disparity between her coursework and the field component.

I see that disparity still. Like with what I was telling you about long division. The method that we use, I have never seen it before. And so I do not necessarily doubt that they [students] use these other methods at some point that we learn but at the same time I feel like there is so much emphasis on math these days and not teaching misconceptions that it has spread. It has just bred a ground for all these different ways of doing it. And so teachers have, or schools, or grade levels, whatever have all these different places to pick from. And so I think that is part of the reason we do not see exactly the two methods that we learned in our like math class, line up with what we are seeing in the school. (Kida, Int. 3, 0:45:01)

Kida wanted to see the exact image of what was discussed in her coursework in her field component. When the image she expected was not present fully, she did not comprehend a connection to her coursework. This meant Kida wanted to see exactly what was being discussed in her courses and nothing less. This demand for exact overlap did not promote Kida to recontextualize her experience.

Sally had the same advantage as Anastasia and Elsa by being placed in a 5th grade classroom. Sally, however, had a different vision of teaching and learning mathematics than the other participants. Consequently, even though there was direct overlap between her coursework and field component, she did not see the overlap. She did on the other hand find a strong overlap between what she had experienced at the mathematics-tutoring center and her field component. Sally had already previously devalued her teacher education program as only teaching her fun activities to use in her future classroom. She was able to recontextualize what she had learned at the mathematics-tutoring center more because of the value she placed on the experiences she had there. This is evident from the resistance demonstrated toward the mathematics method course.

Legitimization by Mentor Teacher and/or Teacher Education Program

Each of the participants sought not only to be legitimized by students, but also by either the mentor teacher or their teacher education program. Anastasia, for example, did not seek to be legitimized by Ms. Blaileen. Anastasia critiqued Ms. Blaileen's practice and feeling unsupported by Ms. Blaileen, Anastasia began to devalue her opinion when it came to teaching mathematics. So to be legitimized by Ms. Blaileen was not valued by Anastasia. Her teacher education program, on the other hand, was valuable to her. She wished to be recognized by her professors and her teacher education program. She began to use what she was learning in her teacher education coursework to warrant the decisions she made in the classroom. This is the opposite of

Sally, who sought status and legitimization from her mentor teacher and not from her teacher education program. Sally believed one can only learn to teach from being in the field and, because of her experience at the mathematics-tutoring center, did not value her teacher education program. Table 8 summarizes where the participants sought to be legitimized.

Table 8
Where Participants Sought Legitimization

Participant	Students	Teacher Education Program	Mentor Teacher
Anastasia	YES	YES	NO
Elsa	YES	YES	NO
Kida	YES	NO	YES
Sally	YES	NO	YES

Elsa also did not seek to be legitimized by Ms. Blaileen because Ms. Blaileen's practice did not match Elsa's desired ways of teaching. She did not seek Ms. Blaileen's recognition because Ms. Blaileen was not helping the students progress. Elsa's teacher education program, however, was legitimizing her beliefs about teaching and learning mathematics. Elsa, like Anastasia, leaned on the teacher education program to provide evidence her desired ways of teaching mathematics were legit. Kida did not have the same experience as Elsa. Kida desired to be included in the community of practice happening at the school. In order to be included, she needed to participate similarly to the teachers she was working with. Kida began to devalue her teacher education program because the other teachers at Amos Moses devalued the teacher education program and Kida sought their recognition. This increased the disparity Kida saw between her teacher coursework and the field component; thereby, making it difficult for her to recontextualize her education.

Stage 3: Identity Construction

The final stage of identity formation the participants went through was identity construction. By reflecting on the experiences they had at Amos Moses, each participant, (re)constructed her identity as a teacher-of-mathematics (Flores & Day, 2006). They each reported changes in what it meant to teach and learn mathematics. The participants went through various identity crises (Erikson, 1968) or turning points in how they described their future work as mathematics teachers. These experiences provided the participants the opportunity to create new images of future-self. Sometimes the (re)construction included new concerns about their work as teachers. At times, these concerns were focused on the students' learning of mathematics. Altogether, the experiences at Amos Moses reformatted the framework the participants were using to make sense of their practice, but also reshaped their perception of their teacher education coursework and the field experiences. The interventions planned by the university had the participants question their future position in the community of practice.

(Re)Construction of Self as Teacher-of-Mathematics

The defining action for this stage was the (re)construction of self as a teacher-of-mathematics, which entailed the participant changing their perception of their life world (Dahlberg et al., 2008). This act of reflection and observation aided the participants in retelling their narrative of future-self (Drake et al., 2001; Kaasila, 2007; Sfard & Prusak, 2005) to include shifts or modifications in beliefs, knowledge, and behaviors. The defining action was influenced by three components: (a) Constructed feeling rules or repertoire of teacher moves, (b) opportunity to reflect on experiences at various grain sizes, and (c) their faith in the teacher education program. Each of the participants' narratives reflected their imagery and positioning of

self as a teacher-of-mathematics within a community of practice as the experience at Amos Moses continued.

Constructed Feeling Rules or Repertoire of Teacher Moves. Feeling rules, as described by Hochschild (1979; 1983/2012), are the social norms convincing the individual about how to feel in a given situation. The participants constructed their own feeling rules they attached to doing the work of a teacher. Although none of the rules were directly related to mathematics teaching and learning, the feeling rules constructed were applied to the actions seen as appropriate for the teacher to do while teaching mathematics. The constructed feeling rules were also not applied directly to students but only to the actions conducted by the self-as-teacher. Participants constructed their own set of feeling rules while at Amos Moses. These defined a part of being a teacher-of-mathematics because the narratives of self-as-teacher would be constructed within the boundaries of the feeling rules they constructed. Table 9 summarizes the feeling rules the participants constructed while at Amos Moses.

Anastasia discussed explicitly three feeling rules she followed while at Amos Moses: (a) showing emotion will remove authority, (b) being in someone else's classroom means it was not her place to show particular emotions, and (c) modification and construction of feeling rules will continue as she begins her career. Anastasia's feeling rules were a consequence of her becoming more aware of the work of a teacher. During her 2nd interview Anastasia described new concerns emerging from her time in Ms. Blaileen's classroom. By the 3rd interview, when she was asked directly about her emotional regulation, Anastasia confronted her ideas of professional behaviour including the feeling rules followed by teachers. She believed teachers lose their authority when they show emotions. "And when I think of a figure of authority I do not think of someone who's, you know, emotional." (Anastasia, Int. 3, 0:34:05). Anastasia saw her feeling rules as being a

part of her image of authority in the classroom. The other feeling rules she constructed were a consequence of the power struggle between Anastasia and Ms. Blaileen. Anastasia recognized when she was the authority in the classroom, she would have a better understanding of the work of a teacher, and could therefore construct more appropriate feeling rules.

Table 9
Participants' Constructed Feeling Rules

Participant	Type of Feeling Rules	Constructed Feeling Rules
Anastasia	Explicit	<ul style="list-style-type: none"> • Showing emotion will remove authority • Someone else's classroom so it was not her place to show particular emotions • Modification and construction of feeling rules will continue as she begins career
Elsa	Implicit	<ul style="list-style-type: none"> • Avoid chaos; Plans on being very structured <ul style="list-style-type: none"> • Limit agency of doing mathematics • Responsible for showing students multiple strategies • Avoid feelings of helplessness
Kida	Explicit	<ul style="list-style-type: none"> • Act enthusiastic to convince students of having a productive disposition toward mathematics • For students to "see" her as a "real" person, she needs to show emotion in the classroom • The demonstration of emotions needs to match or coincide with what one is saying.
Sally	Explicit	<ul style="list-style-type: none"> • Repress emotions when in the presence of students • Release or "be affect by" the emotions in a safe space outside of school • Do not show how one is affected because that is a sign of weakness.

Additionally, Anastasia saw her feeling rules as needing modification depending on her participation in a community of practice.

I think that I am going to have to my first year, my second year, those are going to be the times that I am going to have to find that balance. And look at what other people are doing and how do they—how do they go about that because my first instinct is just no emotions in the classroom. But I do not—I do not think that that's right. (Anastasia, Int. 3, 0:25:43)

Anastasia claimed to not knowing how she will regulate her emotions until she sees how others balance them in the classroom. Anastasia described her feeling rules explicitly, but was focused on rules about her authority and the modification of her feeling rules. These rules had Anastasia look at her work as a teacher differently than when she first began her practicum experience at Amos Moses.

Elsa implicitly referred to her feeling rules. She referenced instead a series of teacher moves she would take in order to avoid particular feelings. The collection of teacher moves Elsa was looking to enact was referred as her repertoire of teacher of moves. Elsa's repertoire entailed: (a) avoiding chaos by making being very structured in the classroom, which included limiting the students' agency when doing mathematics, being responsible for showing students multiple strategies, and (b) avoiding feelings of helplessness.

Elsa desired to avoid feeling like she was out of control in the classroom. To this end, her solution was to have a very structured and routine-based classroom where the students would know what was expected of them at specific times of the day. This included controlling the students' mathematics. From her coursework, Elsa interpreted teaching mathematics was about finding the correct strategy for the child. The idea of invented strategies created a classroom of uncertainty, which needed to be avoided. Elsa decided she would control the strategies the students would learn and use when doing mathematics. Thereby removing student agency when it came to learning mathematics. This would also help with her avoiding feelings of helplessness in the mathematics classroom. Elsa constructed this repertoire of teacher moves as she

experienced teaching and learning at Amos Moses. Consequently, the repertoire of teacher moves influenced how she saw herself as a teacher in the future.

Kida, like Anastasia, was also explicit about her feeling rules. Kida's feeling rules, however, revolved around the construction of a positive learning environment for students than her perspective as an authority figure. Kida felt it was necessary to control her emotions in order to create a positive learning environment for the students. This included Kida needing to act enthusiastic to convince students of her having a productive disposition, needing to show emotion in the classroom for students to see her as a "real person," and needing for her demonstrated emotions to match with what she was saying to students.

Kida's desire to be seen or recognized as a real person was connected to her moral geography's characteristic of wanting to aid students in having a positive disposition toward mathematics. Kida did not stress conceptual understanding throughout her interviews or small group meetings. Instead she focused on shifting students' disposition toward mathematics. This was reflected in the feeling rules constructed. The feeling rules were attached to these desires because they provided the rules for feeling in the classroom to influence students' feelings about mathematics. Thereby, the feeling rules constructed influenced how she (re)constructed her self as a teacher-of-mathematics.

Sally was similar to Anastasia. Sally was explicit about the feeling rules she constructed, but also Sally's feeling rules were about being the authority in the classroom. Sally claimed in order to be an authority in the classroom she could not show how the students' home life narratives were affecting her. Therefore, she needed to repress her emotions when in the presence of students. So like Anastasia, Sally believed showing emotion was a sign of weakness and she would lose authority in the classroom if she emoted in front of students. Unlike

Anastasia, Sally did not focus on modification of feeling rules according to the community of practice she participated in, but instead emphasized her specific coping strategies. Sally focused on the suppression of emotions and the specific coping strategies she used to not show emotion in front of students.

Opportunity to Reflect on Experiences at Various Grain Sizes

Each interview and small group meeting was designed with the intention of having the participants reflect at various points throughout their experience at Amos Moses. For example, each participant was asked to share narratives about their interactions with students and mentor teachers. Questions like, Can you describe a time when you felt helpless? Can you describe a time when you felt you progressed as a teacher? Both of these questions focus on previous past events but could go as far back as the beginning of the practicum. On the other hand, the writing prompts focused the participant's reflection to be temporally between meetings (either individual interviews or small group). During the 3rd interview, the participants were asked about their peak experience at Amos Moses. The interviews were designed such that the participants had to reflect at various grain sizes. The writing prompts are included in Appendix C. The interview protocols are included in Appendix B.

The interviews were also designed to have the participants look back at their past influences and how they relate to their own views of teaching and learning mathematics (e.g. How did the schools you attended emphasize mathematics?). The responses to these questions had the participant reflect on where she had been and where she is today. By focusing the participants on varying positions held and then comparing them to their current position allowed further reflection about the shifts and changes over time. The interviews and small group meetings also worked as a kind of "therapy" for the individual.

Qualitative research interviews can be seen as similar to therapy. While different from a therapy relationship in many fundamental aspects (e.g., the goal, any payment arrangement, and the stated roles of participant and interviewer), the research interview might have a therapeutic impact. (Koelsch, 2013, p. 12)

The interviews and small group meetings being designed to have the participants reflect at various levels of their experience means the study itself was an intervention to the participants.

The act of reflection is needed in order to cause shifts in identity (Erikson, 1968; Korthagen, 2004). Consequently, the interviews and small group meetings influenced the (re)construction of self as a teacher-of-mathematics.

Faith in Teacher Education Program

I use the term *faith* to refer to the developed trust in the teacher education program, which leads the individual to believe the teacher education program will support and prepare him or her for what he or she is going to do in the future. If there are concerns or the desire to know more about teaching and learning, the program will eventually acknowledge these concerns or provide the desired knowledge. Faith is one way to explain the relationship between the participant and the teacher education program. Participants had differing kinds of faith when it came to their teacher education program. A summary of the type of faith of each participant is in Table 10.

Anastasia demonstrated a *blind faith* toward her teacher education program. She felt supported by her program and trusted the program will prepare her for her career. She acknowledged the concerns emerging during her time at Amos Moses would eventually be covered in her coursework. Furthermore, Anastasia sought to be legitimized by her teacher education program and not her mentor teacher. The field component was seen as an extension of the teacher education program. So Anastasia was still able to pick and choose from her experiences what she wanted to take with her as a teacher-of-mathematics (e.g. teaching strategies, tasks, etc.). Anastasia's identity as one-who-teaches-conceptually influenced her to

lean heavily on her teacher education program. Anastasia did not talk negatively or critique her teacher education program. She did, on the other hand, critique the prospective teachers who did not take the program seriously.

I think that even people in my class today were just like, this is stupid. You are just throwing a decimal place in there. And I am like no you are not. If you take all the hundredths and then all the like if—it works. (Anastasia, Int. 2, 0:29:37)

For Anastasia, the teacher education program would resolve or provide her with justification for her desired ways of teaching and she defended the program. Consequently, her faith in the interventions her coursework were providing influenced her (re)construction of her identity as a teacher-of-mathematics.

Table 10
Participants' Faith in Teacher Education Program

Participant	Faith in Teacher Education Program	Characteristics of Faith Type
Anastasia	Blind Faith	Trusts teacher education program to fully prepare her to teach mathematics. Seeks legitimization from program. Strong connections between program and field component
Elsa	Lesser Skeptic	Trusts teacher education program will provide techniques and strategies useful in the classroom. Seeks legitimization from program. Some connections between program and field component
Kida	Greater Skeptic	Trusts teacher education program in supporting her development but more is learned in the field Seeks legitimization from mentor teacher (those in community) Criticizes disparity between program and field component
Sally	Faithless	Trusts learning will occur in schools. Seeks legitimization from mentor teacher (those in community) Program is only to there to answer questions mentor teacher cannot answer.

Due to Elsa's desire to be the one-who-can-help, her faith in the teacher education program was more focused on strategies and techniques. Anastasia believed the program would prepare her in a more abstract sense. Elsa saw the program as preparing her in a more practical way. Elsa looked forward to learning, and consequently knowing, more strategies and techniques to aid her in being the one-who-can-help. She believed her program was supporting her, but she still saw some learning occurring in the field component. Although she devalued Ms. Blaileen, Elsa still defended her position and did not critique her as heavily as Anastasia. Elsa was skeptical of her teacher education program and the relationship it had with the field component, but she did not claim to see a strong disconnect between the two. She questioned her faith in her teacher education program, but did not dismiss it, as evidenced by Elsa being feeling legitimized by the teacher education program.

Kida, on the other hand, questioned the relationship between her coursework and practicum experience at Amos Moses. She claimed there was a disparity between the two and attempted to resolve the differences. Unlike Elsa who was able to resolve the differences, Kida did not show evidence of a resolution. She seemed to get more disappointed in the disparity she saw as the semester progressed. In the end it encompassed most of her experience at Amos Moses, as evidenced by the narrow focus on said disparity of her narratives. Additionally, Kida did not provide evidence of being legitimized by her teacher education program. Even though both Elsa and Kida were skeptical about the relationship between their coursework and practicum, Elsa still felt legitimized by the program and Kida did not. I claim Elsa and Kida were both skeptics. Elsa was a lesser skeptic because she was still legitimized by her teacher coursework even though she questioned it at times. Kida was a greater skeptic because she still

felt supported by the program but did not seek to be legitimized by it. These positions influenced their (re)constructed identities and narratives of the relationship between them and the program.

Sally was categorized as being faithless. She saw little to no recognition in her teacher education program. She devalued her program because of her belief in a strong background teaching mathematics she attained from the mathematics-tutoring center. She claimed the only way to learn to teach was from the field and only sought to be legitimized by the teachers at Amos Moses. Additionally, Sally sought status from her experiences and the teacher education program was not going to provide the status she desired in the community of teachers. Sally desired to be liked by the students and the teachers. The social dynamics were much more important to her. The teacher education program would only provide for her "fun" activities to do with the students. Her faithlessness influenced her identity as a teacher-of-mathematics because it placed a greater value in the practicum experiences.

Conclusions about the Identity Formation Stages

I believe as the participants continued to their next practicum experiences they would repeat these stages. Entering a new context, and consequently new power relations, the individuals will become peripheral participants again and need to find their voice in the new classroom, from there proceed to being legitimized by some community, and then through reflection (re)constructing images of self-as-teacher. Moreover, although each participant was successful in going through the three stages, I do not believe every prospective teacher will traverse each stage. I can foresee a prospective teacher being placed in a context that does not provide them the opportunity to move through the three stages.

Overall, the characteristics of the emotional geographies, the feeling rules, and identity formation stages, provide insight into the relationship between emotionality and identity

formation. In the following chapter, I discuss how emotionality and identity formation work together to construct the prospective teacher's identity as a teacher-of-mathematics.

CHAPTER 5

SUMMARY, IMPLICATIONS, AND CONCLUSIONS

The corollary of that principle is that human dignity cannot be taken away by the government. Slaves did not lose their dignity (any more than they lost their humanity) because the government allowed them to be enslaved. Those held in internment camps did not lose their dignity because the government confined them. And those denied the governmental benefits certainly do not lose their dignity because the government denies them those benefits. The government cannot bestow dignity, and it cannot take it away.

- Justice J. Thomas (*Oberefell v. Hodges*, 2015, p. 17)

When I heard our president today talk about—first of all just the fact that Obama has included same sex couples in like all of his State of the Union address, like every time I hear it, I can't believe it. And I'm 33, you know. There are people who are 88 and they've been fighting much longer than I have. And to hear our president say, today we are a step closer to a more perfect union... To have someone that has that much power see you. It really matters.

- Cameron Esposito (Hardwick, 2015)

Becoming a teacher is a complex process further complicated by the emotionality of the individual. This study sought to examine the emotionality of the individual through a sociocultural perspective on emotion. The emotional geographies framework provided insight into the emotionality of the prospective elementary teachers as they were becoming teachers. Through the exploration of emotionality one can attain a deeper understanding of the identity formation of prospective teachers. The emotionality of the participants influenced their decision-making processes in the mathematics classroom. More importantly, the participants' emotionality influenced how they found their voice, what actions were appropriate to be legitimized, and how to show care for the students' mathematics. Throughout their narratives, they leaned on different aspects of the program or field component to find recognition of their identity as mathematics teachers. Also each of the participants cared for the students' mathematics in their own way.

They each also sought out to be legitimized by various authorities. The quotes at the beginning of this chapter each consider recognition or the act of being seen in different ways. One shows the authority looking down and the other the disenfranchised looking up. Recognition works in both directions. It is human nature to seek out legitimization from those with status. It is empowering and justifies the identity of the individual. The prospective teachers in this study desired to have their identity as mathematics teachers legitimized. They sought out and worked with a variety of authorities (teacher education program, mentor teachers, and students) in order to be recognized as mathematics teachers. The narratives of self-as-teacher the participants shared were about their journey in to be recognized. Investigating this legitimization provided a glimpse into the influence of emotionality on the identity formation of the participants.

Summary of Study

The activities of teacher education programs provide many situations for strong emotional reactions by prospective teachers. Prospective teachers are provided interventions to perturb their beliefs about teaching and learning mathematics. Teacher educators ask prospective teachers to envision teaching and learning mathematics in ways they had never experienced (Drake et al., 2001). In simple terms, teacher preparation programs are in the business of identity development (Luehman, 2007) and do so by influencing the emotionality of the individual. Further studies into the emotionality of prospective teachers are needed to better capture the framework prospective teachers use to make sense of practice or professional identity (Peressini et al., 2004). Furthermore, the identity developed and emotionality of the individual while completing a teacher education program will influence the value added to their professional development (Hammerness et al., 2007).

This study used the narratives of four prospective teachers to focus on the emotional geographies (Hargreaves, 2000; 2001a; 2001b) to portray each participant's identity formation as a teacher-of-mathematics. The practicum experience each participant went through was the first time each of them worked at a school, although it was only one day a week. The participants, at the time, had a limited awareness of the work of a teacher beyond their apprenticeship of observation (Lortie, 1975/2002). A portrait of the participant's identity formation as a teacher-of-mathematics was formed by focusing on her emotional geographies (Hargreaves, 2000; 2001a; 2001b). The participants had differing themes emerge from their emotional geographies depending on their beliefs about teaching mathematics, self-conceptualizations, and the consequences of background experiences. The following research questions guided this study:

- How are emotions involved in the development of prospective elementary teachers' identity as a teacher-of-mathematics?
 - What are some of the characteristics of prospective teachers emotional geographies as they partake in a practicum experience?
 - What are some of the feeling rules prospective elementary teachers constructed as they partake in a practicum experience?
 - What are some influential components to the prospective teachers' developing professional identity?

A qualitative multiple case research design (Yin, 2014) allowed me to focus on the phenomenological experience of each participant and thereby use the lens of emotionality to examine the identity formation of the individual. A survey (Appendix A) was used to select participants from two sections of a mathematics methods course at a large university in the southeastern United States. The participants were selected because of their positive disposition toward mathematics and their belief they were good at mathematics. The four participants (Anastasia, Elsa, Kida, and Sally) were each interviewed individually three times throughout their practicum experience. The first interview focused on their background and beliefs about mathematics, and mathematics learning and teaching. The second interview focused more on

narratives about their experience at Amos Moses Elementary, as well as their perspective on their teacher education program. The third interview asked the participants to reflect on their overall experience at Amos Moses.

Anastasia, Elsa, Kida, and Sally also participated in four small group meetings. Two small group meetings occurred between interviews. Each small group meeting started with a writing session guided by a prompt sent to the participant 24 hours in advance. This was in line with Schultz and Ravitch (2013) study of teachers' identity. After writing time was provided, the participants discussed their responses to the prompts and gave commentary to each other. I facilitated the discussion and asked for clarification when needed. The sessions were video taped and transcribed. I also collected their writings at the end of the session.

I used the emotional geographies framework (Hargreaves, 2000; 2001a; 2001b) to initially code all of the individual narratives within the interviews. Beginning with these codes, I gained an understanding of the characteristics of the participants' emotional geographies. I wrote descriptions of the themes emerging from the coding and modified the coding as necessary. I then looked at the writing and small group meetings narratives to compare the themes and conjectures made based on the individual interviews. A member check was conducted with each participant to validate the portraits of the emotional experiences and consequences of said events. Once approved by each participant, an open coding approach was taken on each of the emotional geographies. The open coding approach helped with finding more specific themes and to conduct the cross-case analysis. In the following section I discuss the main findings of this study.

Conclusions

The overall research question entailed the exploration of the relationship between emotions and identity development of prospective teachers. Three subquestions aided the

examination of the relationship in question. The feeling rules constructed by the participants have already been described (see *Constructed Feeling Rules or Repertoire of Teacher Moves*—pg. 130), as well as the influential components to the identity formation of the participants (see *Stages of Identity Formation*—pg. 111). Furthermore, the characteristics of the emotional geographies of the participants can also be found in Chapter 4 (pg. 103). In this section, I comment on the larger question about the relationship between emotions and identity formation.

Relationship Between Emotionality and Identity Formation

The participants' emotionality influenced the identity formation as mathematics teachers. Emotionality (Denzin, 1984/2009) and identity formation are interrelated because the emotions of the individual influences the decision-making processes within a context (Damasio, 1994/2005; Ortony et al., 1988). All of the participants' identities and voices they wished to use were directly attached to the emotional spaces constructed from their experiences in school, community, and family. The moral and professional geographies were most influential in the ways the participants participated in the mathematics classroom. Using the emotional geographies framework (Hargreaves 2000; 2001a; 2001b) I constructed an understanding of the borders and boundaries of the participants' emotionality within their narratives. For example, Anastasia's desire to teach conceptually and be heard as the one-who-teaches-conceptually constructed a trajectory and a plan to accomplish her vision as a teacher-of-mathematics. The same was true for the other participants. The ways they desired to be seen by the social other determined the acts and activities they believed would convince the social other they belonged to a community of practice (Snow & Anderson, 1987).

Being recognized or legitimized was highly influential to each of the participants because it provided the needed feedback from the social other. Gee (2001) placed recognition as central

to understanding the identities or ways of being seen of the individual; however, Gee does not in any of the four described perspectives on identity include the emotionality of the individual and its influence on identity formation. This study has shown emotionality is influential and a useful perspective in examining the identity formation of prospective teachers. The emotionality of the individual determined *who* needed to legitimize their identity and voice as a teacher-of-mathematics and *what* was evidence of legitimization. The moral space and the professional space aided the participant in deciding on the *who* and *what* of their recognition. The political space drew boundary lines to the interactions between the mentor teacher and the participant. This pushed some participants to have to construct spaces *where* they could find recognition and legitimization of their identity and voice as a mathematics teacher. The emotional geographies influenced the identity formation of each individual.

The feeling rules (Hochschild, 1983/2012) of each participant also formed borders and boundaries around the interactions between the participant and the students. The feeling rules were about interactions between the participants and the students and not interactions between the mentor teacher and the participant. The feeling rules involved the students of the classroom for each participant. Thereby, the feeling rules influenced the appropriate interactions between participant and students. As part of the emotional labor of teaching (Schultz & Zembylas, 2009), the feeling rules aided the participants in determining how to regulate their emotions in the classroom. This was similar to Hochschild's (1983/2012) findings with airline stewardesses. Hochschild argued the feeling rules constructed by airline stewardesses were part of the work of an airline stewardess. In other words, in order to belong and be recognized as doing the work of an airline stewardess certain feeling rules needed to be followed. Each participant formed a set of feeling rules allowing her to complete the job of a teacher. By building borders and boundaries

around the types and kind of interactions with students, the participants had to work within those spaces in order to find legitimization. The feeling rules also demonstrated the participants' believed in acts and activities in the community of practice. Following the feeling rules meant to act like a teacher in the classroom. The participants each developed feeling rules based on her apprenticeship of observation (Lortie, 1975/2002) or her interpretation of the actions of the mentor teacher.

The defining actions and influential components described previously also show how emotionality and identity formation are interrelated. The moral geography played an explicit role on the defining actions of seeking legitimization from the students for each of the participants. Their emotionality (Denzin, 1984/2009) was based on the desired and imagined future-self and how it fit within the context of the mentor teacher's classroom. The participants had a vision of self they attempted to enact within the classroom (Hammerness, 2003). Participants had to find their place in the mentor teacher's classroom, and the emotional geographies influenced how the participants positioned themselves. Moreover, how the participants traversed through their experiences at Amos Moses was dependent on their emotional geographies. This study provides further evidence of Flores and Day's (2006) identity cycle as each participant built, deconstructed, and (re)constructed their identities. The identity formation framework found from this study provides further details into Flores and Day's cycle. The narratives of the participants described change. Concerns and dilemmas arose for all of the participants due to their emotional geographies being expanded in unknown directions from being aware of the pressures of teaching and learning mathematics. Due to the changes in emotional geographies, the participants' portrait of future self as a teacher-of-mathematics was also modified. Therefore, the emotionality of the individual influenced their peripheral participation in a community of

practice (Lave & Wenger, 1991; Wenger 1998), and consequently their identity formation as mathematics teachers.

Implications

This study complements studies by Brown (2008) and Hodges and Askew (2007) on the identity formation and emotionality of prospective teachers learning to teach mathematics. This study also agrees with Beauchamp and Thomas' (2009) disposition, "There are therefore important implications in the study of emotion for an understanding of teacher identity. This appears to be an expanding area of the literature on identity, and will probably deserve increased attention in future discussions of identity" (p. 180). The study provided empirical evidence to Brown's (2008) theoretical discussion on emotions and identity development of elementary mathematics teachers and other more general theoretical arguments about developing teachers (Britzman, 2009). The findings of this study support Brown's ideas of teacher formation being a "contested field" within which emotions influence the trajectory of the individual. The phenomenon of after-education emphasized by Brown (2008) could also be seen as occurring to the participants. As they progressed through their teacher education program, they were forced to look back at their own education and consider its value. In the case of the participants, as they continued their practicum experiences, they reflected on the relationship between the field and their coursework. The value placed on their coursework was a result of their after-education.

The construct of feeling rules (Hochschild, 1979; 1983/2004) in mathematics education should be more prominent in research. The feeling rules of the participants were implicitly aligned with their moral geography characteristics because the feeling rules needed to fit into the believed purpose of teaching and learning mathematics. The feeling rules influenced the actions believed to be appropriate for a teacher within the greater community of practice. The majority

of participants, however, constructed the feeling rules on their own from observations at Amos Moses or their apprenticeship of observation (Lortie, 1975/2002). The only exception was Sally who claimed to have learned from her volunteer experience at Haven and her teacher education program, but could provide no details of said training. Even though none of the participants formed feeling rules directly about the teaching and learning of mathematics, I believe, in the same way Yackel and Cobb (1996) described sociomathematical norms, the construction of sociomathematical feeling rules are a possibility. Because mathematics elicits emotions other contents do not (Williams-Johnson et al., 2008). A better understanding of the sociomathematical feeling rules could provide insight into the identity space between teacher and mathematics teacher.

This study extended the perspective on legitimization not explored previously by researchers (Gee, 2001; Goffman, 1959; Snow & Anderson, 1987). Previous work focused more on discursive cues, such as I-statements (e.g. Sfard & Prusak, 2005), to recognize the legitimization or identity of the individual. Focusing too heavily on discursive markers removes the influence of the interaction between the individual and the social other. The focus on the emotionality of the participant made the use of discursive markers difficult. Instead more of a focus on the arguments made to the social other had to be emphasized. This brings the interactions between individuals to the forefront of the study, and the emotionality of the individual. Furthermore, legitimization and the interaction between teachers and students when learning mathematics have not been previously explored. The studies guiding this research (Hargreaves, 2000; 2001a; 2001b; Schultz & Ravitch, 2013) did not examine the influence the content has on the search for legitimization.

The development of the stages of identity formation of prospective teachers provides researchers various avenues for exploration of teacher education programs and the relationship with mathematics practicum experiences. Teacher education programs can be considered through the lens of identity development (Luehman, 2007). Having a model to explore the experiences of prospective teachers as they move through their practicum experiences can allow researchers to conduct more pointed studies on the phenomenon of becoming and the influence of teacher education programs. For example, in looking at the case of Ursala (Hodgen & Askew, 2007), Ursala began to find value in her professional development when it helped her in developing her voice as a teacher-of-mathematics. Hodgen and Askew did not explore the larger consequences of Ursala's legitimization and (re)constructed identity. By further looking into the actions and activities legitimizing Ursala's identity, Hodgen and Askew could have better understood the impact of their professional development.

This study demonstrates the power of the emotional geographies framework (Hargreaves, 2000; 2001a; 2001b) for mathematics education researchers. Identities of teachers and students have been explored through a variety of lenses (e.g. Avraamidou, 2014; Bishop, 2012; Cobb; Gresalfi, & Hodge, 2009; Martin, 2000; Peressini et al., 2004; Sfard & Prusak, 2005). The emotional geographies framework allowed this study to directly operationalize identity and therefore complemented the results of previous studies. Martin (2000), for example, focuses his study on the beliefs of the individual, ignoring much of the sociocultural aspect of identity formation. Juzwik (2005) criticized Sfard and Prusak (2005) for being too discursively heavy to the point the social other was lost. This study used the emotional geographies framework to keep the focus on the emotionality of the individual in social contexts and looked beyond the beliefs of the individual. The emotional geographies framework is centered on the interactions between

individuals, objects, and events. A better understanding of the interactions between prospective teachers, students, and mentor teachers in learning to teach mathematics is provided by the emotional geographies framework. The use of the emotional geographies to explore identity is only one possibility. The framework should be modified and extended to work specifically within mathematics education.

Although the emotional geography framework was productive for this study, I believe further refinement is needed to develop a theory more specific for those learning to teach mathematics. Williams-Johnson et al. (2008) found school contents each elicited different emotions from students and teachers. It is possible to develop a theory of mathematics emotionality. The sociomathematical feeling rules, described above, would be part of this theory of mathematics emotionality. To refine such a theory, further work would need to consider other aspects of emotion regulation and labor (Hochschild, 1979; 1983/2004) in the teaching and learning of mathematics. This study was not enough to enhance the emotional geographies framework to be specifically for mathematics education research; however, it did open some possible trajectories for future research and refinement.

Mentor teachers influence the identity formation and emotional geographies of prospective teachers as cultural brokers (Aikenhead, 1997; Jegede & Aikenhead, 1999). The mentor teachers can greatly influence the role and expectations of prospective teachers who attempt to enculturate into the classroom and school. These first interactions are important to the identity formation and the emotional geographies of the prospective teacher. They can determine whether or not legitimization will be sought out from the mentor teacher or if the prospective teachers will seek recognition elsewhere. The other teachers can also play a part in valuing or

devaluing teacher education programs. Teacher educators being selective about the placement of the prospective teacher can further influence the identity formation of the individual.

Future Research

This study informed my considerations for future research with both inservice and prospective teachers. First, and most general, is continuing to explore the theoretical use of a sociocultural perspective of emotion on teacher professional development. The emotional geographies framework (Hargreaves, 2000; 2001a; 2001b) was useful in understanding prospective teachers' identity formation. The same participants could be followed in subsequent experiences (student teaching, induction years, etc.) to examine the evolution of their identity formation. This can provide insight on the stability of the emotional geographies of the participants. Through a series of follow-up studies, a trajectory of identity formation and the emotionality of the participants could be constructed.

This study for the most part was descriptive about the identity formation of the prospective teachers. The question now is what interventions could be designed and explored based on the findings. For example, Anastasia and Sally's sociocultural geographies only considered the influence of social aspects retrospectively. This could be a result of a lack of interventions about equity and social justice in the mathematics classroom in the teacher education program. Part of the mathematics teacher educators' responsibility is to prepare teachers to work in political spaces where social aspects like race, gender, and socioeconomic status will influence the learning and teaching of mathematics (DiME, 2007). The emotionality of the prospective teacher influences their awareness of these larger social issues. In what ways could teacher educators intervene and have evidence of awareness in the sociocultural geography of the individual?

Anastasia and Sally demonstrated strong resistance against the ways of teaching that did not align with their background experiences. I argue the phenomenon of resistance needs to be further explored. An exploration of the various ways prospective and inservice teachers resist professional development can be beneficial. The emotional geographies framework helps to connect the results from studies on teacher resistance (Gu & Day, 2007; Garrett & Avner, 2013). On the other hand, a better understanding of resistance could expand the emotional geographies framework and the influential components of the identity formation stages.

Emotionality could aid in the study of the argumentation aspect of identity development. I believe argumentation and one's identity formation are closely related. As Gee (2001), Goffman, (1959), and Snow and Anderson (1987) claimed the identity formation of the individual is argued to the social other. The characteristics of these arguments made could be explored using Toulmin diagrams (Toulmin, 1958/2003). The emotionality of the participants was argued for with narratives and other anecdotes. Better understanding the characteristics of these arguments could aid with developing stronger interventions as well as better understanding of emotionality.

The connection between emotionality and mathematics knowledge of the individuals was not taken into consideration in this study. As Korthagen (2004) claimed knowledge was part of the influential aspects of one's identity. Emotionality and mathematics content knowledge can inform one another in relation to the identity formation of mathematics teachers. The respective emotionality influenced by beliefs about mathematics ability was examined throughout this study, but I could make no direct correlation. The mathematics content knowledge and pedagogical content knowledge (Hill, Ball, & Schilling, 2008) of the participants was not measured. By stressing these more cognitive aspects of identity in addition to the sociocultural

aspects could provide powerful understandings of the identity formation of prospective and inservice teachers.

Emotional geographies can help mentor teachers be more effective in their role as cultural brokers. In what ways can mentor teachers be trained to be cultural brokers for prospective teachers? I imagine designing professional development informing teachers of the emotional geographies of the individual. This can help in improving the emotional geographies framework. This can help mentor teachers and prospective teachers in better understanding the interactions they have with one another. This, in turn, could be helpful in focusing prospective teachers and mentors on the mathematics teaching and learning.

The emotionality framework of this study can aid in the investigation of the described stages of identity formation. Additionally, the defining actions of each stage described may not be the only ones. Exploring each stage in further detail may expand the stages of identity development framework to better fit a more general mathematics education prospective teacher population and expand the emotional geographies framework. There is also the possibility of more influential components. This is only the beginning of this framework and with more pointed studies at each of the stages; the framework could become more refined.

The emotional geographies framework in combination with the situative perspective, which I refer to as the situative emotionality perspective can be used to examine other phenomena other than the mathematics teacher identity formation of prospective teachers. This perspective could be used to further expand the constructs Goldin and colleagues (Debellis & Goldin, 2006; Epstein et al., 2007; Schorr & Goldin, 2008) have developed. The problem solving processes of students could be examined with this perspective because emotionality influences the decision-making processes of the individual. In general, the situative emotionality

perspective opens up any phenomena that require interactions with a person, event, or object. Even the analysis of mathematical arguments or proofs by students could be examined through this lens. The situative emotionality perspective can provide many new insights to the field.

Closing Remarks

I fully agree with Hargreaves (2000) when he says, teaching is an emotional practice. I encourage current and future researchers to look further into the affective domain of inservice teachers and those learning to teach mathematics. We, as researchers and mathematics teacher educators, cannot forget our own emotional trajectories allowed us to construct our identities as mathematics teacher educators. The quotes at the beginning of this chapter remind us of the differences in perspective on recognition and the consequences those in power may have in legitimizing the social other. I hope, we as a field continue to embrace the position we hold recognizing the acts and activities of prospective teachers who are learning to teach, developing mathematical caring relations, and learning the mathematics of students.

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APPENDIX A

PARTICIPANT SELECTION SURVEY

Name _____

Placement Grade _____ Placement Content (if applicable) _____

Beliefs Questionnaire

Place a vertical line on the continuum below which best represents your beliefs about the topic at hand. Note that the choices at the ends of each line are not necessarily direct opposites, but they are certainly different options. Thereafter please explain your rationale for the position you selected.

1) To me, mathematics is:

(a) Surprising Predictable
Rationale:

(b) Doubtful Certain
Rationale:

(c) Changing Fixed
Rationale:

(d) Dull Intriguing
Rationale:

2) Being a good mathematics teacher mostly entails or depends on:

(a) Helping students like math Helping students see the usefulness of math
Rationale:

(b) Understanding math Understanding students
Rationale:

(c) Teacher direction Student participation

Rationale:

(d) Consistency Variety

Rationale:

4) Which of these best describes your views about mathematics?

- A. A set of rules and truths
- B. An unquestioned body of useful knowledge
- C. A body of structured pure knowledge
- D. A personal experience
- E. A changing body of knowledge that is socially constructed

Why did you select this choice?

5) How have your past experiences impacted how you view teaching and learning mathematics?

6) Please describe a powerful moment you had when working one-on-one with your student buddy last semester.

7) Take me on a tour of your envisioned classroom. What do you see, feel, and hear when you walk around your ideal classroom?

8) Describe your role(s) as a mathematics teacher in your future classroom.

9) Do you give the screener (Carlos Nicolas Gomez) permission to look at your mathematics autobiography assignment from EMAT 3400? (Yes or No)

APPENDIX B

INTERVIEW PROTOCOLS

Interview 1 Protocol

Interview 1 Goal: To better understand where the individual is coming from. An exploration of their background, current beliefs, and where they see themselves in the future.

Class and interpretation of upbringing	<p>Let's talk a little bit about your background.</p> <ol style="list-style-type: none"> 1) What people in your life are involved in education – are teachers of any kind? 2) Talk a little bit about your experiences in teaching or working with children. 3) What kinds of things do you do outside of your classes here at UGA? 4) Growing up how did your parents stress education? Math? 5) How did the school you attended promote education? Mathematics? 6) Did you feel like your community growing up stressed the importance of education? Math? <p><i>From Drake, Spillane, Hufferd-Ackles (2001)</i></p> <ol style="list-style-type: none"> 4) A peak experience would be a high point in your story about mathematics in your life - perhaps the high point. It would be a moment or episode in the story in which you experienced extremely positive emotions; like joy, excitement, great happiness, uplifting, or even deep inner peace after some mathematics experience. Tell me exactly what happened, where it happened, who was involved, what you did, what you were thinking and feeling, what impact this experience may have had upon you, and what this experience says about who you were or who you will be as a teacher? 5) Ask for low point thereafter. 7) Why do you want to be a teacher? 8) What do you expect to learn in the class (EMAT 3410)? 	10 – 20 minutes
Teaching	<ol style="list-style-type: none"> 9) How do you define success in the classroom? 10) How do you feel about teaching math? 11) What are some of the things you are concerned about teaching mathematics? 12) Cooney et al. (1998) metaphor selection (see below) 	10 – 20 minutes
Vision	<p><i>From – Hammerness (2006)</i></p> <ol style="list-style-type: none"> 13) Take me on a virtual tour of your future classroom. What do you see, feel, and hear when you walk around your ideal classroom? 14) What are you doing in your ideal classroom? What is your role? Why? 15) What are your students doing in this ideal classroom? What role(s) do the students play? Why? 16) What kinds of things are the students learning in your ideal classroom? For instance, what topics or texts are they working on? Why are those important for them to learn? 17) What is the relationship between what goes on in your ideal 	10 – 20 minutes

	classroom and the kind of society you would like to see in the future?	
Math	18) How do you feel now about math as a subject? 19) What does it mean to be a good math student? 20) Why is it important to learn mathematics? 21) Is mathematics discovered or invented?	5 – 10 minutes

Cooney et al. (1998) Metaphors

1. Learning mathematics is like:

working on an assembly line
cooking with a recipe
working a jigsaw puzzle
building a house

watching a movie
picking fruit from a tree
conducting an experiment
creating a clay sculpture

Which simile best describes learning mathematics? Why?

Which simile doesn't describe learning mathematics? Why?

2. A mathematics teacher is like a:

news broadcaster
Doctor
Gardener
Psychologist
Judge

entertainer
orchestra conductor
coach
scientist

Which simile best describes mathematics teaching? Why?

Which simile doesn't describe mathematics teaching? Why?

Interview 2 Protocol - ANASTASIA

Interview 2 Goal: The second interview is to see how the participant is positioning him or herself within the program. Additionally, it is to ask the participant to look back at some of the narratives written so far in the writing sessions

Class and field component interpretations	<ol style="list-style-type: none"> 1) What have you walked away with from the class so far? 2) In class do you feel you are learning math? Explain? 3) What is the purpose of the field experience component? 4) Tell me about your field experience so far? 5) What is your role in your field experience classroom? 6) How were these roles decided upon? 7) How do you see this field experience as a preview of your teaching? 8) Talk about a time when you felt you progressed as a teacher. 9) Talk about a time when you felt helpless when working with a student or students. 	10 – 15 minutes
Teaching	<ol style="list-style-type: none"> 10) Who is responsible for learning in the classroom? 11) What does it mean to be a math teacher? 12) Describe your ideal math teacher. 13) What obstacles do you see in becoming your ideal math teacher? 14) Do you feel your teacher preparation program is supporting you in achieving this? 	10 – 15 minutes
Math	<ol style="list-style-type: none"> 15) Does mathematics require a unique way of thinking in comparison to other contents? Can you explain this way of thinking? 16) What do you think someone who doesn't like math believes about math? <p>From Drake, Spillane, & Hufferd-Ackles (2001):</p> <ol style="list-style-type: none"> 17) Looking back, please identify the single person, group of persons, or organization/institution that has or have had the greatest positive influence on your perspective of mathematics. Please describe this person, group, or organization and the way in which he, she, it, or they have had a positive impact on you. 18) Looking back, please identify the single person, group of persons, or organization/institution that has or have had the greatest negative influence on your perspective of mathematics. Please describe this person, group, or organization and the way in which he, she, it or they have had a negative impact on you. 	5 – 10 minutes
Narrative Analysis	<ol style="list-style-type: none"> 19) Look at this piece that you wrote in one of our sessions. Reading back over that what are your impressions? 20) Can you tell me more about that specific event and/or feeling? 21) Do you still feel the same? Is there something you would like to add? 22) Ask further question about event and/or writing 23) Repeat as needed with other narratives 	15 – 20 minutes

Writing Prompt 1:

I am not sure how this actually counts as a math lesson, but the most memorable thing I've witnessed during 5th grade math class at [Amos Moses] has been while our teacher checked

over a series of four algebra worksheets. She had done a very brief (less than 10 minute) introduction into variables within equations, given the students a very significant chunk of time (around 45 minutes) to work in pairs or small groups to finish the worksheets, and now they would check their answers. My first impression is how quickly the teacher was flying through the answers. As far as I could tell, most of the kids were getting most of the correct answers - but I felt like more time should've been spent on explaining how the students had arrived at these answers. I understand that teacher most likely feels an insane amount of pressure to cover everything in math, especially in the Early Intervention Class where I've been placed...I don't really see a clear resolution to this situation, other than the fact that our teacher collected the worksheets and I can only hope that she spent time looking at the students' work - making adjustments to her instruction based on work shown that might indicate student thinking.

Why did you think this didn't count as a math lesson? How did you feel watching the teacher go over the problems? Did she ever return to the problems to your knowledge? Is this something that happens frequently in the class?

From Small Group 1:

A: Absolutely. Cause like with the long division, I - one of the little - one of them asked me a question and I didn't know if they did the scaffolding method or if they did a standard algorithm. And I don't really remember how to do the scaffolding one. So like all I know how to do off the top of my head is the standard algorithm. And so I don't want to teach them that and corrupt them.

A: And that's the standard ways hard to explain to someone who's struggling cause it's like, okay now just draw an arrow and bring it down. Well why? Well it's just what you do. Like that - I feel I'm not helping them that way. I feel I'm just bogging them down with how I know. And I'm 20. I just memorized it. So it's awkward.

Can you describe some of the tensions that you are feeling during these moments you are talking about? Have there been other similar tensions since then?

A: And it doesn't help that there's only 14 of them. Cause that's like - there's 3 of us and 14 of them. So it's like our teacher can definitely get to all of them, you know what I mean? So I kind of feel useless sometimes. Which is not a good feeling.

Do you still feel useless at times? Can you describe other moments where you felt useless? What can be done so you no longer feel useless?

Writing Session 2:

I felt really awful about math when I was looking over some of the students' math benchmark tests. These tests are taken county wide and do not consider any special circumstances like my EIP (Early Intervention Program) class. Their scores were absolutely horrible - very few scored above a 50. I had seen them working so hard on math, but the test results did not reflect what I

knew they could do. I felt very discouraged for the students and for my teacher – who I knew would be impacted by her class' score. I also felt frustrated with the writers of the test and the policy makers in general. I hope that there is a better way to assess understanding of mathematical concepts.

What are your impressions reading over that? How did you reconcile these feelings? How did you mentor teacher aid in reconciling?

Interview 2 Protocol - ELSA

Interview 2 Goal: The second interview is to see how the participant is positioning him or herself within the program. Additionally, it is to ask the participant to look back at some of the narratives written so far in the writing sessions

Class and field component interpretations	10) What have you walked away with from the class so far? 11) In class do you feel you are learning math? Explain? 12) What is the purpose of the field experience component? 13) Tell me about your field experience so far? 14) What is your role in your field experience classroom? 15) How were these roles decided upon? 16) How do you see this field experience as a preview of your teaching? 17) Talk about a time when you felt you progressed as a teacher. 18) Talk about a time when you felt helpless when working with a student or students.	10 – 15 minutes
Teaching	24) Who is responsible for learning in the classroom? 25) What does it mean to be a math teacher? 26) Describe your ideal math teacher. 27) What obstacles do you see in becoming your ideal math teacher? 28) Do you feel your teacher preparation program is supporting you in achieving this?	10 – 15 minutes
Math	29) Does mathematics require a unique way of thinking in comparison to other contents? Can you explain this way of thinking? 30) What do you think someone who doesn't like math believes about math? From Drake, Spillane, & Hufferd-Ackles (2001): 31) Looking back, please identify the single person, group of persons, or organization/institution that has or have had the greatest positive influence on your perspective of mathematics. Please describe this person, group, or organization and the way in which he, she, it, or they have had a positive impact on you. 32) Looking back, please identify the single person, group of persons, or organization/institution that has or have had the greatest negative influence on your perspective of mathematics. Please describe this person, group, or organization and the way in which he, she, it or they have had a negative impact on you.	5 – 10 minutes
Narrative Analysis	33) Look at this piece that you wrote in one of our sessions. Reading back over that what are your impressions? 34) Can you tell me more about that specific event and/or feeling? 35) Do you still feel the same? Is there something you would like to add? 36) Ask further question about event and/or writing 37) Repeat as needed with other narratives	15 – 20 minutes

Writing Prompt 1:

The lesson that I observed being taught in the fifth grade was their introduction to algebra. They were having letters and variables put into their math problems for the first time, and they were dealing with it much better than I thought they might have. I think that they had an

understanding to plug in a number for the variable, or solve for the variable. I thought that they would really struggle with something so new like having not just numbers in an equation, but they blew me away when they could complete the worksheet with little to no problems. This shows me that they may struggle with things like long division that has a lot of steps, but they are smart kids and they can solve equations and are good at math, they just need to have their expectations set higher. I feel like right now the expectations that are being set for them are low, so they are performing lower.

What are your impressions reading over that again? Can you describe your feelings during this time? The last statement I found interesting, having been there for a while now do you still think the expectations are set lower for them? How does that make you feel?

From Small Group 1:

E: I think that's still our same like (.) concern of like we're that awkward place is for us in the classroom. Cause we're told to like help them if they have any questions but I don't want to like overstep my boundaries and like completely teach them how to do something cause that's like what if I teach it like different than how like the teacher is doing it or like (.) how all the classmates are doing it. It's just like that very awkward (.) medium like medium in-between gray area.

Do you still feel like you are in this gray area? Can you describe how it feels to be in this gray space?

E: And then she (Anastasia) asked the teacher after like how do you teach it? Like do you teach like standard? Do you teach like the scaffolding method? And she was like, there are so many different ways to teach them now a days like I teach just like the simple old like standard ways but some of them have learned scaffolding before. They come from all these different ways of - I really like how kids can invent their own ways in math and stuff. But when they're taught like when each 4th grade class is being taught - like one's scaffolding, one's standard, one's... I know there was another way, we did it last year and I can't think the name of it. Like how do you bring that all together?

How did this make you feel about your mentor teacher?

E: I guess I get slightly frustrated with it because like I know that they (.) are not doing the same things as the other 5th grade classes are doing. So what happens to them when they're like, great you passed your CRCT. They're like this worked. Like you got - you're no longer EIP or whatever. But then what happens to them when like the 5th grader. When the other 5th grade classes have gone up here and they've stayed at that level that their suppose to happen. Then they can drop because they didn't learn all that curriculum that the other 5th graders did. Or if they didn't move, if they do have to learn that, it's going to be so rushed that they're not going to understand it the same way. So I'm very confused of how that is all going to play out.

Have you reconciled these notions? Have you talked to your mentor teacher about these feelings?

Writing Session 2:

I think the most negative experience that stands out to me is the benchmark exams that the students had to take in my 5th grade classroom. These were given out in silence and taken very seriously. It was the afternoon after they had been taking the ITBS tests in the morning. I could tell in that moment of time that they were defeated, most of them showed on their faces how hard they thought that this test was for them. In my class it is just 14 EIP students, so they are focusing on curriculum for the CRCT test so they can improve their test scores and not be detained, but they also have to fulfill all of the standards for the fifth grade. The feeling of the room was overwhelmingly solemn and all I could do is hope that these students would do better than they thought that they would. They did not. Not a single one of these students passed the benchmark exam, and these were being sent into the state so they were super important. Not one passed. That is terrible. These kids are put in such a hard spot because they know that they are behind, they know they are different from the rest of the 5th graders, yet they are still expected to achieve on a benchmark exams just as the other students are. It is very frustrating. The whole class was there, but it was just me, Anastasia, and the teacher looking at the results the next week.

What are your impressions reading over that? How did you reconcile these feelings? How did your mentor teacher aid in reconciling?

Interview 2 Protocol - Kida

Interview 2 Goal: The second interview is to see how the participant is positioning him or herself within the program. Additionally, it is to ask the participant to look back at some of the narratives written so far in the writing sessions

Class and field component interpretations	19) What have you walked away with from the class so far? 20) In class do you feel you are learning math? Explain? 21) What is the purpose of the field experience component? 22) Tell me about your field experience so far? 23) How do you see this field experience as a preview of your teaching? 24) Talk about a time when you felt you progressed as a teacher. 25) Talk about a time when you felt helpless when working with a student or students.	10 – 15 minutes
Teaching	8) Who is responsible for learning in the classroom? 9) What does it mean to be a math teacher? 10) Describe your ideal math teacher. 11) What obstacles do you see in becoming your ideal math teacher? 12) Do you feel your teacher preparation program is supporting you in achieving this?	10 – 15 minutes
Math	13) Does mathematics require a unique way of thinking in comparison to other contents? Can you explain this way of thinking? 14) What do you think someone who doesn't like math believes about math? From Drake, Spillane, & Hufferd-Ackles (2001): 14) Looking back, please identify the single person, group of persons, or organization/institution that has or have had the greatest positive influence on your perspective of mathematics. Please describe this person, group, or organization and the way in which he, she, it, or they have had a positive impact on you. 15) Looking back, please identify the single person, group of persons, or organization/institution that has or have had the greatest negative influence on your perspective of mathematics. Please describe this person, group, or organization and the way in which he, she, it or they have had a negative impact on you.	5 – 10 minutes
Narrative Analysis	15) Look at this piece that you wrote in one of our sessions. Reading back over that what are your impressions? 16) Can you tell me more about that specific event and/or feeling? 17) Do you still feel the same? Is there something you would like to add? 18) Ask further question about event and/or writing 19) Repeat as needed with other narratives	15 – 20 minutes

Kida

In the first small group meeting you wrote and talked about a student you named Arwen, here is what you wrote. Then you stated the following

But it was just kind of like a reality check for me that like that when I teach like not (.) all my lessons are going to go through and like not all the students are going to get them right away. But like even just having one student who understands is like affirming. So just to like recognize that, I guess. And just like understand the realities of teaching in the future.

Have you had any other reality checks? What about a better understanding of the realities of teaching? What are the feelings behind the reality checks?

Can you describe this feeling of affirmation?

In the first small group, the others described feeling they were in a “gray space.” Unsure of what their role was during the field experience. Can you describe your role in your field experiences? How were these roles determined? How has this role changed since then?

Not as much. Just cause like my teachers younger and she's like very just like open to our help. Because I think in some situations - she's just like a wonderful teacher and I think she feels helpless in a lot of situations cause like this is only 2nd year teacher teaching 1st grade. And here she has like a very hard classroom. So she's always like, oh my gosh guys I'm sorry that this is so crazy like I try to have classroom management but like your, me and Emily that's my partner, are like we think it's fine. Like from our perspective like you seem to know what you're doing. I just kind of like I said I usually fill in and like help the higher students because the lower students are already receiving additional help. So yeah. I don't really feel the gray area as much.

Here you describe the teacher as feeling helpless, what brought you to that conclusion? Have you helped her in not feeling helpless?

First off, I see the difficulty of incorporating mathematics instruction into the modern day classroom. This is because there's so much emphasis on mathematics (i.e. STEM), but not nearly enough time allotted for quality instruction.

Can you tell me more about this difficulty?

You also described in the 2nd small group the nonchalant environment the teacher has constructed:

It just like I recognize that it's hard like them being in a circle having like white boards and answering questions because it's like kind of more relaxed because it's on the white board and there's like more freedom. It's not like you're turning it in. Um, it's not like conducive for like struggling students to succeed. Um, because it's like this one student like I'm pretty sure he just copies off of his partner. And so then the teacher asks like how did you do this, so and so. And he like can't explain it, but like that like saddens me because this is like such a like nonchalant way to learn math. They're like, who cares if you get that wrong. Like it's just you can get it right next time. Like if you try we can like work through this. But it's just like he's afraid of like doing the

wrong answer to the point where he won't even try. And it's like, if you think this at this time then how much more is that like amplified when you actually are turning in this assignment.

Why does it sadden you the nonchalant attitude the teacher has during math?

In your first interview you said:

I think teachers sometimes, we take on the role, the role of the instructor way too much when facilitation is what's actually necessary because the students are learning from each other. Without our help.

In the first interview you stressed making mathematics “relevant” to students. How do you see yourself doing that? How have you seen your mentor teacher math relevant to the students?

Interview 2 Protocol - Sally

Interview 2 Goal: The second interview is to see how the participant is positioning him or herself within the program. Additionally, it is to ask the participant to look back at some of the narratives written so far in the writing sessions

Class and field component interpretations	26) What have you walked away with from the class so far? 27) In class do you feel you are learning math? Explain? 28) What is the purpose of the field experience component? 29) Tell me about your field experience so far? 30) What is your role in your field experience classroom? 31) How were these roles decided upon? 32) How do you see this field experience as a preview of your teaching? 33) Talk about a time when you felt you progressed as a teacher. 34) Talk about a time when you felt helpless when working with a student or students.	10 – 15 minutes
Teaching	38) Who is responsible for learning in the classroom? 39) What does it mean to be a math teacher? 40) Describe your ideal math teacher. 41) What obstacles do you see in becoming your ideal math teacher? 42) Do you feel your teacher preparation program is supporting you in achieving this?	10 – 15 minutes
Math	43) Does mathematics require a unique way of thinking in comparison to other contents? Can you explain this way of thinking? 44) What do you think someone who doesn't like math believes about math? From Drake, Spillane, & Hufferd-Ackles (2001): 45) Looking back, please identify the single person, group of persons, or organization/institution that has or have had the greatest positive influence on your perspective of mathematics. Please describe this person, group, or organization and the way in which he, she, it, or they have had a positive impact on you. 46) Looking back, please identify the single person, group of persons, or organization/institution that has or have had the greatest negative influence on your perspective of mathematics. Please describe this person, group, or organization and the way in which he, she, it or they have had a negative impact on you.	5 – 10 minutes
Narrative Analysis	47) Look at this piece that you wrote in one of our sessions. Reading back over that what are your impressions? 48) Can you tell me more about that specific event and/or feeling? 49) Do you still feel the same? Is there something you would like to add? 50) Ask further question about event and/or writing 51) Repeat as needed with other narratives	15 – 20 minutes

From Small Group 1:

In the first small group session one of the participants describes a “reality check” she had when in the classroom:

But it was just kind of like a reality check for me that like that when I teach like not (.) all my lessons are going to go through and like not all the students are going to get them right away. But like even just having one student who understands is like affirming. So just to like recognize that, I guess. And just like understand the realities of teaching in the future.

Have you had any “reality checks”?

One of the others during this small group session stated she felt like she was in a “gray space.” Here is what she said:

I think that's still our same concern of like we're that awkward place is for us in the classroom. Cause we're told to like help them if they have any questions but I don't want to like overstep my boundaries and like completely teach them how to do something cause that's like what if I teach it like different than how like the teacher is doing it or like (.) how all the classmates are doing it. It's just like that very awkward (.) medium like medium in between gray area.

So I kind of feel useless sometimes. Which is not a good feeling.

Do you still feel like you are in this gray area? Can you describe how it feels to be in this gray space?

And then she asked the teacher after like how do you teach it? Do you teach the standard? Do you teach the scaffolding method? And she was like, there are so many different ways to teach them now a days, I teach just like the simple old standard ways but some of them have learned scaffolding before. They come from all these different ways of - I really like how kids can invent their own ways in math and stuff. But when they're taught - when each 4th grade class is being taught - like one's scaffolding, one's standard, one's... I know there was another way, we did it last year and I can't think the name of it. Like how do you bring that all together?

Small group 2:

So like we'll go over and tell our kids to do something and this has happened multiple times like I can't just think of one example. We'll go and tell our kids to do something and be like, yes totally fine. Work in partners, like we really want you guys to be talking. And she'll come around and be like, seriously like do I need to give you a punch. Like you cannot be talking right now. And we're like, oops. And then like, kids look at us and they're like, but but Ms. H (Sally) said. And then like I feel horrible because I don't really have (.) like she's an actual teacher. She's a hired person. I'm just a teacher intern. So like yeah she has more power than I do but I'm going off the mentor teacher and then the kids. I don't know it's just a very tough situation. And like the teacher knows that it's a tough situation but she's also not willing to like - or it's not that she's not willing to. She and the parapro talked but the parapro is very strict and set in her ways. So there's not much room to compromise. But it's just weird to be in that classroom. Like when she leaves, we love it. We love when she's not here. But when she's there, we're kind of like, okay. And she does help when they work in small groups but like (.) in general not so much.

Interview 3 Protocol - Anastasia

Interview 3 Goal: Have the participant reflect on their experiences and interpreted changes. Additionally, asked to tell more stories about their teaching experiences.

Class and Field Experience	<ol style="list-style-type: none"> 1) How do you feel about the overall field experience opportunity? 2) In what ways has your field experience changed your perspective on teaching mathematics? 3) Tell me about one event during your field experience that had the greatest positive impact on your perspective of student mathematical thinking. Negative impact? 	5 minutes
Teaching	<ol style="list-style-type: none"> 4) When you talk with your friends or roommates, what do you say about yourself as a teacher? 5) How do you describe the act of teaching math to a friend or roommate? 6) Did you feel like a teacher when you were there at your field experience? Did you feel like a math teacher? If you have never felt like a math teacher then what would it take? 7) What do you think you are good at as a teacher? What are qualities or skills that you feel like you have developed that give you confidence? Based on your experience, what are some qualities or skills you would like to develop as a teacher? 8) Do you feel like you had to regulate your emotions while teaching? How did you do so? 	5 - 10 minutes
Math	<ol style="list-style-type: none"> 9) What is mathematics? 10) How does a student demonstrate mastery of a mathematical concept? 11) It's 10:00. You're teaching in a 4th grade math class. If I walk into your classroom, what am I going to see? <i>(Be prepared to build on what they say. Ideas: what are the norms, learning environment, who's doing the talking, who's responsible for the learning?)</i> 	5 – 10 minutes
Vision	<ol style="list-style-type: none"> 12) You previously described your ideal image of a mathematics teacher to be patient, challenges everyone, has high expectations, communicates well (explains things clearly). Do you still agree with this? What would you add to the list? 13) How close do you currently feel about achieving this vision of self as a teacher of mathematics? 14) What are you most looking forward to about teaching? 15) What are your greatest concerns/challenges about teaching? 	10 – 20 minutes
Narrative Analysis	<ol style="list-style-type: none"> 16) Look at this piece that you wrote in one of our sessions. Reading back over that what are your impressions? 17) Can you tell me more about that specific event and/or feeling? 18) Do you still feel the same? Is there something you would like to add? 19) Ask further question about event and/or writing 20) Repeat as needed with other narratives 	15 -20 minutes

That's just such an overwhelming like (.) am I going to be able to get them to understand it deep enough to where they can do it next year? Do I need to cut corners so they can pass the test this Friday? Which one do you? So I think that part of [the field experience] is honestly showing us the frustration of [teaching]. Like (.) I think that there's absolutely no way a 5th grade teacher can ever get through all of the curriculum she's suppose to get through; in math, in social studies, in anything. So I think that part of it is just like where do you make those decisions. Do you (.) which concepts in math do you (.) go deep enough to where they're going to (.) you know, get it and be able to do it 2 years from now. And which ones do you cut corners on so that you can get (.) cause my class is the class that's failing their CRCT's. So (.) yes it's worth it to make sure they get (.) the concepts but you also have to get through everything so they don't fail again. So I think part of it is just getting into the politics of knowing like (.) its not easy.

Well I've like kind of just made up my mind that I'm going to do what's best for the kids. Obviously within her classroom. I'm not going to violate her like (.) it's her classroom. Period. But um (.) I'll supplement... And like (.) that I don't think is violating her like (.) classroom protocol because I'm relating it back to what - cause obviously the math is right in what she's teaching. She's not insane but it just (.) like I feel like what you have to do when you're in someone else's classroom is like (.) teach what you feel is right like what you - cause like I'm learning this in my classes right now, you know what I mean. Like I know I can help. And she like she loves the procedures that I teach too. So if I can just like connect it back to what she's doing I feel like it's okay.

And she's totally fine with it. She's totally the person that would say well there's a 10 and there's a half. So just multiply the two. And like I was so scared that I was going to let her down because like eventually the kids are going to go back to there desks and she was going to see that they had only done 3. And I didn't - first of all, I didn't want the kids to get in trouble for my difference in opinion for how math should be approached but I also didn't want them to be like well Ms. R said that we should go with her.

Its just there's so many things. And you have to just be aware of it but also one thing that I learned is that you can't control it all. You know what I mean like you can't be like this teacher figure and just fix everything with a note home to mom because the financial situation, you can't change that. You know what I mean (.) ugh (Disgruntled sound). And its just so frustrating cause I think that as a teacher, especially when it's my classroom...I want to fix everything. I want it to be my cookie cutter little classroom and it's just not going to be.

And it's like heart breaking, you just have to like paint a smile on and pretend like you're okay with everything in your classroom. Even though like you literally (.) like some of the things that these kids go through, I literally cannot imagine. Like one kid comes to school in the same pair of pants every single day. And like, you can't - you can't grimace and be grossed out by it. You have to be okay with it and it's just... And it's so hard because it's like (.) like I said you just want to fix it. You just want to bring him some pants. But then, you just can't.

Interview 3 Protocol - Elsa

Interview 3 Goal: Have the participant reflect on their experiences and interpreted changes. Additionally, asked to tell more stories about their teaching experiences.

Class and Field Experience	<ol style="list-style-type: none"> 1) How do you feel about the overall field experience opportunity? 2) In what ways has your field experience changed your perspective on teaching mathematics? 3) Tell me about one event during your field experience that had the greatest positive impact on your perspective of student mathematical thinking. Negative impact? 	5 minutes
Teaching	<ol style="list-style-type: none"> 4) When you talk with your friends or roommates, what do you say about yourself as a teacher? 5) How do you describe the act of teaching math to a friend or roommate? 6) Did you feel like a teacher when you were there at your field experience? Did you feel like a math teacher? If you have never felt like a math teacher then what would it take? 7) What do you think you are good at as a teacher? What are qualities or skills that you feel like you have developed that give you confidence? Based on your experience, what are some qualities or skills you would like to develop as a teacher? 8) Do you feel like you had to regulate your emotions while teaching? How did you do so? 	5 - 10 minutes
Math	<ol style="list-style-type: none"> 9) What is mathematics? 10) How does a student demonstrate mastery of a mathematical concept? 11) It's 10:00. You're teaching in a 4th grade math class. If I walk into your classroom, what am I going to see? <i>(Be prepared to build on what they say. Ideas: what are the norms, learning environment, who's doing the talking, who's responsible for the learning?)</i> 	5 – 10 minutes
Vision	<ol style="list-style-type: none"> 12) You previously described your ideal image of a mathematics teacher to be patient, challenges everyone, has high expectations, communicates well (explains things clearly). Do you still agree with this? What would you add to the list? 13) How close do you currently feel about achieving this vision of self as a teacher of mathematics? 14) What are you most looking forward to about teaching? 15) What are your greatest concerns/challenges about teaching? 	10 – 20 minutes
Narrative Analysis	<ol style="list-style-type: none"> 16) Look at this piece that you wrote in one of our sessions. Reading back over that what are your impressions? 17) Can you tell me more about that specific event and/or feeling? 18) Do you still feel the same? Is there something you would like to add? 19) Ask further question about event and/or writing 20) Repeat as needed with other narratives 	15 -20 minutes

Back in the beginning of the semester, I guess this is just relevant to math, but I would go and ask my mentor teacher and be like, oh yeah how are you teaching it? So I would make sure I would teach it the same way. But now I feel I've kind of found my independence a little bit more as a teacher. And progressed, and maybe, I would ask a student and I was like, oh okay how did Ms. H teach it to you. And they'll explain it. And I was, okay that's great. Let me show you how this way of do it too... And so not being afraid just to not step on Ms. H's toes but that I can (.) teach the kids different things too. And they can also teach me cause they had learned this whole strategy that I've never seen before and I was well this is great thanks for teaching it to me and not being afraid to be, oh wait, I don't know that. Don't talk to me about that because (.) I don't know. I felt in the beginning I just didn't know what my place was and so (.) I was more timid to take on those problems.

I think that she doesn't necessarily like us teaching them why things work. I think she just wants them to do it her way, the way that she taught them the first day for 5 minutes. And then (.) keep doing it and (.) fill out all the worksheet and be done with it and move on. And so I don't - it's kind of like I don't know if you'd say this but it's an awkward tension kind of.

A: Yeah.

E: When we tell how these things work. So I feel it's benefiting them. I see their growth though it - but then I don't know. I just feel it's somewhat - it's somewhat awkward.

A: Cause at the end of the day we're still guests in the classroom.

E: Yeah. But it hasn't stopped me from doing it, which is probably bad. I probably should (.) go to my mentor teacher a little bit more but I have a feeling that it's helping them a lot and they seem to have a better understanding of it after I leave. So.

It was very frustrating and I (.) I mean it great for assessing student work cause it shows (.) there's a lot to talk about. But then it's just super frustrating to know that once they've moved on that went completely in one ear and out the other. They can do it when they're being told what to do but on the CRCT isn't going to be like, here multiply fractions this is how you do it. Let's go. They're not going to have that structure. And so it's kind of just super disheartening that they were simple problems. And I went into them setting up, okay I want to see if they remember how to do all that accepting that some that some weren't going to make the mistake. But a lot of them made the mistakes. And so I was just kind of disheartened after taking that away. But I mean some did really well. That's where I'm concerned (.) is when they're not being exactly told what they're working on. They don't know what to do.

I think it's that awkward tension. I did the same thing. I would much rather get through 3 problems. They have a great understanding of it. And even if they don't finish it they can go do it for homework. But I feel she's much more about okay, let's get it done. The more practice you get the more you'll do it. Which is understandable. If you get more practice you're going to get better at it. But if you don't know why you're doing stuff. You're not going to get it through that practice and so. She can fly through a whole sheet in 15 minutes. And I can probably get through normally (.) for the word problems we got through two and a half in that 15 minutes. Which is obviously a long time to spend on it, but if it's going to be beneficial then even though they didn't really end up understanding division and multiplication (.) fractions. Um (.) at least I feel I helped them in a way.

I think that's a great point. I feel a lot of the times I try to (.) not necessarily fix things but improve upon them, but sometimes there (.) things are just going to have to be how they - going to be. And you have to adjust and make it work for your classroom. And sometimes that's not easy and sometimes that means that a kid is bouncing off the walls but (.) I guess you just have to learn to accept that. And your students need to learn that that's (.) not acceptable for everyone but this is just how it's going to be and so (.) um it might not always be fair, kind of. But I feel (.) I don't know. I feel (.) sometimes it's just the way the cookie is going to crumble.

Interview 3 Protocol - Kida

Interview 3 Goal: Have the participant reflect on their experiences and interpreted changes. Additionally, asked to tell more stories about their teaching experiences.

Class and Field Experience	<ol style="list-style-type: none"> 1) How do you feel about the overall field experience opportunity? 2) In what ways has your field experience changed your perspective on teaching mathematics? 3) Tell me about one event during your field experience that had the greatest positive impact on your perspective of student mathematical thinking. Negative impact? 	5 minutes
Teaching	<ol style="list-style-type: none"> 4) When you talk with your friends or roommates, what do you say about yourself as a teacher? 5) How do you describe the act of teaching math to a friend or roommate? 6) Did you feel like a teacher when you were there at your field experience? Did you feel like a math teacher? If you have never felt like a math teacher then what would it take? 7) What do you think you are good at as a teacher? What are qualities or skills that you feel like you have developed that give you confidence? Based on your experience, what are some qualities or skills you would like to develop as a teacher? 8) Do you feel like you had to regulate your emotions while teaching? How did you do so? 	5 - 10 minutes
Math	<ol style="list-style-type: none"> 9) What is mathematics? 10) How does a student demonstrate mastery of a mathematical concept? 11) It's 10:00. You're teaching in a 4th grade math class. If I walk into your classroom, what am I going to see? <i>(Be prepared to build on what they say. Ideas: what are the norms, learning environment, who's doing the talking, who's responsible for the learning?)</i> 	5 – 10 minutes
Vision	<ol style="list-style-type: none"> 12) You previously described your ideal image of a mathematics teacher to be constantly pursuing own education, create in students a healthy inquisitiveness, and be a model for the students. Do you still agree with this? What would you add to the list? 13) How close do you currently feel about achieving this vision of self as a teacher of mathematics? 14) What are you most looking forward to about teaching? 15) What are your greatest concerns/challenges about teaching? 	10 – 20 minutes
Narrative Analysis	<ol style="list-style-type: none"> 16) Look at this piece that you wrote in one of our sessions. Reading back over that what are your impressions? 17) Can you tell me more about that specific event and/or feeling? 18) Do you still feel the same? Is there something you would like to add? 19) Ask further question about event and/or writing 20) Repeat as needed with other narratives 	15 -20 minutes

I don't mind like learning the new way but it's - it's also hard just cause not everyone is on board if that makes sense. So like, um (.) like I would agree with many of the things she says but like in our own experience like I haven't necessarily seen this in my class but like from hearing different um people's personal experiences in Statham and what not. Like just because we're learning it, how to teach it. Doesn't mean that like practicing teachers are doing that. So it's hard cause like not everyone's on the same page.

The other day I was helping a student "build numbers" and used the language "ten sticks" and "one sticks." He pointed it out to me, asking, "What is a one stick?" I paused, confused and realized that I had misspoken. "Sorry, just ones." This interaction was a bit disconcerting. How many times do I use incorrect language but students don't point it out to me. If students don't know the correct language, they won't know to correct me. This was a reminder to be careful about what I say even in the most casual teaching scenarios.

Well at the same time there's a kid in our class who I've worked with a lot during the semester. And he also went off on - off his medicine but like just - it was his parent's choice because his parents are like well off. And so like that's frustrating cause it's not a financial issue. It's just like their choice. And so you can't do anything really to influence that as a teacher except say like, oh I don't think that's a great idea but like there's nothing really you can do and like from (.) like I came back a week and my teacher didn't even tell me that he was off his medicine, but it was very (inaudible). Cause like already he had trouble focusing and he doesn't really like act out. But it was just like, hey like (.) I'm like right in front of you. Like pay attention. And he could not focus for 30 seconds. So it's just frustrating cause it's like (.) there is so much else going on in the class like (.) I don't need that as well to be an additional factor. Like there's no way you can teach him and the other 20 students.

But at the same time I think like with this confidence that everyone's talking about like it has made me more confident like my role in the classroom at this stage. That like um (.) we like offer like a unique perspective um cause I know that like in pre-k and elementary school there have been things that we've like done with the kids where our teacher is like, oh I really like that. (Group agrees). Because they're kind of out of the (.) the game in a different sense. Um so.

Interview 3 Protocol - Sally

Interview 3 Goal: Have the participant reflect on their experiences and interpreted changes. Additionally, asked to tell more stories about their teaching experiences.

Class and Field Experience	<ol style="list-style-type: none"> 1) How do you feel about the overall field experience opportunity? 2) In what ways has your field experience changed your perspective on teaching mathematics? 3) Tell me about one event during your field experience that had the greatest positive impact on your perspective of student mathematical thinking. Negative impact? 	5 minutes
Teaching	<ol style="list-style-type: none"> 4) When you talk with your friends or roommates, what do you say about yourself as a teacher? 5) How do you describe the act of teaching math to a friend or roommate? 6) Did you feel like a teacher when you were there at your field experience? Did you feel like a math teacher? If you have never felt like a math teacher then what would it take? 7) What do you think you are good at as a teacher? What are qualities or skills that you feel like you have developed that give you confidence? Based on your experience, what are some qualities or skills you would like to develop as a teacher? 8) Do you feel like you had to regulate your emotions while teaching? How did you do so? 	5 - 10 minutes
Math	<ol style="list-style-type: none"> 9) What is mathematics? 10) How does a student demonstrate mastery of a mathematical concept? 11) It's 10:00. You're teaching in a 4th grade math class. If I walk into your classroom, what am I going to see? <i>(Be prepared to build on what they say. Ideas: what are the norms, learning environment, who's doing the talking, who's responsible for the learning?)</i> 	5 – 10 minutes
Vision	<ol style="list-style-type: none"> 12) You previously described your ideal image of a mathematics teacher to be patient, challenges everyone, has high expectations, communicates well (explains things clearly). Do you still agree with this? What would you add to the list? 13) How close do you currently feel about achieving this vision of self as a teacher of mathematics? 14) What are you most looking forward to about teaching? 15) What are your greatest concerns/challenges about teaching? 	10 – 20 minutes
Narrative Analysis	<ol style="list-style-type: none"> 16) Look at this piece that you wrote in one of our sessions. Reading back over that what are your impressions? 17) Can you tell me more about that specific event and/or feeling? 18) Do you still feel the same? Is there something you would like to add? 19) Ask further question about event and/or writing 20) Repeat as needed with other narratives 	15 -20 minutes

She's an actual teacher. She's a hired person. I'm just a teacher intern. So yeah, she has more power than I do but I'm going off the mentor teacher and then the kids. I don't know it's just a very tough situation. And the teacher knows that it's a tough situation but she's also not willing to - or it's not that she's not willing to. She and the parapro talked but - the parapro is very strict and set in her ways. So there's not much room to compromise. But it's just weird to be in that classroom. When she leaves, we love it. We love when she's not here. But when she's there, we're kind of, okay. And she does help when they work in small groups but (.) in general not so much.

I really encouraged them to simplify all the fractions before they get started on the problem cause then it makes it easier numbers for them. And they just loved that and thought that it made so much more sense. And by the end of all of this they just loved fractions. They're like, oh my gosh, this is so much fun. Both of those two - first two classes thought that. Then the 3rd class that we had was (.) a medium class. Not as high or low as the other two classes. And they were just so confused. They had no idea what we were saying. And we would draw pictures and do (.) I mean we did it with pictures and diagrams. And every different way that we could think of. All 4 teachers in the room did. And (.) the kids were just like, no that makes no sense to us whatsoever. It was very interesting cause it was the same lesson and in one, just went so well. And the other just crashed and burned. They're like, fractions are stupid. This makes no sense. And I don't know if it was one student that got frustrated and the entire class followed. But the entire class (.) said, this is the worst thing ever.

The one that sticks out to me the most from this semester is (.) one time a student came up to me and was like, I'm only - and he had been a problem child all day. He was like, I'm only acting like this because I can't take my medicine. So I mentioned that to the teacher and I was like, yeah he said it's because he can't take his medicine. And the teacher was like, yeah his mom and I had a meeting about it. Their insurance ran out. So they can't afford his medication anymore. I mean he knows and he was (.) definitely acting out. But he was like, I can't help it. I need - I feel like I can't control it. And that was just something like - I mean some of the kids came to school smelling like cigarettes and drugs and just (.) you know that they've got horrible family lives. And they - you can't control that all they can do is control that 8 hours that you have them in the classroom.

Interview 4 (Follow Up #1) Protocol

Interview 4 Goal: Have the participant reflect on their experiences and interpreted changes. Additionally, asked to tell more stories about their teaching experiences.

Class and Field Experience	1) Can you tell me about your just completed field experience? 2) What surprised you most this semester? 3) How did this experience compare to your other field experiences? 4) How was it working with a partner? 5) What was the best experience between you and your mentor teacher? 6) What was the high point when working with a student during math class? 7) What was a low point when working with a student during math class? 8) Did you ever interact with parents? What was that like?	5 – 10 minutes
Teaching	9) What skills or abilities do you still think you need to develop as a math teacher? 10) Considering your previous field experiences, what goals have you set for yourself during student teaching? What do you want to accomplish during student teaching as a math teacher? 11) Do you think your program has prepared you well up to this point? Is there anything you think your program could have done to improve your preparation?	5 - 10 minutes
Math	12) What did it mean to students to do mathematics in the class you were in? Is this what you want students to think in your own class? 13) It's 10:00. You're teaching in a 4th grade math class. If I walk into your classroom, what am I going to see? <i>(Be prepared to build on what they say. Ideas: what are the norms, learning environment, who's doing the talking, who's responsible for the learning?)</i>	5 – 10 minutes
Vision	14) What norms do you want to set for your math class? 15) What are you most looking forward to about student teaching? 16) What are your greatest concerns/challenges about student teaching?	5 – 10 minutes
Profile Overview	Participant will be given profile written from previous interview data. Participant will be asked to share feedback on written profile.	15-20 minutes

APPENDIX C

WRITING PROMPTS

Writing Prompt 1

Sept. 10, 2014

Write a narrative (story) that describes a powerful moment that you have had during your field placement's math lessons. Describe the setting, the actors, the conflict, and resolution. Make sure to describe how you felt during the situation

Writing Prompt 2

Oct. 6, 2014

Write a narrative(s) that describe a moment or moments that produced a positive response (good feeling). What was the experience like? Who was there and how were they involved in the experience? Make sure to describe how you thought and felt about being in the experience.

Also write a narrative(s) that describe a moment or moments that produced a negative response (bad feeling). What was the experience like? Who was there and how were they involved in the experience? Make sure to describe how you thought and felt about being in the experience.

Writing Prompt 3

Nov. 14, 2014

Describe an activity or strategy that you enacted that went *really well* (very successful) in a math period. Describe the strategy or activity and how you thought about enacting it? Did the student(s) respond positively or negatively? How did your mentor teacher respond? How did you feel about the experience thereafter?

Describe an activity or strategy that you enacted that went *really badly* (e.g. crashed and burned) in a math period. Describe the strategy or activity and how you thought about enacting it? Did the student(s) respond positively or negatively? How did your mentor teacher respond? How did you feel about the experience thereafter?

Writing Prompt 4

Dec. 11, 2014

Write about the ways you feel you have progressed as a teacher of mathematics this semester. Describe where you started and where you feel you currently are as a teacher of mathematics. Additionally, describe how certain experiences during your field experience or coursework influenced you to think differently about mathematics education. What was a positive critical experience that influenced the greatest progression? What about this event was so powerful?

APPENDIX D

PORTRAITS OF PARTICIPANTS

Anastasia

Anastasia's identity as a teacher-of-mathematics is centered on her desire for students to learn mathematics in a conceptual manner. This was brought to light by the ways in which Anastasia desired conceptual understanding of mathematical topics, wanted to work on her ability to communicate conceptual models, and how she evaluated her mentor teacher's practice based on the students learning conceptually. Additionally, Anastasia had positive and negative feelings depending on whether or not conceptual understanding was achieved and/or communicated:

"And I just worked it out conceptually for him. And he was wide-eyed. That's why it ends up being four and one-fourth... Seeing him succeed and then doing a couple more examples with him and seeing him being able to do the worksheet and get the right answer and then the next day or the next week still being able to do that and build upon that. *I mean that is what changed – made it such a priority to me. To do the conceptual with kids*" (Anastasia, Int. 3).

"So I think that that's been mine and Elsa's biggest frustration but also the biggest thing that we have overcome... cause we will just sit in the back of the classroom and just *shudder at what she teaches*. It's like they're never going to get this" (Anastasia, Int. 1).

"I guess my concern is just how in the world are you suppose to you know communicate what you've been taught all these years. *All this deeper understanding you've been looking for.*" (Anastasia, Int. 1)

"I did not know off the top of my head how to do the scaffolding method. And that is a method that I know works. I know it helps students to see it broken down on the side. But I did not know how to do that. So I was just doing the standard algorithm with them. And *that felt so frustrating* to me because I knew that's not conceptual (Anastasia, Int. 2)."

Anastasia's centrality with conceptual understanding is also the focus point of a critical event she shares multiple times. The event involves her showing a student how to convert an improper fraction to a mixed number. The student was not capable of using the "trick" that the mentor teacher had shown the class. Anastasia worked with the student one-on-one and he was able to not only complete the worksheet but retained his understanding for the coming weeks. This moment proved to be important to Anastasia because it showed her how empowering conceptual understanding could be. However, the students not understanding the relationship between conceptual and procedural knowledge perturbed her. "They did not even put two and two together... So I want them to realize they [conceptual and procedural knowledge] are not two separate concepts. They go together, hand in hand" (Int. 3).

In terms of Anastasia becoming a teacher, she was concerned about making difficult decisions that would impact her mathematics teaching. In particular, Anastasia had two large concerns that arose many times over the course of the interviews. The first was her concern with

differentiation. As she continued with her field experience she questioned how differentiation was even possible:

“Just how in the world are you suppose to differentiate for all - for all the students who maybe not even on a third grade level and their suppose to be on a 5th grade level. And they can do the math but then you understand they are just guessing. *That's what my biggest concern is*” (Anastasia, Int. 1).

“So that is the thing that I think field experiences add more than anything is that you have to have differentiation. And you have to know how to do it and *how to be confident in it*” (Anastasia, Int. 3).

The second major concern for Anastasia was learning which corners to cut. The large amount of material that needed to be covered clashed with the time it takes to teach students conceptually. Anastasia became aware of the difficult decisions that teachers make when it comes to selecting which topics are more important to invest time in.

“You have to cut corners sometimes... There is no way that you would be able to give every single student in the classroom a critical understanding of every single math concept” (Anastasia, Int. 2).

“There is just no way you can teach everything as fully as you would like. It is just impossible. You would have to go to school all the time. And that is just not going to happen. *And so that is definitely in my mind*. Every single day, am I going to know what to cut and what to emphasize. I think that is not something you once and for all decide like standard blah blah blah. That is going to be one that always gets addressed. I think you have to be dynamic with your students” (Anastasia, Int. 3).”

Anastasia also felt stifled when it came to teaching conceptually to students because of her position in the classroom. Anastasia felt like she was “doing something under the radar” (Anastasia, Int. 3) and often was concerned with stepping on the teacher’s toes (Int. 2). Although, Anastasia admits that much of the awkward tension between her and her mentor teacher was because of Anastasia’s desire to teach conceptually.

“When something is deeply explained to me and I get to practice it on my own, I am going to know the content better. But that is still a very legitimate - *like I did not want the kids to get in trouble. I did not want to get in trouble myself* because they had not finished the worksheet. I feel like that is a very telling analogy of how my career as a teacher is going to be. I do not want my kids to get in trouble for not making it through the whole curriculum. I do not want to get myself in trouble. But at the same time, I want them to have deep and thorough understandings of things” (Anastasia, Int. 3).

“A lot of times I would sit down with her and explain why, you know, this is the way I think through it. This is why I do not necessarily like the trick. And she would be like, oh that's really really interesting. But then teach her way. And that is fine. *I am not expecting for her to, you know, listen to a block 2 and change her entire approach to teaching mathematics*. Of course not. But at the same time there was tension for sure” (Anastasia, Int. 3).

In the end, Anastasia made the decision to do what is best for the students. This feeling of what is best for the students provided Anastasia the motivation needed to creatively get around the limitations she felt.

“Well I've kind of just made up my mind that I'm going to do what's best for the kids, obviously within her classroom. *I'm not going to violate her – it is her classroom. Period. But I'll supplement*” (Anastasia, Int. 2).

Anastasia justifies her actions with the fact that she is currently learning about the same content in her methods course.

Elsa

Elizabeth's identity as a teacher-of-mathematics is centered on her desire to demonstrate to students multiple ways of doing mathematics. In particular, she wants to show students ways of doing mathematics that also explains to them the "why" behind what they do. One way this came to light was the ways that she evaluated her mentor teacher's practice:

- I'm like, well if you are not understanding it *lets try to show you why it is working. So then maybe you can use this strategy to help you* but you're going to know it is right because you can check it. Or because *you know it's more than just like the trick* (Int. 2)
- She was teaching them like if you have like 3 and two-fifths you can multiply the 5 by the 3 and then add the 2. *And I was like, yes that works, but none of them understood why it worked.* And so, kind of things like that. *I would teach them why it all works. And once they could master how, why it worked and the concepts behind it, then teach them the tricks* (Int. 2).
- My mentor teacher did it one way and like the one way was the way to go. And so I think I totally - *that made me want to do the opposite* (Int. 3).
- I found myself getting (sighs) *aggravated when I was seeing a lesson being taught because I was - because it was taught so one-way street.* That I was like, well obviously these kids aren't going to - *I would get frustrated because I was like these kids aren't going to get that* (Int. 3).

Elizabeth also valued watching students' progress, and the lack of opportunity given to students to progress frustrated Elizabeth because it is one reason that she choose to become a teacher, "I really love kids. And I love working with them. And *I love like seeing their progress* and knowing that like you're making a difference in their lives (Int. 1)."

- *I think if we were there everyday it would be better cause I could see they're progress.* But I feel like I miss those chunks from when they move from one thing to another (Int. 2).
- I'm really just thinking of success as not how kids do but their progress they make throughout the year (Int. 1).
- I mean I do still think that it helped - it really benefits the students *and I think I saw their growth.* So I probably would have done it again (Int. 3)
- *It makes me mad* because I feel these kids are trying. A lot of them are really trying hard. *And then they are just not going to get the same experience, and that is not fair* that the school system decides to do it that way. And they are not going to get the same education. Then they are going to go and struggle in 6th grade when they get there (Int. 2).

Elizabeth was most concerned with two things. The first was what she referred to as "knowing." We've interpreted this as being her concern with not only having a deep understanding of the content herself, but knowing how to interpret standards and knowing what to teach. This also includes her knowing how to handle a classroom. Although she does not foresee herself being able to truly know how to do this until she is on her own:

- Being able to really get into the standards and what I would have to teach and really knowing what I would be teaching because I can I feel I can by now put together a good lesson. And we've read so many things about like management. I know management is so hard and that it's going to be something that everyone struggles with their first year. So I would definitely need to work on that but I feel like you can not do that until you are on your own because other people's management skills might work really well but it just depends on the class. But yeah, kind of just really knowing of what I would be teaching. (Int. 3)

It seemed that when Elizabeth was able to fill in her "knowing" gaps, she gained both

independence and confidence:

- Being more comfortable and *knowing what I'm learning to teach* these students - maybe I did it a different way back in elementary school then they did it. Their way is not better than my way or my way is not better than their way, but we can all learn from each other has helped me do that and *reinforcing the learnings that were like we are doing in class, has helped me to have the confidence to teach them that* (Int. 2).
- I think learning in that EMAT class last semester helped me find it [independence] a lot because we tried so many different strategies and talked about ways that the students could learn. And so knowing that something worked and then applying it, and I was like, wait this is actually really great. And it worked for the students and they understood it. *Really helped me to find my independence* (Int. 3).
- So I think I just really need to understand where the students are coming from. And giving them that curri - finding the curriculum and making it - *so I would know [it] inside and out. So I can be comfortable delivering it to them* (Int. 3).

Elizabeth's second concern was that after she starts teaching she will turn her back on the teaching practices that are best for students. In particular, she describes the fear she has in teaching like her mentor teacher.

- She definitely just taught them [students] one way the first day of the topic. And it was 5 minutes, and then they did worksheets on it to practice. I definitely do not think that is the way I plan on doing it. *Again, big fear that that is how I'm actually going to do it* (Int. 3).
- *My biggest fear is that I will not be able to do that and I will get really overwhelmed.* And so I will end up going just more like, all right. This lesson we have to do. This is how we are going to get it done and got to move on. And like not taking those needs for individual students and not digging deeper into that. Because I know there is a lot of times where there is not time for that. *But I am concerned that I'm just going to lose that all together because it is hard* (Int. 3).

Finally, Elizabeth claims she will only feel like a teacher if she is given the authority of a teacher. This was described in two ways. The first was Elizabeth having the authority over a lesson. The second was having authority over the students.

- I definitely think that like as simple as it is, *teaching a lesson would make me feel more like a teacher.* And not having, obviously I'll have my mentor teacher in there in the fourth semester - student teacher in there, but *I feel like just having all students be like all eyes on you and to you deliver that information really feels like a teacher.* (Int. 3)
- Just like to know that they [students] would be able *to listen to me without having to look to the other teacher*, would make me *feel much more gratified* in what I would do (Int. 3).
- I would plan on having them trying to be very controlled and not chaotic because the chaos really stresses me out...So like establishing that "activity" of control and - not control like calm ways to do things (Int. 3).

Kida

Kida's identity centered on many aspects of teaching and learning mathematics. One of these was her desire to change students' dispositions toward mathematics. She discussed various teacher strategies that would be helpful for influencing students' perceptions of mathematics. To Kida making the mathematics understandable, communicating appropriately, engaging students and connecting the mathematics to the students lives would aid in changing perceptions. However, Kida recognizes this is difficult to do.

- I think as a teacher it's scary especially in math because so many people hate it these days. *To make it relevant and making it exciting but also portraying it in an understandable way.* Cause that was another thing, one of my - the teacher in 7th grade her - I really disliked. She would come up with these examples that vaguely related or just like weren't really enriching our understanding. They were just making it more confusing. So I never want to do that but that's it's hard to, you know make it (.) exciting but also helpful (Int. 1)
- We talked about all types of manipulates last semester and even bringing in stuff from outside and judging whether or not it is a good use as a manipulative and what not um which just align the kids to *engage more that way.* *So it's not like, uh (disgruntled sound) math. It can be a positive experience* (Int. 1).
- I think that is a really good just because *you tie emotions with math too.* People have really strong emotions about math but they do not necessarily talk about them, especially in elementary" (Int. 2)
- I've had math teachers who I don't - who I dislike because it's very like book, worksheet, book, worksheet. There is not a lot of hands-on *this is where I'm using this; this is how it is useful type stuff.* More like real world examples even (Int. 2).
- I think that some students feel it [math] is not useful, and it is just kind of a foreign language, which sometimes rightly so cause like *I said some teachers teach it without any context. So they do not see the usefulness of it. So not only do they not understand it but its like there is no reason for me to understand it* (Int. 2).
- And then also just *being very clear* about how to use the visual objects in making sure those reinforce whatever we're learning. *Instead of making it more confusing* (Int. 3)
- Regardless I'll always remember my work with him because it was proof to me that *I can make a difference in children's feelings about math,* and just feelings about different subjects in education (Int. 3).
- I guess *just students being engaged* and how I've seen my teacher now do it. It is writing on the board or writing on chart paper, and having that as a reference for later. I guess them listening to me but also *listening to the point that they're engaged* in asking questions cause I don't want it to ever just be myself talking and not knowing whether or not *they're grasping it* (Int. 3).

Kida's identity as a teacher-of-mathematics also focused on her use of the appropriate language and incorporating it in her mathematics practice. This might be connected to her 7th grade experience with a mathematics teacher that did not communicate clearly the material. Specifically, her attempts to make the mathematics relevant only made learning mathematics more confusing.

- So just *adapting the right language and putting that into practice.* And being held accountable if we're not using the right language. Cause it is so easy to fall back to what you learned for the 12 years you were in grade school (Int. 1)

- I feel like I have the ability to, but like I said *it kind of scares me the new language and new methods*. And um, these kids that I'll be teaching having started from a totally different curriculum than I did (Int. 1).
- We definitely want to do what's best for the students. I'm learning - I guess *I'm unlearning and then learning how to communicate as a math teacher* (Int. 2)
- I felt like *I progressed as a teacher because I had to thoughtfully think of how I worded things...* So yeah that was just a big *learning experience about watching my language as in math language* (Int. 2).
- So being careful as a future teacher about *the language that I use associated with teaching math* (Int. 3)

In this semester, Kida became concerned with the disparity between her program and the experiences out on the field. Kida was also aware of the differences between what the administration wanted and what the teachers thought was best for students. Altogether, this frustrated Kida and made her unsure of the practicality of the content in some of her coursework (though not her math classes).

- Not everyone is on board if that makes sense. So I would agree with many of the things she says but in our own experience I have not necessarily seen this in my class... just because we are learning it, how to teach it. *Does not mean that practicing teachers are doing that. So it is hard because not everyone is on the same page* (Int. 2).
- *I think there is definitely a disequilibrium between what we are told to do and what is feasible*. I've observed this a lot. They just - how like - I feel people who are higher up forget ever having taught. It is like once you go passed a certain point, it is just like you forget actually being a teacher. And you are putting all these regulations and have to's on the teachers' plate, but not realizing if it's even feasible (Int. 2).
- At the same time I feel some of my professors, not Dr. W, *fail to acknowledge the fact that the schools that we may teach at are not perfect realities*. Sometimes I will bring that up in class. Like I know you say that you do not like this technique but the fact is that this school is implementing that so we have to do it whether or not we do not like it. And they are just kind of like, okay and do not really address it... It is just like - puts you at a hard place because nobodies winning in that situation (Int. 2).
- It is just frustrating sometimes because I feel, not necessarily in math, but sometimes *I learn things that I know will not be beneficial later on because I am seeing the reality*. So it is like we are pretending this is actually going to work kind of thing (Int. 2)

Sally

Sally's identity as a teacher-of-mathematics is centered on two main desires. The first is her desire for students to develop a positive productive disposition toward mathematics. This means that Sally wants students to see mathematics as useful and have positive feelings about doing mathematics. From Sally's perspective students need to be motivated to do mathematics, and it is one job of the teacher to keep students engaged in the mathematics.

- So getting kids to *see the importance of math is something that's very interesting to me* (Int. 1)
- *Math is one of those subjects the kids have to be motivated.* You can force students to read. You can force them to listen to science, social studies and learn about that. *In math they have to be actively engaged the entire time in order to learn. So you got to be up there* (Int. 1)
- *We need to find a way to get more people to like it.* And I mean it's a reality like I have a budget. I do math everyday when I think, okay, well I'm really hungry. I have this much money to spend on food this week before I have to go home and say I'm sorry mom and dad but I have nothing else to do. So its kind of thing - or you have to make choices based on that too. I'm a college student, I'm not a math major or anything but I have math everyday. I look at my gas tank and think, hmm I get 30 miles a gallon and I have to drive this far that's going to cost me about this much. Do I really want to go there? So I mean different, *all sorts of different ways you can use it* (Int. 1)
- *If they were having that kind of experience in a math class that would turn them off from math for a long long time.* And then you get to middle school and it's that much harder and the teachers care a little bit less (Int. 2)
- I'm very good at real world applications. Like, okay if we are learning about this, well let us think about it in a word problem. And then we'd look at the world problem and they are like, wait those kind of things happen everyday. So different things like - *it makes students understand why it's important* (Int. 3)
- I know the content very well, and I'm enthusiastic about it, which I think is one reason *why they get so excited* (Int. 3)

Sally's desire to have student's develop a productive disposition in mathematics has influenced her decisions about students doing mathematics. This includes the expectations set by teachers for students. For example, Sally believes it is "really dumb" to have students do overly complicated steps to solve a problem (Int. 1) when they should be expected to know their multiplication facts. This also influenced Sally to teach students faster ways of doing mathematics.

- Cause that is a lot of steps. *And for 5th grade I feel like they should be able to do a little bit more than that.* So I was like, well instead of just doing one at a time. Why don't you do it up to 9 times? Why don't we think about it? Hmmm. 50 times - or two groups of 50 is going to be about a 100. So that kind of close to 100. Why don't we try and take away 2 groups of 51? So two groups of 50 is 100, two groups of 51 is going to be 100 plus 1 plus 1. So that's a 102. So why don't we do 120 minus 102? Oh okay we only have 8 left over so we know it goes in two times. *Just showing them kind of an easier way* (Int. 1)
- They [Students] will show me one-way, and I'm like, oh well what about this. And they will be like, wait we can actually do that. And *I'll teach them these shortcuts and different things that I've learned over the years* (Int. 2)

The second desire that Sally's identity as a teacher-of-mathematics centers on is her goal to be an administrator. This influenced Sally to focus on the social dynamics of the classrooms and schools that she was in. In particular, Sally paid attention to the relationships between the people she met at schools.

- *I want to work in administration. That's the grand plan. And go teach for 3 years. You can't get your Ph.D. until you teach for 3 years. And then get my Ph.D. in educational administration and then work my way up because I think that everybody that runs the schools are extremely stupid (Int. 1)*
- *You're going to get all sorts of different people that you work with. That's one big thing that we're learning. And it's funny to see how the different the teacher relationships... So that's really really interesting. The teacher dynamics. And then the student dynamics. You're going to get all sorts of kids. And we were work with different classes at different times too. And you really have so many different things. (Int. 2)*
- *My end goal is to work in administration and stuff. So it's very interesting to see all the different things. There's so much collaboration (Int. 3)*
- *I'm very interested in like who the students are and their backgrounds and what they like and different things like that cause I feel like the more you know your students the better your classroom will run. When everyone feels comfortable (Int. 3)*

The focus on social dynamics also influenced Sally to want to develop strong relationships with the students. She was proud of the ways that she made students excited and motivated them to learn (see small group meetings). However, she also became frustrated when the opportunity to build relations was stifled. This also caused Sally to not feel like a teacher.

- *I'm the 3rd wheel... And then all of a sudden there is no real way for me to insert myself because the student teacher is the priority. Cause and that's what she said. She's like, the student teacher like we need to get her graduated (Int. 3)*
- *I mean those kids absolutely adore me. And it bothers the student teacher that they get more excited when I'm there (Int. 3)*
- *but it's hard being the (sighs) the very very very bottom of the totem pole when there is 6 adults in the classroom (Int. 3)*
- *Last semester I mean the kids - I mean they would only have - they would have two of us and then their teacher. And they would very much identify us as teachers. And this semester the kids do identify me as Ms. H (Sally) and everything - like saying and they think that I'm a teacher and they'll ask me questions. And they'll ask me about rules and stuff and that's great but I don't feel like an authority figure as much (Int. 3).*

Finally, Sally emphasized that learning to teach happens in the field.

- *I feel like it needs, it's something that we kind of have to learn more in the field (Int. 1).*
- *It's [Teaching math] a lot easier to learn when we actually have classroom experiences (Int. 2).*

APPENDIX E

ANASTASIA'S BIOGRAPHY

I hope that when I walk into my classroom for the first time, I hope that I have absolutely no doubt about whether or not I belong there, whether or not I can make it there.

- Anastasia (Int. 3, 0:39:24)

In this chapter, I will be providing Anastasia's background and narrating her experience at Amos Moses Elementary. From there, I describe the characteristics of Anastasia's emotional geographies (Hargreaves, 2000, 2001a, 2001b). I conclude the chapter with a description of how Anastasia's emotional geographies influenced her perspective of her teacher education program and how Anastasia's faith in her teacher education program provided the support needed to continue her identity formation as a teacher-of-mathematics.

Biography of Anastasia

Anastasia grew up in the suburbs of a metropolitan city in the southeastern United States. From a young age she knew she wanted to be a teacher. "I always had known that I wanted to be a teacher. I was that kid that had like the giant white board. I played school with my stuffed animals and everything" (Anastasia, Int. 1, 0:00:00)². Positioning herself in this way, Anastasia commented on wanting to be a teacher to be a positive influence in students' lives. This desire grew out of her experiences doing missionary work in other countries and as a volunteer working with low SES students at the university she attended. The expectations by the community members for the children influenced Anastasia's desire to be a positive force in the students' lives.

I have been on a couple of trips out of the country and just kids that—they have never been told that they can succeed in something. And it just blows my mind. I am like you are so smart. You can do this. Just working with kids in [College Town] that they are expected to just drop out of high school and raise a chicken farm. That is what some of

² Transcript excerpts have been modified for readability

them have been told. And so I just want to be the teacher that makes them just consider even for just a second. I can stay in school. I can be something more than what is expected of me because my teachers were always like that for me. So I think I just want to inspire success for my students one day. (Anastasia, Int. 1, 0:13:22)

She was perturbed by her interpretation of the expectations of the students she worked with. This conflicted with Anastasia's own upbringing where community members set the expectation of college for her at an early age. "I remember people from the time I was in 5th grade were asking me, what college do you want to go to? ... I knew what was expected of me as far as my education" (Anastasia, Int. 1, 0:08:21). Anastasia connected her own experiences with the interpretation of students' expectations and concluded, as a teacher, she could be influential in the students' perception of future selves.

She was the younger of two in the family and often found herself being a "typical little sister" wanting to emulate what her older sister was learning. Anastasia fondly recalled being fascinated with learning mathematics before starting school.

[Sister] was in third or fourth grade and that is when they start drilling multiplication and addition facts into your head... I was like I want to do it. So I remember being pre-school age and doing four plus four and stuff like that and just being fascinated by it. (Anastasia, Int. 1, 0:04:48)

Her sister working on mathematics at home influenced Anastasia's disposition toward mathematics. Additionally, Anastasia conceptualized herself early on as being more into mathematics because her sister was "really into reading and stuff. So I felt like math was my thing growing up" (Anastasia, Int. 1, 0:04:48). This identity as a doer-of-mathematics was legitimized by her family, in particular her mother who would highly value Anastasia's computational ability in front of others:

I remember my mom would show off in front of people. She'd be like, 'okay Anastasia come here, 40 plus 20 plus 30 plus 16 minus this,' so on. And I would just love it. I would just like puff myself up and be like, 'Mom let me tell you the answer.' (Anastasia, Int. 1, 0:04:48)

Anastasia's parents also played an important role in her conceptualization as capable of doing mathematics. Though neither of Anastasia's parents worked in education, they were heavily involved at the schools she attended and in her learning of mathematics. For example, Anastasia described her mother's reaction when she was failing a class: "It was never a question about if I was going to pass. It was what are we going to do to make sure we pass. It was always a family thing" (Anastasia, Int. 1, 0:04:48). For Anastasia, participating as a family member in her home required doing mathematics and working toward her education.

The elementary and middle schools Anastasia attended also emphasized mathematics and aided in her formation as a doer-of-mathematics. Anastasia recalled the gifted program focused on mathematics more so than other subjects. She described the existence of a program that pushed students to learn mathematics facts and work on procedural fluency in order to attain points for prizes. In middle school, Anastasia claimed mathematics was attached to the social status of the individual. "I kind of felt that math was correlated with your intelligence in general. Like if you could rattle off multiplication facts you were just a little bit cooler than the rest of your class. " (Anastasia, Int. 1, 0:06:34). Because being able to succeed in mathematics held such high value among her peers, Anastasia was proud of being selected to be a member of her schools mathematics team. "I was the only girl on it [mathematics team], and it was such a big deal" (Anastasia, Int. 1, 0:06:34). She also stressed how being the winner of an "around the world game" raised the status of an individual. For Anastasia her identity as a successful doer-of-mathematics was emphasized not only at home but also at school.

Anastasia described her peak mathematical experience occurring during middle school when she participated as the only girl on the mathematics team. She was "full of pride" for being accepted because the mathematics team was made up of only four students from the whole grade.

At one of the competitions Anastasia attended, she had a powerful defining moment or turning point (Erikson, 1968) about what it meant to do mathematics. Anastasia was given a formula sheet and a series of mathematical questions for her to answer. The problems were challenging but their difficulty only further influenced her disposition positively.

And looking at the formulas I was like, yeah I was right. I do not know what half of these mean. But once we got the questions, and they were just so hard, but it was a good kind of hard, you know... Like when I was in the general education classes I knew I was going to be able to do the math that I was given. I was going to be able to answer the questions. So seeing something that I was going to have to really try really hard. I was like, it was weird saying that I was enjoying not being able to get the answer but it was like, I enjoyed having that challenge prompted to me. And I enjoyed having to actually like really put my mind to what I was doing. And getting – like when I got the answers I actually got them right it was like just such a feeling of pride. And I was like this is what being math, like a math learner is all about. Because it wasn't just like what is four 'x' plus seven equal twelve. It was not like solve for x. It was like if this and this and this and there was so many different aspects to each question and you had to think like such strategically through each one. I loved it. It was so enjoyable. (Anastasia, Int. 1, 0:09:51)

From this narrative, Anastasia shared how she became aware of what it meant to learn and do mathematics. This experience was powerful to Anastasia because she was able to break through her former understanding of what mathematics was, which she had constructed from her school mathematics experiences. This turning point reflects Anastasia's shift in her purpose behind doing and learning mathematics. She experienced challenging and satisfying mathematics work. Overall this event influenced Anastasia to develop a deeper meaning of mathematics learning and teaching.

Anastasia at Amos Moses Elementary Part I: Existing in the Gray Space

Anastasia was assigned to Ms. Blaileen's 5th grade class at Amos Moses Elementary. Ms. Blaileen taught the early intervention program (EIP) class for students who scored near passing on the previous years state standardized test. Ms. Blaileen had 20 or more years of experience, but this was her first year teaching the EIP class at Amos Moses Elementary. Anastasia described

Ms. Blaileen's class as only focused on procedural understanding. This perturbed Anastasia early on during her practicum experience. In her first writing session, Anastasia wrote about a lesson on solving for a variable. Ms. Blaileen's focus on the solution instead of the students reasoning left Anastasia questioning Ms. Blaileen's decision-making processes.

My first impression is how quickly the teacher was flying through the answers. As far as I could tell, most of the kids were getting most of the correct answers - but I felt like more time should've been spent on explaining how the students had arrived at these answers. I understand the teacher most likely feels an insane amount of pressure to cover everything in math, especially in the Early Intervention Class where I've been placed. ... I think that these students especially need to understand increasingly complex math concepts - like variables in equations - with more critical thinking. If I was the teacher, I think it would've been worthwhile to find out which questions many students were getting wrong...and why. Were any of the students missing some fundamental knowledge needed for these algebraic problems? Were any students solving the problems strictly by using a memorized algorithm? If so, they may not fully understand what they're doing and why - which could very likely cause problems as they move into more difficult mathematical concepts using algebra. (Anastasia, WP1, Lines 6-10; 12-19)

Anastasia focused her writing on Ms. Blaileen's decision to fly through the answers and not show any interest in the students' thinking. This conflicted with Anastasia's meaning of learning mathematics she had developed as a student. Furthermore, Anastasia demonstrated her value for student thinking and being aware of that as a teacher-of-mathematics.

Anastasia defended her criticism of Ms. Blaileen's focus on procedural understanding during the first small group meeting by referring to what she had learned in her coursework.

I just thought that was really interesting cause in all of our classes we talk about critical understanding and not just rote memorization. And I felt like that was a terrible example because it was literally just if it's addition, subtract. If it is subtraction, add, so on and so forth. Just do the opposite. Any time she asked a question it was just do the opposite operation. (Anastasia, SG1, 0:14:31)

This was not the only time that Anastasia emphasized conceptual over procedural understanding. In the first interview, Anastasia described a critical experience she had working one-on-one with a student during her first semester practicum experience. Anastasia become aware of the

different ways of reasoning the child had developed over time. In particular, Anastasia highlighted how the child was able to explain why. To her this meant the student "was starting to put a lot of reason into the way she solved her problems... And it was so impressive. And just seeing that progress was a really proud moment for me and her" (Anastasia, Int. 1, 0:11:42).

From the beginning of her practicum experience, Anastasia highly valued students' conceptual understanding. This remained consistent through all of the writing sessions:

I gave them a fraction like $30/80$. Every student in my group told me that the simplified version of this fraction was $3/8$ because you just scratch out the zeros. This sparked my attention so I asked them to simplify $30/100$... as I expected (feared) they told me that the simplified fraction was $3/1$. I was so frustrated that whoever had taught them the "just scratch out the zeros" trick hadn't done anything to check that they actually had any kind of conceptual understanding of WHY this trick worked. (Anastasia, WP2, Lines 7–13)

I remember several instances when I didn't even wait for them to read the whole problem before saying – "Just multiply the whole number by the improper fraction. We've done 2 of these problems already, so you should know which numbers to be multiplying." I always told myself I'd never say this but I didn't want to let down my mentor teacher, so my priority was just to get as many done as possible. As embarrassing as it is, I don't think that this activity helped the students at all. (Anastasia, WP3, Lines 31–37)

I saw so many things at [Amos Moses] that reinforced just how necessary it is to teach students to solve problems critically and not simply by a memorized algorithm. Even though it seems like you might be saving time by laying out exactly how to do a cookie-cutter problem then sending the students to do 24 more of the same problem on a worksheet, you are really just going to be spending more time in the long run fixing the "rules that expire" and re-teaching how that simple algorithm fits into a mathematics foundation as a whole. (Anastasia, WP4, Lines 12–18)

In writing prompt 2 (WP2) Anastasia described how she made the conjecture the students she was working with only had a procedural understanding of simplifying fractions. She tested her conjecture and found evidence of the students having developed a misconception about simplifying fractions with zeros. It frustrated her someone would teach the students in such a way. She believed teaching solely procedurally was inappropriate for students.

Anastasia's belief about teaching mathematics conceptually placed her in a "gray space" when it came to finding her role in Ms. Blaileen's classroom. This space was first described by Elsa, but was taken up as being true by Anastasia during the first small group meeting. Elsa and Anastasia described the gray space as consisting of feelings of awkwardness and tension because of the mentor teacher's practice. They remained in the gray space because they were unsure of Ms. Blaileen's expectations for them in the classroom. Thereby, they were both unsure of how to be participants in the classroom. This resulted in feelings of insecurity with the ways of instructing students in mathematics.

Interviewer: You guys feel lost while you are in there?

Anastasia: Absolutely. Cause like with the long division, one of them [students] asked me a question and I did not know if they did the scaffolding method or if they did a standard algorithm. And I do not really remember how to do the scaffolding one. So all I know how to do off the top of my head is the standard algorithm. And so its like I do not want to teach them that and corrupt them.

Elsa: Yeah.

Anastasia: Just a little uncomfortable. Like I - I remember I had to ask you [Elsa] and they [students] were like (Makes facial expression showing surprise/shocked)

Elsa: Yeah.

Anastasia: Do you not know how to do this? Sorry. (SG1, 0:20:28–0:20:53)

Anastasia acknowledged her lack in knowing the scaffolding strategy for division and the conflict her teaching the traditional algorithm has with her desire to teach conceptually. She wanted to be recognized as the one-who-teaches-conceptually. Therefore, Anastasia was uncomfortable due to her desire to teach students conceptually. Moreover, she was not sure what strategy Ms. Blaileen expected the students to do. She attempted to please two visions of teaching mathematics, her own and Ms. Blaileen's. The uncomfortable feelings Anastasia had were probably due to her inability to compromise between the two.

When Anastasia elaborated on this experience during her second interview, after reading what she had previously stated, she focused more on the frustration she felt for not teaching conceptually:

I think what I was trying to say was they were working on long division and we did long division in last semester's course. So it had been a while because there was all summer, you know. I did not do long division all during summer break... And so I did not know off the top of my head how to do the scaffolding method. And that is a method that I know works. I know it helps students to see it broken down on the side. But I did not know how to do that. So I was just doing the standard algorithm with them. And that felt so frustrating to me because I knew that is not conceptual... So I just remember being frustrated with that. And like I said here it was like that is just something I memorized and I do not think as 4th and 5th graders that that is the best way to go about it. (Anastasia, Int. 2, 0:43:37)

Ms. Blaileen was no longer apart of Anastasia's narrative. When reflecting back on her experience, Anastasia described more of an affective reaction to the betrayal of her vision of teaching (an unfaithfulness to her desired ways of teaching) then her previous concern of matching Ms. Blaileen's ways of teaching. Demonstrating the high value Anastasia had for students' conceptual understanding, and the devaluing of Ms. Blaileen as a mentor teacher.

The gray space Anastasia experienced left her without a voice as a teacher-of-mathematics. She attempted to use Ms. Blaileen's voice (the authority) even though Anastasia vehemently disagreed with it because of her vision and desire to teach conceptually. Anastasia was seeking out her ways of knowing (Belenky et al., 1986) within the classroom. Her interpretation of Ms. Blaileen's teaching conflicted with her desired ways of teaching mathematics. The conflict silenced Anastasia's voice because she was unsure if the authority in the class (Ms. Blaileen) would recognize or validate her voice. Reflecting back on her experience in the classroom Anastasia expressed how her ideas and voice as a teacher were not being legitimized:

She knew about it and that is why I felt comfortable doing it. Had I actually been sneaking behind her back—I'm just not the kind of person that would have done that. Because I would have felt like I was breaking her rules. But at the same time I did feel I was doing something under the radar. And she knew I was doing it but she was not super on board. She told me it was fine. Of course she is not going to stop me from doing it. She just—and a lot of times I would sit down with her and explain why you know, this is the way I think through it and this is the why. I do not necessarily like the trick. And she would be like, oh that is really really interesting. But then teach her way. And that is fine. Like I am not expecting her to listen to a block 2 and change her entire approach to teaching mathematics. Of course not. But at the same time there was tension for sure. (Anastasia, Int. 3, 0:57:56)

When thinking back on her experience, Anastasia recognized Ms. Blaileen was not supportive of the ways Anastasia desired to teach. She also referred to her position in the classroom and knowing, as a "block 2" (second semester student), her mentor teacher did not have to listen to her ideas about teaching. This positioning left Anastasia voiceless.

Anastasia at Amos Moses Elementary Part II: Focusing on the Audience

As Anastasia's weekly visits continued, she began to feel like she had escaped the gray space. She felt more like an active participant in the class but she held on to her desired ways of teaching mathematics, regardless of the developed feelings of awkwardness with Ms. Blaileen.

We will walk around and just make sure—not only are they [students] on task but we are answering questions and just helping them when they need it. So I think that it has become less of an observation and more of an active participant. But it is an awkward like—I do not want to step on toes. And like she is teaching this procedural way but I know I can help you if I teach this like—just check this out. Look how it works. But it is awkward because it is her classroom obviously. (Anastasia, Int. 2, 0:08:25)

After several weeks, Anastasia still had issues with her position in the classroom. She admitted Ms. Blaileen had given more control to her because of a student who demanded a lot of attention. Anastasia claimed she still would have found her place in the classroom because of what she was learning in her methods course. "We are learning how to solve these specific problems. And we are in 5th grade, so we are really lucky. What we are doing in [course] is pretty much what we are doing at [Amos Moses]" (Anastasia, Int. 2, 0:46:35). Anastasia attributed finding her voice in the

classroom to the overlap between her coursework and field component. I believe this overlap helped with recontextualization (Ensor, 2001).

Anastasia's identity as one-who-teaches-conceptually in the classroom began to become more of her own after having found her voice in the classroom. Practicing her teacher moves with students in an "actual classroom setting" (Anastasia, Int. 2, 0:47:46) allowed her to grow as a teacher. But more importantly Anastasia made the decision to do what she thought was best for the students. One example of Anastasia's shift in voice and audience was shared multiple times (second interview, writing prompt, and second small group). Her turning point narrative was about working with a student converting mixed numbers to improper fractions.

It was converting mixed numbers to improper fractions and vice versa. And she [Ms. Blaileen] teaches a way that you - like if it was 32 over 9. She would just put the 32 inside the (air quotes) "little house" and then you know set it up. Then you would get the answer and then you would just draw a 'j' and that's where, and I have no idea how it works. They [students] were trying to explain it to me and I was like, I'm sorry what? So I learned that way from her and then it kind of made sense. But I would teach them that way because I had too. But then I would also draw the $\frac{32}{9}$ ths and let's see how many wholes we can make. Oh and look that is that big number that we wrote right there for the mixed number. That I do not think is violating her classroom protocol because I am relating it back to what - cause obviously the math is right in what she's teaching (Anastasia, Int. 2, 0:10:01)

Anastasia found a space where she could conduct mathematics teaching how she envisioned was best for students but also was in line with her interpretation of Ms. Blaileen's expectations. She mentioned specifically how she was forced to teach in one particular way, but then supplemented what the student was learning with a more conceptual strategy. Anastasia recognized teaching conceptually could lead the student to the same procedures Ms. Blaileen taught. "If I can just connect it back to what she's [Ms. Blaileen] doing I feel like it is okay... That is why we have the conceptual understanding and the procedural understanding. They go hand-in-hand" (Anastasia,

Int. 2, 0:10:01). This influenced Anastasia in implementing her own ways of teaching mathematics, and finding her voice in the context of the classroom.

Anastasia's commitment to students' conceptual learning helped her find the space she needed to enact her identity as a one-who-teaches-conceptually. Although, she was conscious of the fact she was a guest in Ms. Blaileen's classroom. "I have just made up my mind that I am going to do what is best for the kids, obviously within her [Ms. Blaileen's] classroom... It is her classroom. Period. But I will supplement" (Anastasia, Int. 2, 0:10:01). Anastasia referred to working within the norms set by Ms. Blaileen multiple times. She often described having to "walk on egg shells," and having to work "under the radar" to accomplish her own teaching goals. Anastasia saw this position as inescapable as long as she had to work within the classroom of another.

I think that even in my student teaching semester, when I am just about there, I think there is still going to be things that - at the end of the day this is not my classroom. If these kids fail every test they ever take. You know it is going to look poorly on my teacher. Not me. So I think that is still why there is always going to be that tension, a little bit, but it is not the elephant in the room anymore... It is fine. I feel fine. I can ask questions. I can ask [mathematic methods instructor] questions. I can talk to my peers. I do not feel nervous anymore. I mean there are still times that I do not know what to do. But I feel a lot more confident. (Anastasia, Int. 2, 0:50:22)

Anastasia confessed feeling more comfortable and the tension in the classroom had lessened but not gone away completely. She attributed her newfound position to being able to ask questions to those in her support system (professors, partner, other student teachers, etc.). In other words, Anastasia felt others legitimized her ways of teaching mathematics and could support her in enacting them in Ms. Blaileen's classroom, but Ms. Blaileen was explicitly left out of her list of support.

When asked what helped her in being more confident about her desired ways of teaching, Anastasia stated practicing what she had learned in her coursework during field experiences was

very beneficial. Moreover, Anastasia found it beneficial she was able to enact her identity as a one-who-teaches-conceptually without bringing "harm" to the students.

You just do it. You know what I mean. You just get that experience and you walk away from a lesson and you are like, I did not burn anything down. I did not corrupt any students, I do not think. Everyone is fine. Everyone is still breathing. We can do this again tomorrow... Just having things work. Having little things what happened with the student last week, like that worked well for me. So I was like, a notch on my belt. I can do this. I know how to do this. (Anastasia, 0:47:46)

Anastasia recognized she was developing her own ways of thinking about teaching mathematics. She found a space in which Ms. Blaileen's authority, though still a powerful force in the classroom, was less influential on Anastasia's decision-making processes. Anastasia was empowered by her mathematics education coursework because the program justified her actions in the classroom and her insubordination of Ms. Blaileen's ways of teaching mathematics. Anastasia was not looking toward Ms. Blaileen to legitimize her ways of teaching anymore. The teacher education program would validate and legitimize her identity as one-who-teaches-conceptually.

Anastasia also found validity for her determination to teach conceptually from the success she perceived students were having in learning mathematics. Anastasia's high and low narratives about the classroom usually referred to students learning conceptually as shown previously in her writing prompts. She also described feeling frustrated with herself to the other participants for breaking from her desired ways of teaching:

Well one week I was doing word problems with multiplying whole numbers by improper fractions. It was just awful, and I was so aware of the time because each group was 15 minutes and there is 3 of us... It was a little embarrassing because there was 10 to 12 problems on this worksheet... She was like, as long as they get through half or a little more than half you'll be fine... And we did maybe three... So it was just really frustrating and some of the strategies I used I was just like - or strategies I used were just awful. And I told myself I would never do that but I did. You know they tell you not to pull out key words in word problems and I was doing that... So there is usually one whole number and one fraction. You do not have to look too hard for the numbers that you need. And I

would be like, guys we have done two of these already. Can you not just figure out like which numbers you are suppose to be multiplying? It was bad. And the more frustrated I got the more terrible my instruction became. (Anastasia, SG3, 0:30:24)

Anastasia became frustrated with herself for not staying true to her developed identity as one-who-teaches-conceptually. She believed teaching students conceptually was best, but the time allotted to her in the small groups was not enough for her to meet both her own expectations of teaching and those of Ms. Blaileen.

So even though Anastasia had developed her own voice in the classroom, how she decided to use her voice depended on the pressures she felt. In this particular example, not only the authority of Ms. Blaileen pressured Anastasia but also the time she had for completing her goals. Switching from her own voice to the authorities (Ms. Blaileen's) relieved the pressure she felt while working with students; however, when reflecting on her experience, Anastasia became frustrated by the way she resolved those issues. Anastasia had already relieved some of the pressures felt from Ms. Blaileen's authority by compromising the relationship between conceptual understanding and the procedures valued in the classroom. With the additional pressure of time added Anastasia did not know how to compromise. Therefore, she fell back to using Ms. Blaileen's voice as a way to relieve the pressure even though this went against her own beliefs about teaching mathematics.

Anastasia also started to become more aware of other issues of the profession. In general, Anastasia began to confront the complexities of teaching mathematics and other subjects. During her first semester mathematics education methods course field experience she became aware of the challenges in teaching mathematics. During the first interview, she was asked how she felt about teaching mathematics.

Now that I have seen actual students working on it [mathematics] and asking those questions... I feel less prepared now but I know that that is a trajectory to one day be

prepared to be a math teacher. But I feel like I could do it right now but it would not be suitable for the kids because I could only give that step one do this, step two do this, step three box your answer. And that is not, that is not what they need. They need someone who can explain what is really going on below the surface. So I feel like after I get more practice on a broad spectrum of, not just math, but all types of questions and problems. Then I feel like I will be able to be successful one day. I just need that practice I think. So I feel okay. I feel like I will survive with practice of course. (Anastasia, Int. 1, 0:22:42)

Anastasia's previous experience working one-on-one with a primary student was enough of an intervention to convince her she was not prepared to teach mathematics in her desired manner. She had not yet developed her voice. Anastasia described the desire she had to attain this particular image of teaching and how she saw practice as the way to get there. Anastasia was becoming aware of the challenge teaching mathematics is, and how she was lacking in her ability to teach mathematics in her desired ways.

As Anastasia continued in Ms. Blaileen's classroom, she became aware of other challenges of teaching mathematics. The one raised throughout her second and third interviews was what she referred to as a teacher knowing about which "corners to cut." What Anastasia meant with this phrase was the complex nature and weight teachers' decision-making processes have.

When there are 18 kids raising their hands saying, I do not get this. It is easier just to be like well just do it this way and here is why it works but just do this shortcut. It is harder to look at the clock and be like, okay I have 15 minutes, I have to make sure they know how to simplify fractions. *That is just such an overwhelming - am I going to be able to get them to understand it deep enough to where they can do it next year. Do I need to cut corners so they can pass the test this Friday? Which one do you? So I think that part of it [field component] is honestly showing us the frustration of it [teaching].* I think that there is absolutely no way a 5th grade teacher can ever get through all of the curriculum she is suppose to get through in math, in social studies, in anything. So I think that part of it is just like where do you make those decisions? Do you like which, which concepts in math do you go deep enough to where they are going to get it and be able to do it two years from now. And which ones do you cut corners on so that you can get - because my class is the class that is failing their [State standardized exam]. So like yes it is worth it to make sure they get the concepts but you also have to get through everything so they do not fail again. So. I think part of it is just getting into the politics of knowing it is not easy. It is not ideal... I think the field experience just offers a completely different

perspective on everything. A good experience but also an overwhelming one. (Anastasia, Int. 2, 0:03:17, emphasis added)

Anastasia became aware of the pressure of time and how difficult it is for a teacher to make the best decisions (in her case about teaching conceptually). The particular context Anastasia was in, an early intervention class, placed additional pressure on Anastasia. To Anastasia it was her responsibility to develop the students' "lacking" mathematical skills while at the same time preparing them for the mathematics of the next grade. To Anastasia, however, feeling frustration was part of the process of becoming a teacher. Her teacher education program had intentionally placed her in a position to be frustrated by the work of a teacher. Therefore, she trusted the experience was beneficial for her.

Anastasia also felt overwhelmed by trying to determine which corners to cut from the curriculum to best prepare students and the consequences of these decisions. "I do not envy her [Ms. Blaileen] position to make those decisions for 18 kids and their futures. Like, hope I do not screw them up in 8th grade, 10th grade, college... So I would say overwhelming is a good word" (Anastasia, Int. 2, 0:06:52). Anastasia showed she cared for the students' mathematics. She desired the students' mathematics to move beyond their current understanding according to the standards and wanted students to become successful in building their own mathematics. Anastasia's want to do that successfully left her feeling overwhelmed. She came to the realization her actions as a teacher had greater consequences than the students' successes in the classroom. "You have to cut corners sometimes... because there is no way that you would be able to give every single student in the classroom a critical understanding of every single math concept" (Anastasia, Int. 2, 0:41:19). Again, Anastasia's awareness of the pressure of time had provided her a space to further develop her sense of self in the classroom. She recognized more of the limitations she had as a teacher-of-mathematics.

Another concern Anastasia had about her developing identity as one-who-teaches-conceptually was the ability to communicate to students. She stressed communication as necessary for teachers of mathematics to help students learn conceptually. When asked to describe her ideal mathematics teacher, one criterion was being able to communicate with students.

So I think that the way you can communicate because a lot of the times (air quotes) "math people" kind of struggle with words, you know. I am such a numbers person but then you ask me like explain something in words and it is like I do not know. So I think that communication aspect is also really important which gets overshadowed I think sometimes. (Anastasia, Int. 2, 0:24:30).

Anastasia previously foreshadowed her value for communication when she described her favorite mathematics teacher and some of the moves that made her such an excellent teacher. In particular, her former 4th and 5th grade teacher was able to explain mathematical concepts very well. Anastasia saw this as a necessity for being able to teach conceptually and was therefore necessary for her to be recognized as one-who-teaches-conceptually.

When she narrated working with the child converting improper fractions to mixed fractions, communication was an important aspect of the experience and being able to aid the child in learning to convert fractions was only possible because of her ability to communicate her own understandings of fractions. Anastasia recognized she needed to work on this aspect of herself.

So I think that is the biggest thing between me and that ideal math teacher... Then I get frustrated and I am just like blah (makes noise representing panic and blathering) and I am all over the place. And it is just like let us just do something different. Do you know what I mean? I get frustrated when I cannot put things into words. It is so frustrating because you have it. You know what I mean. You have it here (points to brain). But you cannot get it here (points outwardly through mouth). But like that is what being a teacher is about. So I got to work on that. (Anastasia, Int. 2, 0:26:40)

Anastasia attributed being able to communicate as a specific characteristic of a teacher. To her this meant to become a teacher her ability to communicate had to be improved because one cannot be a teacher if they cannot communicate to students. Thereby, she would not be seen or recognized as a member of a community of practice. She was aware of her emotions and her lack in ability frustrated her.

During this time, Anastasia had learned to compromise her acts of teaching to work within the authority of Ms. Blaileen. However, Ms. Blaileen's presence in a classroom also made Anastasia aware of new pressures and tensions such as time constraints, her ability to communicate, and her responsibility to the students' future mathematical success. These internal and exterior pressures were close to home for Anastasia because of her belief mathematics was part of who she was (as legitimized by her parents growing up and her success in school mathematics). "So at the same time, it is an emotional roller because you want to invest in these kids and math is my subject so I want to make sure they get it" (Anastasia, Int. 2, 0:06:52). Anastasia had to modify her compromises or construct new compromises in order to find her voice within the context again. At this point, Anastasia was comfortable realizing her voice as a teacher was not yet fully developed, but it could be further developed within Ms. Blaileen's classroom through "practice." Finally, Anastasia was no longer seeking legitimization from Ms. Blaileen because she recognized her desired ways of teaching did not match with Ms. Blaileen's. Instead Anastasia sought out legitimization from the students and used her coursework as justification for her actions.

Anastasia at Amos Moses Elementary Part III: Reflecting on Her Identity and Emotions

After having completed her field experience component, Anastasia was asked to consider her progress as a teacher-of-mathematics. She claimed to feel more confident in her abilities to teach mathematics in her desired ways. She wrote the following:

More than anything, I feel more confident now than I did at the beginning of the semester. I feel like I could realistically walk into a classroom and design mathematics instruction for a wide variety of topics and grades. I do not freak out at the thought of a student asking me a “hard” question like I did last semester. I think I could much more calmly approach a problem with stronger techniques that would guide – not force – a student through. I saw so many things at [Amos Moses] that reinforced just how necessary it is to teach students to solve problems critically and not simply by a memorized algorithm. Even though it seems like you might be saving time by laying out exactly how to do a cookie-cutter problem then sending the students to do 24 more of the same problem on a worksheet, you are really just going to be spending more time in the long run fixing the “rules that expire” and re-teaching how that simple algorithm fits into a mathematics foundation as a whole. You cannot look at a mathematics subject in isolation because it all builds on itself. (Anastasia, WP4, Lines 8–19)

Anastasia became more comfortable with her voice as one-who-teaches-conceptually even though she struggled finding her voice in Ms. Blaileen's classroom. Her experience in Ms. Blaileen's classroom "reinforced" her desired ways of teaching by showing her how focusing on procedures was not beneficial to the students. Anastasia benefitted from the "identity crisis" (Erikson, 1968) she went through when she felt forced to use Ms. Blaileen's voice to teach mathematics. Anastasia did, however, use the voice of a different authority. Her reference to the "rules that expire" was to an article read in her mathematics education methods course (Karp, Bush, & Dougherty, 2014), by this point, though, she had integrated the program's voice of authority to her own.

In her third interview, second writing prompt, and fourth small group meeting, Anastasia referred to her teaching converting improper fractions to mixed numbers as a turning point (identity crisis) during her time at Amos Moses elementary. When reflecting back on her

experience with the student, Anastasia emphasized the success of the student as further justification of her desired ways of teaching. She recognized how working with this student "made it a priority" to teach conceptually. In other words, the social other (students in this case) legitimized Anastasia's identity of one-who-teaches-conceptually.

I think that seeing him succeed and then doing a couple more examples with him and seeing him being able to do the worksheet and get the right answers. And then the next day or the next week still being able to do that and build upon that. I mean that is what changed - made it such a priority to me, to do the conceptual with kids. And not only model it but let them practice it and let them play around with it until they see that it is not something completely separate from the procedure. You know every time I have to turn an improper fraction into a mixed number, I do not sit down and draw the diagrams anymore because I know that is why. So I want them to realize they are not two separate concepts. They go together, hand in hand. It did take a little more time up front, you know. Sitting down and explaining that with him, but it was worth it because I did not have to explain it everyday for five days while they worked on it. So I think that, kind of like what I said earlier, that is one of the corners you cannot cut. You cannot just skip over stuff like that because the whole class was thinking that what I was doing was so different than what they were doing, when really it was the conceptual way. (Anastasia, Int. 3, 0:13:37)

The validation she received from the student's success further legitimized her desire to teach conceptually. Following the pattern discussed by Flores and Day (2006), Anastasia was deconstructing and reconstructing her identity as a teacher-of-mathematics based on her interpretation of the phenomena occurring in Ms. Blaileen's classroom. In this case, Anastasia was able to strengthen her voice as a teacher-of-mathematics even though was in a context where her voice conflicted with the authority.

Anastasia ended her experience with a more cohesive argument for her vision of teaching mathematics. For example, in the previous quote Anastasia used the compromise she had to make in Ms. Blaileen's class, of the link between conceptual and procedural understanding, to justify her future actions. Furthermore, Anastasia used this experience to re-evaluate the pressures she previously felt and was able to compromise a space for them. She recognized the

pressure of time but with this student's success Anastasia could defend her need for taking the time to teach conceptually. Anastasia also generalized this idea by claiming there was multiple events similar to those previously described starting with the "make-a-j" strategy Ms. Blaileen had taught the students.

My mentor teacher literally frowned upon [Elsa] and I teaching long division in a conceptual way. She wanted us to just teach them the algorithm and her make-a-j "short cut" (literally I couldn't explain this even if I tried) even though she could see that the students were clearly not grasping this procedure and most certainly not WHY it worked. It was definitely an accumulation of very similar events like these that pushed me to the conclusion that I want to spend a sufficient amount of time to get students to really understand a topic before flying to the next one. (Anastasia, WP4, Lines 19–26)

Anastasia even let the other participants know of her position during the fourth small group meeting. "Put the time in at the beginning and then maybe spend a couple of extra days on getting them to thoroughly understand a topic instead of just flying to the next one and realizing that they did not understand" (Anastasia, SG4, 0:01:16). Though Anastasia still felt the pressure of time, she had learned to work within that space.

When it came to her previous concern of "cutting corners," Anastasia described a commitment to teaching conversion of improper fractions to mixed numbers conceptually. She accepted she would have to make difficult decisions about what corners can be cut, but her field experience had provided her with insights to teachers' decision-making processes.

Through my field experiences I have seen where the important corners that cannot be cut to make a way for that proper foundation that you are building. Like you cannot cut the multiplication corner and hope that they are going to be fine down the road. It is just not going to work. So I think that realistically the field experiences helped me to realize what is actually going to go into my math curriculum. Because I am going to be given these standards one day and whatever state I teach in I have to make decisions as a teacher about what is going to get taught. How it is going to get taught. How it is going to be assessed. And those are all things that you hear about in math classes... I think that the professors that I have had have done a fantastic job of giving us the idea that it is not going to be perfect. (Anastasia, Int. 3, 0:08:55)

Anastasia reflected on her experience at Amos Moses and then projected the outcomes to her future self as a teacher-of-mathematics. She recognized part of the work of being a teacher is making curriculum decisions. She gave credit to her teacher education program for painting a realistic portrait of the work of a teacher. This allowed Anastasia to position herself as one who could make the decisions she saw as necessary to complete the work of a teacher regardless of the standards given. Although, when asked if in her following field experience she felt comfortable or confident in making curricular decisions for she stated, "Not right now... I think that is something that comes with practice. Unfortunately I feel like first, second year teachers just kind of have to hope for the best because they have never done that" (Anastasia, Int. 3, 0:54:26). So even though Anastasia recognized progress in developing her identity as one-who-teaches-conceptually, she still saw the need for more experience to grow further.

Anastasia also referred to her former identity as a teacher-of-mathematics when she reflected on the idealism she had at the start of her program.

I was a sophomore and I started in block one. And I was like, okay I am eighteen, my classroom is going to be perfect one day. And it is just easy to buy into that and I almost feel like you have to have a bad experience to realize that it is not going to happen that way. But you got to make the best of it. You got to make the best use of your time, and how you can integrate math into other curriculum. So I think that more than anything it has just taught me how to make things work. (Anastasia, Int. 3, 0:08:55)

Anastasia attributed her change in perspective to the experience at Amos Moses. Anastasia's field experience was a strong enough intervention for her to deconstruct the idealism she had and reconstruct it as a more "realistic" portrait of teaching and learning mathematics. Her projected self-as-teacher shifted because she was more aware of the complexities of teaching and could therefore evolve her image of the context she will be working in. Anastasia had to consider her voice and position within that space. The experiences at Amos Moses provided her with a different horizon of understanding (Gadamer, 1975/2004) to make sense of her projected context.

When asked to reflect on her emotions throughout the interviews, small group meetings, and writing prompts, Anastasia expressed her emotionality using emotional language (Denzin, 1984). Through the discussions of highs and lows in Ms. Blaileen's classroom, however, Anastasia only once explicitly discussed the emotional labor (Hochschild, 1983/2012) of being a teacher. During the fourth small group meeting, Sally commented on knowing when to get others outside of the classroom (e.g. counselors, social workers, etc.) involved during her field experience, specifically, if a child's issue is outside the control of the teacher. Anastasia responded to Sally by commenting on the emotional front teachers put on to create a positive environment for students.

And it is heart breaking, you just have to paint a smile on and pretend like you are okay with everything in your classroom... Some of the things that these kids go through, I literally cannot imagine. Like one kid comes to school in the same pair of pants every single day. And you cannot - you cannot grimace and be grossed out by it. You have to be okay with it... And it is so hard because it is like I said you just want to fix it. You just want to bring him some pants. But then, you just cannot. (Anastasia, SG4, 0:23:08, emphasis added)

Anastasia's metaphor of "painting a smile" referred to the face-work (Goffman, 1967) she was doing in the classroom. Anastasia's face-work also included not grimacing or being grossed out by the student's situation. Anastasia had to control her facial expressions and gestures toward her student to send messages not reflecting her true feelings for the benefit of the student. In order to show her support, Anastasia needed to conduct the appropriate face-work and show specific emotions.

Anastasia had established her own feeling rules (Hochschild, 1979, 1983/2012) for working with this student. Even though she did not explicitly state other feeling rules, I believe because of Anastasia's desire to teach conceptually she had her own feeling rules when interacting with Ms. Blaileen. These rules at times can be described as manners (Goffman,

1958). But Anastasia's concern with working "under the radar" could be evidence of the constructed feeling rules she enacted. Anastasia did not mention letting Ms. Blaileen know of her frustrations. So instead, Anastasia would hide her frustration with Ms. Blaileen's instruction, and attempted to get permission from Ms. Blaileen to teach conceptually. This may be a defensive act to save face (Goffman, 1967) because of Anastasia's awareness of Ms. Blaileen's authority.

When asked explicitly to describe her emotion regulation in Ms. Blaileen's class, Anastasia at first spoke about the amount of personal information she will give to her future students. She was conflicted by this because she did not see herself as an "open person," but recognized she has to be open about her life in order for students to be open about theirs. "I am not going to be like, here is what is going on in my life with a lot of people, but you have to give students a little taste of that if you want that reciprocated" (Anastasia, Int. 3, 0:25:43). Anastasia claimed it is important for her to get to know her students because she wanted to work in a school where she could be "an advocate for the students." Anastasia concluded her statement by claiming that due to her being the professional in the classroom she would have to balance her emotions.

I do think that as the adult, as the professional, this is your career and you do have to - I do not want to say hide your emotions but you have to - at the end of the day you have to get up there and you have to teach. And you have to do your job. And you have to do it with a smile on. So I do think that you have to balance when and where and how you show your emotions. So I think it is hard... I think that is the kind of thing I am nervous about. I think that I am going to have to my first year, my second year, those are going to be the times that I am going to have to find that balance. And look at what other people are doing and how do they go about that because my first instinct is just no emotions in the classroom. But I do not think that that is right because of all the reasons I just said. I do think that is something I am nervous about though. (Anastasia, Int. 3, 0:25:43)

Although Anastasia used the word emotion, she was referring to the amount of private information she was to give the students. To her the expression of an emotion was giving the receiver a window into her private life. So Anastasia claimed she would refrain from showing

emotion in her future classroom. She accepted she would only be able to modify her current feeling rules once she became a practicing teacher. Once in the field, she would learn the appropriate balance from the others in the community of practice.

Specific to Ms. Blaileen's class, Anastasia felt she could not show some her emotions with the students because it was not her classroom. "I would say now I do not share much of my emotions or what goes on in my life with the kids. Just because it is someone else's classroom...I do not know how she goes about [sharing emotions]" (Anastasia, Int. 3, 0:28:32). So Anastasia suppressed her negative feelings because it was not her place to have those feelings, but also it was not appropriate for a teacher to share or show negative emotions.

I tried to stay 100 percent positive the whole time even when I was frustrated with a problem or something like that. And even when I was frustrated with the kids' behavior, I tried to stay positive because I just did not feel that was the place for me to be frustrated or discouraged or embarrassed or any of those emotions. I thought that in someone else's classroom - I kind of feel like you just have to suck it up and grin and bear [it], and wait till you get home. (Anastasia, Int. 3, 0:28:32)

Anastasia felt emotions like frustration and discouragement should be held back when working with a student. She suppressed "negative" emotions until releasing them in a safe location, outside of the community of educators. Additionally, Anastasia decided not to share her emotionality or private life because she was not the authority in the classroom, but also Anastasia was unsure of the appropriate ways to do so. Therefore, Anastasia was attempting to determine the feeling rules of teachers through her peripheral participation.

When confronted on her definition of emotion regulation, as the suppression of particular emotions, Anastasia realized her image of an authority figure was one who does not emote openly. This realization caused her to problematize her own image of self-as-teacher. She believed her emotion rules allowed her to portray herself to the students as an authority figure in the classroom.

I think it just has something to do with like, you still want to be a figure of authority. And when I think of a figure of authority I do not think of someone who is emotional. *That sounds so bad. That sounds awful. Because you know as teachers we are suppose to be modeling good attitudes and good habits and I would never tell my students to suppress what they are feeling.* I would want them to be open about that. In my personal life I am all about getting things out and I do not do suppressing. I do not do passive aggressive. I do confrontation. I talk about things with people but that does not necessarily translate into how I would teach, which is interesting. And I never really thought about that. Sorry that was very raw. (Anastasia, Int. 3, 0:34:05, emphasis added)

Anastasia's image of an authority figure conflicted with not only her own image of teaching but also her own image of herself. She reflected on who she was outside of being a teacher and how that image was contradicted by her image of an inexpressive teacher. She confronted this contradiction but was unable to come up with a compromise between her two voices, the teacher and the personal. Anastasia had an identity crisis (Erikson, 1968). She was made aware of how different her two identities were. She apologized to the interviewer for the "very raw" response she provided. I believe her apology was for the genuine insight into her identities and how she felt it inappropriate to not have a compromise. Instead all she could do was leave it in a "raw" form.

As Anastasia reflected on her experience at Amos Moses Elementary she demonstrated an awareness of shifts and developments in her identity as a teacher-of-mathematics, but also in her emotionality. Anastasia had constructed particular feeling rules for her emotional labor in Ms. Blaileen's classroom. She was still unsure of how teachers show emotion or how much private information to share with students. There was no evidence of reconciliation during the interviews. She did attempt to find a compromise through her teacher education program but was not able to. "I do not think I have ever hear anyone really talk about that because that does not fit into social studies, math, science, or [elementary methods course]" (Anastasia, Int. 3, 0:29:51). To Anastasia, the emotional labor of teachers was outside the scope of her coursework. What had

been discussed in the development of her identity and voice as a teacher-of-mathematics had been influenced by the emotion rules she had set for herself.

Anastasia's Emotional Geographies

In this section I discuss the characteristics of Anastasia's emotional geographies (Hargreaves, 2000, 2001a, 2001b) during her experience at Amos Moses Elementary. I begin by looking at each of her geographies individually providing commentary on how her emotional geographies influenced her decision-making processes during her field experience. I end this chapter by arguing that Anastasia had *faith* in her teacher education program, and her faith influenced her to follow through her desired ways of teaching mathematics.

Anastasia's Moral Geography

Anastasia's moral geography was characterized by her desire to teach conceptually. Throughout her experience at Amos Moses Elementary, Anastasia's purpose was to teach mathematics conceptually to the students. This is evident from the amount of frustration, anger, helplessness, etc. she felt when observing Ms. Blaileen teach and the pride and validation she experienced when seeing students' success in learning conceptually. To Anastasia, Ms. Blaileen taught in a procedural manner. She disagreed and criticized Ms. Blaileen's actions early on in the study. Ms. Blaileen's practice pushed Anastasia to lean heavily on her partner and her teacher education program as a way to validate her identity as a teacher-of-mathematics.

Anastasia decided the students needed to be taught more conceptual strategies. Her desire and believed purpose of teaching mathematics was so strong she broke through Ms. Blaileen's authority and taught the students conceptually regardless of the ways of teaching Anastasia observed. Anastasia distanced herself from Ms. Blaileen and attempted to find her own voice within the classroom. Anastasia felt comfortable practicing creative insubordination (Gutierrez,

2013, 2015) due to the influence of her mathematics education courses. She made a commitment to do what was best for the students, and knew what was best because of what she had learned in her coursework.

Anastasia's ability to recontextualize (Ensor, 2001) her coursework aided her in legitimizing her voice in the Ms. Blaileen's classroom. Anastasia saw direct links between what she was learning and what she was teaching. This connection justified what she believed should be done as a teacher-of-mathematics. She stated the teacher education program had changed the way she thought about teaching. In particular, she mentions her mathematics course as being important in changing her mindset on procedural understanding.

So it has been really hard to get out of that [procedural] mindset because I know it... cause I am all for kids understanding why they do things but it is not easy... So I have spent so many days after math like spending my lunch break just going back over my notes and figuring out what in the world they mean. Because I know it all is right but I just want to know why it is right. I keep little sticky notes in my notebook now. And I just like flag it. And I look back at this because right now we are doing - or last week we did division of fractions and it just blew my mind all together. But it after I spend time on it. I feel confident enough that I could like teach it to a kid. And that is rewarding because it like lines up with what we are doing at [Amos Moses] elementary. So it is cool to watch... the kids have the same light bulb moments that I am. Like it puts me instead of being like here is the teacher (hold hand up) where I understand, and like here you are (holds hand significantly lower). It puts us like discovering together so. I have enjoyed it, a lot more than I thought I would. (Anastasia, Int. 2, 0:08:03)

Anastasia worked to change her mindset and to have a deeper conceptual understanding of the mathematics. Because her coursework and her field experience aligned it motivated Anastasia to better understand what she was learning and putting in the time necessary to teach her students conceptually. She justified this, as before, with the students success. She also argued teaching conceptually to the students constructed a different learning environment positioning the students and teachers differently. She had positive affective reactions to this. Therefore her desire to teach conceptually was legitimized.

Anastasia's Professional Geography

Anastasia's professional geography was characterized by two main themes: (a) Curriculum decision-making processes and (b) Being able to communicate the mathematics to students. Anastasia saw both of these aspects as being influential to her capacity to teach mathematics conceptually. She also saw both of these characteristics as limitations in her current position as a developing teacher. She felt both aspects of her professional geography needed further development, and she saw the teacher education program as supportive of her desired trajectory. The characteristics of her professional geography would not have come to light if Anastasia had not become aware of the complexities of teaching.

Anastasia recognized she developed an awareness of the complexities of teaching early on in her first semester one-on-one experience with a student. She credited her teacher education program for having given her the opportunity to participate peripherally at schools. The field components provided her with the insight needed to know what "really goes on" for teachers.

When I was in elementary school I thought that my teacher was just happy and perky and just showed up in the front of the classroom and at the end of the day, she left and went home. But there is a lot of behind the scenes decisions that have to be made and like what am I going to teach? How am I going to teach it? And then some days you walk away and you are like did the kids learn anything today? And I feel that is the biggest preview because it has taught me a lot that I had a lot of misconceptions about how (air quotes) "easy" it was. Because I just thought that you sat at home the night before and spent 45 minutes writing four different lesson plans for the four subjects and then you walked into the room... But then you walk in and you have a fire drill. You have an assembly. You have 4H coming. You have this. You have this. You have this. It is like okay, I have 45 minutes left to teach 4 subjects. Like so I think that is the biggest preview. Which I wish it was not. I wish that was not how it is but it is. And I know that is how it is going to be. So I think that is the biggest thing that was giving me foreshadowing into what it is going to be like. (Anastasia, Int. 2, 0:12:32)

Anastasia compared her former imagery of teachers she constructed through her apprenticeship of observation (Lortie, 1975/2002) and her current imagery of teachers. Seeing the complex nature of teaching allowed Anastasia to see the lack or incompleteness of her apprenticeship of

observation. Her professional geography was concerned with closing the gap between what she thought she knew and what she was experiencing. During her third interview, Anastasia described feeling more confident about making curricular decisions because of her field experience component along with her professor's painting a realistic portrait of teaching.

Anastasia also described her understanding of the complex work of a teacher by focusing on the difficult decisions teachers need to make due to outside forces. Anastasia used the rhetorical questions in the quote above to show the number of variables teachers need to consider. As the semester progressed, Anastasia became more aware of the ways teachers need to "cut corners." Anastasia often felt confused, uncertain, and overwhelmed by the ways Ms. Blaileen and others made curricular decisions. She described these feelings during her second and third interviews. She often referred to them as what "corners" to cut. She became concerned about this aspect of knowing while at Amos Moses. This became a part of her professional geography because it influenced what she saw as an issue of the profession.

Anastasia did feel more confident about making these decisions during the later interview and credited her teacher education program for making her aware of these curricular choices. However, she was still not confident enough to make those decisions on her own during her practicum experiences. She claimed first and second year teachers still struggle with making curricular decisions, but even though she could not find a compromise yet, she did recognize she would have to be dynamic when it came to her students.

So that is definitely in my mind. Every single day, am I going to know what to cut and what to emphasize. I think that is not something you once and for all decide like standard blah blah blah. That is going to be one that always gets addressed. I think you have to be dynamic with your students. Every year you are going to have a new group of students. And I think you have to feel out what they know. What they need the most work on and make decisions that are going to benefit the most of them that is possible. So if that is, you know, breezing over something but most of them are secure in working one-on-one

to get the rest of the class caught up and then spending a three week period of time on something that the other classes are way past, but you know that it is best for your students. And you're planning ahead and you know it is going to fit into your schedule. (Anastasia, Int. 3, 0:30:53)

Anastasia still considered what was best for students to be the main backing to her decision-making processes. To Anastasia, the students in the class are the biggest influence to a teacher's decision-making processes. So the years of experience needed to learn how to make curricular decisions is based on learning to work with a variety of students and attaining experience in making curricular decisions.

Anastasia also focused her professional growth on being able to communicate the mathematics to her students. This was important to her because she felt she was not a good communicator. As previously described, Anastasia characterized herself as having a strong discrepancy between what she thought and what she said. This was a major concern for Anastasia and was a limitation needing attention. She described the ability to communicate as a characteristic of her ideal teacher, and she admitted her program was supporting her in attaining her ideal teacher image.

I have never once written out how I solved a problem with numbers and turned it in. But just about every week I turn something in that says how I thought through a problem. How I would explain it to a student and everyday in class we spend time talking at the table, working on problems, using manipulatives. You know four different approaches. Four different people, now let us talk about - and that is really helpful because I have not talked about this yet but math is really collaborative. You have to have other people on board when you are doing stuff like that [problem solving]. So it helps the communication aspect. It helps the problem solving aspect. It helps how in the world are you going to get other teachers on board. So I think that I really do think that especially in math, and in other subjects too, but just the way the courses have been designed the past two semesters have really helped get to that like ideal. (Anastasia, Int. 2, 0:28:19)

Anastasia credited her program with having provided her the opportunity to develop her ability to communicate the mathematics. She attached communication with the collaborative nature of doing mathematics. So in the field Anastasia looked for possibilities to communicate the

mathematics to students. However, she focused on her ability to communicate conceptual understanding to students. She was frustrated when she felt unable to do so, as seen when she worked in small groups. But positive experiences communicating conceptual understanding legitimized her teaching conceptually, as can be seen by her teaching the student conversion of improper fractions to mixed numbers.

Anastasia's Political Geography

Anastasia's political geography was characterized by the power struggle between Anastasia and Ms. Blaileen. Anastasia's position in the "gray space" was the first power conflict between the two. As described previously, Elsa used this metaphor as a way to depict the uncertainty of their role in the classroom as well as Anastasia and Elsa's conflict with Ms. Blaileen's ways of teaching mathematics. At first this positioning silenced Anastasia's voice in the classroom, but by focusing on "what's best for the students" Anastasia found her way out of the gray space. Although Anastasia used defensive moves (Goffman, 1959) when she described Ms. Blaileen's teaching she did not value her mathematics teaching. When asked to reflect on her experience at Amos Moses, Anastasia responded:

Last semester I was working with someone who had been teaching for 23 years. So she was not in the know with the newest theories and how kids cannot grasp those procedures and still move on with math curriculum like it is today in the state of Georgia. So you know, I do feel like I have a lot to offer in that aspect. (Anastasia, Int. 3, 0:17:20)

Anastasia found problematic how Ms. Blaileen would not teach conceptually. Consequently, Anastasia did not seek out Ms. Blaileen to legitimize her identity as a teacher-of-mathematics. Instead Anastasia sought validation from the students and her teacher education program. As seen above, Anastasia did not value Ms. Blaileen's procedural teaching, but valued the conceptual strategies and ideas from her teacher education coursework. In other words, Anastasia was empowered by her teacher education program.

Anastasia felt her teacher education program provided justification for her desired ways of teaching. So her decision-making process was influenced by the empowerment she received. For example, the overlap between her coursework and the content the students were learning provided the push Anastasia needed to compromise with Ms. Blaileen's authority. Therefore, Anastasia embarked on the creative insubordination that allowed her to use her voice as one-who-teaches-conceptually. However, Anastasia felt the tension of the power structure she was working within.

The tricks are faster. It is faster to know the trick and the procedures. But if you spend a bit little more time up front, they are going to benefit from it. *And I know they are going to benefit from it. I have seen it first hand. The research says they are going to benefit from it. I benefit from it. You know as a 21 year old...* I did not want the kids to get in trouble. I did not want to get in trouble myself because they had not finished the worksheet. And I feel like that is a very telling analogy of how my career as a teacher is going to be. I do not want my kids to get in trouble for not making it through the whole curriculum. Or I do not want to get myself in trouble. But at the same time, I want them to have deep and thorough understandings of things. (Anastasia, Int. 3, 1:00:12, emphasis added)

Anastasia was left to work within some parameters determined by her position in the institution. She was empowered by the research she was introduced to, but also felt a tension with her responsibility to the students in Ms. Blaileen's class. She described her actions as "getting them [the students] in trouble," but who would be punishing the students was unclear. This hidden punisher created roadblocks for Anastasia's identity formation as a teacher-of-mathematics. She still insisted her desire to teach conceptually would not be stifled.

Ms. Blaileen's authority in the classroom influenced Anastasia's decision-making processes. Many times Anastasia made statements similar to, "at the end of the day it is her classroom. So I can only do what I think is best for the kids within her parameters. And there is pretty much no getting around that" (Anastasia, Int. 3, 1:01:28). Anastasia confessed her decision-making processes needed to take into consideration the parameters she was in. When

she felt she pushed these boundaries, which she referred to as teaching "under the radar," there was hesitation and the need to attain permission from Ms. Blaileen.

Any time I was feeling like I was pushing the envelope, I would try to have that conversation with her and be like, well this is what I'm doing. Can you explain to me what you are doing? And nine times out of ten that conversation was the end of it. But that was important to me that she was at least in the loop. (Anastasia, Int. 3, 1:01:48).

So even though Anastasia did not need Ms. Blaileen's permission to teach in her desired ways, she still felt it appropriate to make Ms. Blaileen aware of what she was doing. Anastasia's voice in the classroom was still dependent on Ms. Blaileen, in that she needed to feel Ms. Blaileen was aware of her use of her own voice as a teacher-of-mathematics. In other words, Anastasia was only able to enact her identity when she felt comfortable in the context.

Anastasia's Sociocultural Geography

Anastasia's sociocultural geography was limited to her awareness of issues of gender in mathematics. This was particularly relevant when Anastasia reflected on her experiences in elementary and middle grade mathematics. When reflecting back on her turning point with mathematics, Anastasia referred to being selected for her schools mathematics team and being the only female on the team. As the only female on the team, Anastasia felt pride for being selected and took to heart her position as seen by the powerful moment she had while working on mathematics at the competition described earlier. The social standing achieved by being good at mathematics at her school may also have validated her feelings of pride.

Another way issues of gender arose was with how Anastasia discussed the issues of female representation in mathematics. She referred to her concern as a prospective teacher when describing characteristics of the ideal mathematics teacher.

I would say patient because I know I think math more than any other subject people have like they are either a math student or they are not... Like you hear so many people, girls especially, say like, oh I do not do math. I am not a math person. (Anastasia, Int. 2, 0:24:38).

With her awareness of female's lack of opportunities to develop a positive identity as a doer-of-mathematics, Anastasia sought out positive role models. When she described the individual who had the greatest impact on her view of mathematics, Anastasia focused on a female elementary teacher who was a "math person" like her.

She was such a math person. I think that up until that point I had really soft-spoken - I only had women teachers in elementary school. A lot of them were really into language arts and words study and stuff like that. But math was kind of like, (sighs disappointedly) math time. Like let us do math really quick because I can specifically remember... It was second grade and we had these number houses and my teacher dreaded them. I knew she dreaded them as a second grader. I knew she hated doing them. So anyway 4th and 5th grade teacher loved math. She was a woman and was like all about math and numbers and she was a science person too. I remember I was a pretty nerdy kid. So I was like, wow she is so cool. And she loves math and science. And she is smart. I can be her. And she is the person that made me want to be a teacher. And she loved math... Like cause you know fourth and fifth graders is kind of when the tide turns in math. It is not all easy any more. It is when you have to start studying and thinking about things. And so it would have been easy to be like mmm I am done with math. Cause this is hard and only boys like it. So I think that she had a really big impact on why I like math as much as I do. (Anastasia, Int. 2, 0:32:56)

Anastasia's role model was a female with a positive productive disposition toward mathematics.

She identified a bit of herself in the teacher, and decided to join the profession because of her.

Anastasia's fifth grade teacher was contrasted with other teachers she had who showed a negative disposition toward mathematics. Although, Anastasia does not provide explicit examples of her consideration of gender in her field component, we can assume gender had already influenced her worldview because how she saw mathematics as a gendered subject (Mendick, 2006).

Although Anastasia did not explicitly discuss issues of gender within her experience at Amos Moses, she attributed the influence of gender on a students' mathematics while working one-on-one during the field component of her first semester mathematics education course.

Just seeing her progress I was like, I did not know that I was actually going to have an effect on this [student's mathematics]. And I know she was also getting math instruction but at the beginning... We were doing a counting assignment, she got to 99, and I was like, what comes next? She said, oh I do not count in the hundreds. I was like, hmm okay well what comes after 99? And she said a 100. So what comes after a 100? 101. After a 101? 102. And she went on. I was like, you do count in the hundreds. *So I think and I do not want to equate that to her being a girl but like you know, I was like you can count in the hundreds.* And I think she was in 1st grade. I was like give yourself some credit. Like that is incredible that you can do that. (Anastasia, Int. 1, 0:11:42)

Anastasia reflected on how gender influenced her decision-making processes when it came to interacting with this student. She conjectured about the reasons the child may not want to count into the hundreds. She determined being a girl might have something to do with her deliberate choice not to "count in the hundreds." Anastasia was not asked explicitly about her focus on gender, so I cannot say how much influence this was, but like other social aspects such as race and socioeconomic status these master narratives are influential to the ways prospective teachers view teaching and learning mathematics (DiME, 2007).

Anastasia's Physical Geography

Anastasia's physical geography was characterized by her limited presence in the classroom; a consequence of the design of the field experience in the teacher education program. Anastasia felt her limited amount of time in the classroom was problematic. For example, when it came to making curricular decisions, Anastasia claimed one reason she was not comfortable making those decisions was because she was not in the classroom enough. "I just do not feel I see the kids enough" (Anastasia, Int. 3, 0:54:26). She was also not able to see how lessons were working together or what decisions Ms. Blaileen made. "I think it was frustrating but I have to trust I am only there once a week" (Anastasia, Int. 2, 0:39:19). The physical geography became more apparent in the second and third interviews, when Anastasia started becoming more aware of the pressures of time and curricular decision-making. Anastasia also claimed going to the

classroom one day a week was a possible reason for Ms. Blaileen's lack of trust with Anastasia teaching mathematics conceptually.

We are only there once a week. So it is not like - I mean we know each other. We know the kids. We know the teacher but you know we could be teaching them the wrong thing. And I understand it would be hard to trust people that come into your classroom once a week. (Anastasia, Int. 2, 0:10:01)

Overall, the limited amount of time Anastasia was present constructed a distance between Ms. Blaileen and her. Anastasia's peripheral participation did not help her in seeing the decision-making processes Ms. Blaileen went through each and every day. Anastasia desired to learn more about the decision-making processes and during her next field component realized how isolating being present one day a week was. "It is just so different doing it two days a week then having that isolated one day a week" (Anastasia, Int. 3, 0:00:36). Anastasia's physical geography influenced what she felt was possible in the time she was there.

Anastasia's emotional geographic characteristics demonstrate the ways her emotional spaces influenced her ways of thinking about teaching and learning mathematics in Ms. Blaileen's class. The characteristics were also influential in what Anastasia saw as possible for herself within the classroom. They were the boundaries, constraints, and limitations that Anastasia had to work within. These aided her in the construction of feeling rules and finding her space within the community of practice she desired to join. Table 11 summarizes the characteristics within each of her emotional geographies. Consequently, Anastasia's identity as a teacher-of-mathematics was linked to her emotional geographies. The field component was a strong intervention to Anastasia's imagery of her practice as a teacher-of-mathematics. Therefore, Anastasia's narratives of future self changed as time progressed in Ms. Blaileen's classroom. Her trajectory as a mathematics teacher shifted as new concerns and ideas emerged from her reflection on Ms. Blaileen's classroom experience.

Table 11

Characteristics of Anastasia's Emotional Geography

Geography	Main Theme(s)
Moral	Students given the opportunity to learn mathematics conceptually
Professional	Deciding which "corners to cut" Being able to communicate the mathematics to students
Political	Teaching under the radar of mentor teacher The teachers classroom
Sociocultural	Perception of females as doers-of-mathematics
Physical	One day a week

Conclusion: Anastasia's Faith in her Teacher Education Program

Throughout all her experiences at Amos Moses elementary, Anastasia was able to persevere with her desire to teach mathematics in a conceptual manner. Although her mentor teacher did not validate her teaching methods, she was able to find validation through her teacher education program and her students. I believe Anastasia's trust in her teacher education program was strengthened by Ms. Blaileen's unsupportive actions. Because Anastasia was no longer seeking to be legitimized by Ms. Blaileen, she found legitimization in her teacher education program. Additionally, this process developed Anastasia's *faith* in the program. When I describe this as *faith* I mean Anastasia had developed a trust in the program leading her to believe the teacher education program would support and prepare her for what she was going to do in the future, and if there were gaps in her education, the program would eventually fulfill them. Take the following statements for example:

I want to be able to tell a principal or tell a parent, I am going to do what is best for your kid. And mean it. And not have any question about that. And right now, I do not think I could, but I think that is also due to the fact that I still have a semester and a half to go. (Anastasia, Int. 3, 0:39:24, emphasis added)

Just the way the courses have been designed the past two semesters have really helped get to that like ideal (Anastasia, Int. 2, 0:28:11).

Obviously a lot of time and energy has gone into planning how these field experiences work. And I think they are working because I do not feel as uncomfortable in the classroom. (Anastasia, Int. 2, 0:50:21)

As far as like content goes, math and science are my favorites. I feel more confident in math just because I have only taken four days of a science class so far (Anastasia, Int. 3, 0:36:55)

In each of these statements, Anastasia emphasized how her participation or future participation in her program will continue to legitimize her identity as a teacher-of-mathematics. Anastasia's faith in her program allowed her to practice creative insubordination against Ms. Blaileen's authority. Her faith influenced the discovery of her voice in Ms. Blaileen's class.

Anastasia's faith in her teacher education program provided her with the container needed to contain the negative emotions she felt (Brown, 2008). With the negative affective responses being held for her, Anastasia felt she could move forward with her desired ways of teaching. The teacher education program was a strong force pushing Anastasia to develop her voice in the classroom, to seek legitimization, and (re)construct her identity as a teacher-of-mathematics.

APPENDIX F

ELSA'S BIOGRAPHY

My mentor teacher did it one way and the one way was the way to go. And so I think I totally—that made me want to do the opposite.

- Elsa (Int. 3, 0:04:56)

In this chapter, I will focus on Elsa's experience at Amos Moses Elementary. Elsa was Anastasia's partner in Ms. Blaileen's class, but had a different perspective on the experience. I will begin by giving Elsa's background and describing her time at Amos Moses. Thereafter, I will discuss Elsa's reflection on her experience and the feeling rules she constructed. I conclude the chapter by describing the characteristics of Elsa's emotional geographies (Hargreaves, 2000, 2001a, 2001b).

Biography of Elsa

Elsa grew up in a small town in the northeastern United States. She described the town as "super small" because it only had one middle school and one high school. She claimed once students reached the middle grades they did not transfer to a private school. "So it was the same kind of people for the rest of the experience" (Elsa, Int. 1, 0:00:18). Part of her youth, she worked for the family business until, her family moved to the southern United States her first year of college. Elsa saw moving to a southern state as a big transition in her life.

Elsa had no family members who were involved in education. She does, however, claim her mother was very involved with her learning at home and was the president of the PTA at one point.

Since my mom was the PTA chair she really did have a different connection with a lot of those teachers. So I had known a lot of the teachers in my elementary school because I would tag along with her to meetings, or she would pick me up and we would like go talk to a teacher really quick before going home or something. So, I guess not quite the teachery thing but got more of an awareness kind of. (Elsa, Int. 1, 0:03:20)

Elsa's mother being PTA chair provided her a peak to the backstage work (Goffman, 1959) of the teachers at her school. She recognized her mother did not have the same access as someone who belonged to the community of practice, but being PTA chair provided Elsa an opportunity to observe a peripheral participant (Wenger, 1998).

Elsa discussed how her sisters were a big influence on her education and desire to be a teacher. Her older sister "set the path" for her education because they went to the same schools including universities. Elsa felt part of her social identity (Snow & Anderson, 1987) was constructed by her sister's reputation. Elsa's older sister also desired to be an elementary teacher. Elsa's younger sister was also influential to her. Although her parents worked with Elsa on her schoolwork, Elsa took over the role as supporter for her younger sister. "I kind of took on that role for my little sister, helped pave the way." Just as with her older sister had done, Elsa felt the same responsibility to her younger sister by taking on the role of guide through her educational experiences.

Elsa struggled with reading during her elementary years. She emphasized how her parents would help with her schoolwork at home, but mostly focused on reading because of her struggles. Elsa, when reflecting back on her learning experiences, considered herself more of a mathematics person because she was more successful in those endeavors. "Math always came easier to me just because I really understood it. I liked how concrete it was... I always liked math but reading was a big struggle for me" (Elsa, Int. 1, 0:11:13). Due to the validation Elsa received

from being successful at school mathematics, Elsa felt recognized as a mathematics person. Her identity as a doer-of-mathematics was legitimized by her success in school mathematics.

A turning point (identity crisis) occurred during Elsa's 8th grade year. She had overall a positive experience in her algebra I course and her feelings of success differed greatly from her previous 7th grade experience.

So I think it was probably just a real high because I really understood all the concepts and I really liked it all. And I was always the kind of person that was like yes, I got this right. I can help you with it. I can tell you exactly how to do it. I think that was different for me then 7th grade because 7th grade I had a teacher that I really did not like. And she ah (angst) gosh she still bothers me to this day. She told me one time that - I did not do very well on a test, and she told the whole class one time that this was not one to hang up on my refrigerator. So I remember really always trying in 7th grade and so I think that when it clicked in 8th grade, It was just the best feeling ever because I was like wow. This is great. I can do it. I can understand it. Let me help you cause I can show you how I can do it kind of thing. So I think going from that low to high made a big difference. (Elsa, Int. 1, 0:15:21)

Elsa valued being the one-who-can-help, as she had taken the role with her younger sister, Elsa desired to take on the same role for others. She saw as a prerequisite being able to "do" the mathematics. This differed from the previous year, when her teacher publically positioned her as one who could not do mathematics. Elsa was able to legitimize her identity as a doer-of-mathematics after rejecting her previous teacher's social identity. Elsa described her 8th grade teacher as being able to explain the mathematics well and giving the students a reasonable amount of work. But did not provide additional details of how her 8th grade teacher made learning more accessible to her than her 7th grade teacher. Instead Elsa attributed her success to the content by saying "algebra really clicked for me" (Elsa, Int. 1, 0:16:35). Although her experiences allowed her to legitimize her identity as a doer-of-mathematics, her success was attributed partly to the work of the teacher and partly to the content.

Elsa's discussion of her background highlighted the value she placed on seeing progress. This could be connected to Elsa's desired position as the one-who-can-help. Elsa first mentioned her focus on progress when describing her experiences working with students before college. She mentioned her experience as a dance instructor sharing the experience of progressing with the students. Her own turning point had to do with progressing or shifting from being positioned as a low-achieving mathematics student to a high-achieving student. Finally, she wanted to be a teacher because she could be part of the students' progress.

I really love kids, and I love working with them, and I love seeing their progress and knowing that you are making a difference in their lives. And like teaching them the steps that they are going to use for like the rest of their life. Even if it is just like something small or I do not know, but it is always those building blocks to help build their future. I do not know I think kids are really really great. And very transformable. You know what I mean. And so you can make those differences and see your visible progress. Which I think is awesome. (Elsa, Int. 1, 0:17:07)

Elsa emphasized "progressing" as why she wanted to be a teacher. She related progress with her actions and activities as a teacher. I believe Elsa early on saw the purpose of teaching as helping students progress in their lives. This is evident by the way she described her reasoning for becoming a teacher. In particular, she stressed the "transformable" nature of elementary students and the impact she could make on them as a teacher. She saw students' progress as legitimizing her identity as a teacher-of-mathematics. She even described looking forward to her field placement because of the growth she will be apart of the growth of students. "I'm really excited... to really see them grow and to see their ideas develop... there is a lot of potential in that class" (Elsa, Int. 1, 0:19:38). Being an agent of progress was also a reason she enjoyed her volunteer work with an elementary student at a local school.

The notion of students' progress also colored her vision of teaching. When Elsa described her future classroom she accentuated the environment she would construct for her students.

I do want [to] have a very happy and fun environment. And so like pictures on the walls of great work they have done. And always have to accentuate the positive that they have done and show them that they have done great things and they are really smart and they can continue to do great things, and so putting things of there's up on the wall to show their great growth that they have made. (Elsa, Int. 1, 0:33:22)

Elsa desired to have students be aware of the progress they made. This was important to co-construct a positive learning environment for the students. In constructing her desired environment, Elsa needed to feel like she was making connections with her students. Her position was to help them feel like a team. "I also really want them to be that team... That they could like, hey I do not understand this. Can we work on it together? So I guess that is my role" (Elsa, Int. 1, 0:38:04). Elsa's desire to connect with students and construct a positive environment was influential during her experience at Amos Moses Elementary.

Elsa at Amos Moses Elementary Part I: Positioned in a Gray Space

Elsa was partnered with Anastasia in Ms. Blaileen's 5th grade classroom at Amos Moses Elementary. As previously stated, Ms. Blaileen's class was an early intervention class (EIP), so the school used their previous state standardized test scores to identify the students to place in the class. The purpose of the class was to prepare the students to pass the 5th grade state standardized examination as well as to reinforce and enhance their mathematical knowledge. Although, Elsa was in the same classroom as Anastasia, her perspective on Ms. Blaileen's practice and the students was different.

Elsa early on was confused by the idea of the EIP classroom. Elsa's confusion was instigated by a student who struggled with long division. Elsa noticed the student struggling and assisted the student, but Elsa felt the assistance was not enough and the student's struggle would continue. Elsa believed a 5th grade student should not struggle with the idea of long division. To Elsa it was evidence the student was not given the opportunity to progress.

So I saw this one girl, we will call her Kelly. She was doing long division. She asked if I could help her with a problem she did not quite understand. And we were outside doing this work and she understood it. She got it. She moved on. But you could tell she was just really struggling as she kept going down the hallway. And I did not want to be like, okay well like let us go over how to do it, but at the same point, what do you do when you can see she keeps struggling and she is in the 5th grade but she is struggling with long division. And so like that was kind of frustrating. (Elsa, SG1, 0:04:47)

A consequence of this turning point, Elsa questioned the format of the EIP course. Elsa expected the student to have progressed more in her previous classes. Because she was a 5th grade student who struggled with long division the idea of progress was questionable to Elsa. This frustrated her and she became aware that she, students, and teachers participated in a larger structure.

Elsa thought it was problematic to have split the EIP students from the general population and teach them a different curriculum than the other 5th grade students.

They are being taught to solve the problems that they are working on like they would for the benchmark exam or the CRCT and struggle with it a lot. For something like long division, it is a very, very slow process for most of them. For instance, one student that I was working with really needed to be doing long division step by step slowly, really thinking about what she was doing before she did it. It was a struggle. Many of the students in the class are at that same level and they should be higher. They are focusing on these types of problems for them to be able to pass the test, but then they are going to fall behind in curriculum if they are not being taught the same things as the other class. This is all I could think of while I watched this student struggle through the rest of the problems that she had to solve. (Elsa, WP1, Lines 17–25)

Elsa's perspective of the EIP classroom structure contrasted her notion of student progress. To Elsa, the students were progressing but she foresaw issues in the students' progress in the coming years of school mathematics. She was unsure of how the students would be able to catch up with their fellow peers. Elsa did not find a compromise to this conflict with the structure of the EIP.

The notion of progress was also written about in each of Elsa's writing prompts. As she was asked write narratives of her highs and lows experienced during the practicum, the idea of the students' progress brought both positive and negative affective reactions.

In the preschool that I am placed two girls and I were playing with these small plastic teddy bears that varied in colors and sizes. I was just kind of testing them in a play setting because I was curious of their level of math and what they could understand at such a young age. Both of the students had one to one correspondence up to about five, then one student skipped from five to eight and then went up to 23. The other student could count with one to one correspondence up to about 15. This was very interesting to me because they did not know they were being assessed and were just having fun and playing and counting but it was very helpful for me to see what level they were at. (WP1, Lines 7–14)

Not a single one of these students passed the benchmark exam, and these were being sent into the state so they were super important. Not one passed. That is terrible. These kids are put in such a hard spot because they know that they are behind, they know they are different from the rest of the 5th graders, yet they are still expected to achieve on a benchmark exams just as the other students are. It is very frustrating. (WP2, Lines 29–33)

They were supposed to be multiplying fractions, but wanted to divide them. The students were given a worksheet that we were supposed to work through and solve together, with six word problems on it with a place for an equation for each problem, a place for their work, and a place for their answer. Each time they could identify the numbers that they wanted to use for the equation, but always wanted the function to be division instead of multiplication. It was frustrating because we went through the first problem and showed why the division did not work, why the multiplication did, and then showed the picture evidence and then every group for the next problem said that they wanted the function to be division again so I had to go through the whole explanation process yet again, prove why multiplication worked, showed the picture and explained why it worked and they agreed yet again, but did not understand it... I feel like this just went really badly because I could not come up with another way to explain why it worked other than proving it with the math, explaining the fundamentals behind it, and showing it with a picture. I hope by the third time I explained it that they would get it, but I already took up all my time for the center for explaining it so was not sure to tell. I just felt defeated because I don't know if they got it or not. (WP3, Lines 29–40; 43–48)

Elsa's desire to aid in the progress of the students led her to feel negatively about the learning happening in the EIP classroom. Her experience positioned her to become aware of how social positioning can influence the expectations others set for the students (Parks, 2010). This connected back to her confusion and disagreement with the purposes behind the EIP classroom. Her attention to the progress of the students was one aspect influencing Elsa's experience at Amos Moses.

When it came to Ms. Blaileen's teaching, Elsa had a more positive perspective than Anastasia. Elsa conducted more protective moves (Goffman, 1959) toward Ms. Blaileen. She valued Ms. Blaileen for the many years of teaching experience she had, as well as her classroom management skills. Elsa still did, however, critique Ms. Blaileen's teaching because she found Ms. Blaileen to not be doing enough for the students. Elsa felt the students were not pushed to their potential.

I really like my mentor teacher. I think she is great. She has been teaching for, I think she told us 21, 22 years. So she has plenty of experience but this is her first time doing that (air quotes) "EIP" classroom... So I know it is a little bit different for her. And so I kind of struggle sometimes cause I am like, wait there is so many better things you could be doing with them but she has clearly been teaching for so long that it has changed, you know. And so sometimes I struggle with that cause I am like, well these kids need more one-on-one attention. That is why they are in the smaller classroom. And she will kind of give them worksheets or something, which is an effective strategy but if they are constantly getting worksheets it gets tiring. And so I think she has great thoughts and ideas... She has great classroom management but sometimes I kind of just wish she could do more with them cause I see the potential that they have and just using that potential to fill out a worksheet is not going to be using all the potential that they could. So I guess that is where I stand with her. (Elsa, Int. 2, 0:04:32)

Elsa protected Ms. Blaileen's practice by providing evidence of her experience and reminding the interviewer of this being the first time she taught the EIP class. When Elsa focused on the students, however, she did not protect Ms. Blaileen, but instead criticized her for not doing enough to help the students' progress. Elsa felt conflicted because she believed the students required more one-on-one attention in the EIP class and a more interactive environment. Elsa attempted to compromise the contradictions she was aware of in Ms. Blaileen's class. She did not provide compromises, instead gave way to Ms. Blaileen's authority and decided her position was as described and that was that. Elsa did not feel empowered to use her voice against Ms. Blaileen nor in the classroom.

Elsa felt pressure from Ms. Blaileen's presence and was silenced by her authority in the classroom. When asked to describe why she did not feel her experience with the student who struggled with long division was not resolved, Elsa stated her position in the classroom did not allow her to act.

I was conflicted on what to do kind of. I do not know. I think that is still our same concern of like we are that awkward place is for us in the classroom. Cause we are told to help them if they have any questions but I do not want to like overstep my boundaries and like completely teach them how to do something cause... what if I teach it different than how the teacher is doing it or how all the classmates are doing it. It is just that very awkward medium, like in-between gray area. (Elsa, SG1, 0:18:37)

Elsa did not want to overstep her boundaries in Ms. Blaileen's class and this put her in an awkward position she called a gray area. Elsa desired to be the one-who-can-help, but due to Ms. Blaileen's presence Elsa felt limited in her actions. Instead of using her voice, she chose to silence herself and did not even attempt to use Ms. Blaileen's voice.

Elsa desired to be seen as one-who-could-help, but in Ms. Blaileen's classroom she felt she could not enact her identity. She described being positioned in a gray space as a metaphor to represent the awkwardness of not being to fully enact her identity or use her voice. She was also conflicted by the institutional structure and her reaction there was to be complacent. Although she disagreed with the position of the students and the context of the EIP class, Elsa only accepted her position, and did not attempt to compromise or resist. When she focused on the students, Elsa criticized Ms. Blaileen's practice, but still felt powerless in her classroom.

Elsa at Amos Moses Elementary Part II: Enacting her One-who-can-help Identity

After a couple of weeks visiting Ms. Blaileen's class, Elsa began to find her voice in the classroom. She felt she had broken through the gray space she was positioned in and found her role in the classroom. Elsa admitted though her role was not clearly defined. When asked what her role was in the class, Elsa described it as being a "floater."

I feel we are kind of more of just like a floater. We can help when we need to but we are not always assigned what to do. So I would not say that we have a very specific set role but... I feel we are needed when we are in there.... We are readily available to help when we are in there. (Elsa, Int. 2, 0:09:29)

Elsa described her role as having to be flexible with what Ms. Blaileen had planned for the students. She had accepted the uncertainty of her position as a student teacher. She no longer needed to know specifically what she was to do, but became complacent with understanding she was to help students and there was a space for her in Ms. Blaileen's classroom, even though the space was not explicitly defined. Elsa, however, still felt like a member of the community.

Although Elsa's expectations were not explicitly defined, but she was still able to escape the gray space where she felt previously positioned. Elsa co-constructed her position with Ms. Blaileen by letting Ms. Blaileen know of her intended and desired position in the classroom. She sought to be legitimized by the authority. Elsa sought to use her voice in Ms. Blaileen's classroom, but she needed to have Ms. Blaileen's permission.

I am getting more comfortable with my role in [Ms. Blaileen's] because I went in there being like well, I am not quite a student teacher. I am not quite just some person that is going to be here all the time to observe. It is that super awkward in between where you did not know what to do, and so getting more comfortable and forming those relationships has helped a lot. And just talking to her, being like, hey we are here to do whatever you need us to do. Please use us for whatever you can. I think that has helped. (Elsa, Int. 2, 0:12:08)

Elsa described entering Ms. Blaileen's classroom being in-between student teacher and student. This position left Elsa unsure of her responsibilities and expectations. Elsa credited building relationships with being more comfortable in Ms. Blaileen's classroom. It helped her in determining what she should be doing during her practicum experience. Elsa was unsure of how to participate in the community she desired to join. But by talking with Ms. Blaileen, Elsa positioned herself as one-who-can-help, her desired position according to her background.

Elsa also attributed her teacher education program with aiding her in escaping the gray space. She was able to make connections with what the students were learning and what she was experiencing, but she also became aware of the differences between her past experience in school and the experience of modern students. She compromised the differences by positioning herself as a learner, and claiming both perspectives are important in the classroom. This perspective allowed Elsa to feel more comfortable in enacting strategies she was learning in her teacher education coursework.

And just being more comfortable and knowing what I am learning to teach these students. That maybe I did it a different way back in elementary school then they did it. But like their way is not better than my way or my way is not better than their way but we can all learn from each other, has helped me do that. And reinforcing the learnings that were like we are doing in class has helped me to have the confidence to teach them that. (Elsa, Int. 2, 0:12:08)

To Elsa, the practicum experience was her time to "reinforce" what she was learning in class. By positioning herself as a student, Elsa was able to break through the gray space because are the actions to take in order to learn to teach and join the community of educators. She was empowered by shifting her focus from Elsa as a teacher to Elsa as a student.

During this time, Elsa refused to position herself as a teacher. Instead she focused on her in-betweenness or her "teachery" position. To Elsa, to break through the "teacherish role" she had taken, she would need to teach a lesson and be responsible for the students' outcomes. When it came to discipline, however, Elsa felt more comfortable flaunting her teacher identity. Elsa described how when it came to classroom management, she had seen a shift in her role in Ms. Blaileen's classroom.

Sometimes I still feel awkward. I am like, like what do I do? Kind of like the behavioral and like disciplining area. But now I feel I have kind of moved on in terms of telling the kids what they can do and what they cannot do, or helping them with things and not giving them the answer. I think mostly before it was all behavioral stuff... I did not know if I could tell the kids that they can go to the bathroom. But now I can - I feel like I have

enough role in the classroom... Our teachers been like, they will listen to you if you tell them what to do something. I will respect that. So I feel like that has helped a lot just to settle those nerves. (Elsa, Int. 2, 0:42:08)

Elsa described how her mentor teachers empowered her to take on the role as a disciplinarian in the classroom. Being in a position of power was important to Elsa because the students seeing her as a figure of authority was necessary to being a teacher and moving out of the gray space.

Elsa was still in search for her position in the classroom. She wanted to fulfill her desired identity as one-who-can-help, but had not yet been able to accomplish this. She did find a niche where she could help with classroom management, which provided her with a sense of authority she desired.

Being given the opportunity by Ms. Blaileen to run a center was particularly powerful for Elsa because she took control of a lesson to a certain degree (one of her criteria for feeling like a teacher). Elsa credited running a center as aiding her in getting out of the gray space. While running centers, Elsa was able to use her voice as desired without the pressure of Ms. Blaileen. She also was able to have control over the students.

I think by helping us run centers has helped us get out of that gray space because... see us as there to help them one-on-one but they can also see us as an authoritative figure. If I am running a center like you need to listen to me. And we are going to be doing the group work but you cannot... just because it is me and not [Ms. Blaileen] like you cannot goof off and so I think that has helped a lot for them to kind of realize why we are there. And not—we are there to help them and not just sit there and observe in the back. And help them on little things. So I think that has been a good benefit from it. (Elsa, Int. 2, 0:43:05)

Elsa pointed out how being in control of the center convinced the students she had a purpose in Ms. Blaileen's classroom. Being in charge of a center legitimized Elsa's identity as a teacher and she felt she had permission to use her voice and was given authority over the students. In these situations, Elsa was provided a space by the authority to enact her one-who-can-help identity, and was able to influence the progress of the students.

From her escape of the gray space Elsa felt she could enact her identity and use her voice as she desired in Ms. Blaileen's classroom. Within this newfound space Elsa desired to use what she had learned in her program. She perceived this as an extension of her position as one-who-can-help. She described having learned many teaching strategies in her mathematics education course, but she found it difficult to implement those strategies. In particular, Elsa found it important the strategy shown to the student help him or her in understanding why. Like Anastasia, Elsa found Ms. Blaileen's mathematics teaching practice problematic because of Ms. Blaileen's emphasis on tricks and not on understanding why. Elsa does not refer to this as conceptual understanding.

I feel like it is kind of hard because I have tried not to step on the teacher's toes by being like well this is the trick of how you do it but this is actually why you are doing it. So it really helps when we get to do the worksheets that they do. And I am like, well if you are not understanding it lets try to show you why it is working so then maybe you can use this strategy to help you but you are going to know it is right because you can check it. Or because like you know it is more than just like the trick. (Elsa, Int. 2, 0:01:04)

Elsa felt Ms. Blaileen restricted her actions, and Elsa did not want to disrupt the current power structure. When Elsa felt she was not under the supervision of Ms. Blaileen (centers, independent student work, etc.), she felt capable of teaching the ways she thought was best for students. The space had been provided for Elsa to use her voice.

Elsa felt certain limitations to when her voice could be used. It depended on whether or not she felt positioned as the one-who-can-help. As stated previously, Elsa felt comfortable showing the "why" behind the trick to the student if they did not understand the mathematics. She did not refer to teaching the why to other students, but rather only those who did not understand and needed the assistance to progress in the class. Elsa was able to connect her desire to teach students why to Ms. Blaileen's tricks.

The other day when we were doing mixed numbers and improper fractions [Ms. Blaileen] was teaching them like if you have three and two-fifths you can multiply the five by the three and then add the two. And I was like, yes that works but none of them understood why it worked. And so kind of things like that I would teach them why it all works. And once they could master why it worked and the concepts behind it, then teach them the tricks. So that you know if they came across a problem where they stumbled at it and it did not make sense. They could fall back on the knowledge they had. And so like really teaching them those lessons and not just being like, oh well you remember when we did this. (Elsa, Int. 2, 0:06:25)

Elsa stressed the importance of teaching the students "the why" behind the mathematics but not for the benefit of having a deeper understanding of mathematics. The language of "the why," however, seems to miss Elsa's desire for "the why" to lead to understanding why something works. Instead, Elsa stressed how knowing "the why" would be beneficial for the students to succeed and progress in school. The tricks were fine for students as long as they first learned the why and the concepts behind them.

Elsa's desire to be the one-who-could-help and her desire to show students why also emerged when discussing her ideal mathematics teacher. The main criterion for her ideal mathematics teacher was the ability to explain why things work. This was important because it gave the students something to fall back on when they do not know how to solve the problem. Also important was students practicing the techniques they were shown. This could help them to build up their mathematics. "So once they got those techniques mastered. They can show that they are kind of little stepping stones" (Elsa, Int. 2, 0:20:37). Elsa attributed the students' understanding of why to the progress they will make.

Elsa saw some issues in becoming this ideal teacher, mostly with the students she envisioned as teaching and not so much with her own development. She felt underprepared to work with students who only want the tricks and not the conceptual understanding behind the

mathematics. Additionally, Elsa is concerned with students who no matter how many strategies she shows them, they do not understand the subject matter.

A kid that does not understand it and going through the three different ways that I know or however many different ways I know, and then them still not understanding it. You can explain it so many different times but they just needed that one time to click, but what if I cannot get that one time for them to click. There is only so many different ways. I feel sometimes I could explain things and maybe it takes a partner explaining it to them or something but... what if they just never get it. And you cannot spend weeks and weeks having them get it. They have to move on eventually. So I do not know. But that scares me too. (Elsa, Int. 2, 0:21:59)

Elsa saw these types of students as limiting her enactment of her identity as the one-who-can-help. Thereby, she saw these students as not being receptive of her voice and stagnant in their progress. Elsa's roadblock to being her ideal teacher was not her ability as a teacher-of-mathematics but the students' reception of her one-who-can-help identity as a teacher-of-mathematics.

Elsa did see her program as supportive in her endeavor to become her ideal teacher. She felt she was progressing in her "teacherish" narrative thanks to the experiences she had been provided. She believed the program would continue to provide her with experiences needed to continue developing her teacherish narrative. As Elsa continued in the program, she and her cohort "will be taking on a whole [lot] more of a teacher role about [the classroom]. So I think it helps us kind of scaffold to becoming that teacher which is helpful" (Elsa, Int. 2, 0:24:44). Elsa saw her program as a way to progress her own identity as a teacher-of-mathematics. The same focus she had on her students' progress, she had on herself in the teacher education program. But she still looked to the program to provide her with guidance on how to teach mathematics and develop her own mathematical understanding.

Elsa continued to criticize Ms. Blaileen's teaching practice, but now was able to use the program as evidence in her argument. Elsa did not focus on conceptual understanding, but

instead on Ms. Blaileen's lack of attention to the strategies the students used to solve a problem.

Elsa argued her program had shown her the importance of emphasizing multiple ways of doing.

To narrow them down to just one way to do something, I thought totally was not right. And I mean I understand why she did it. Why she does it? It makes it easier for her to teach. It makes it easier for the kids to talk amongst themselves and figure it out when they are working in groups. And it makes it easier for her to grade and stuff... It was tough to see her just say, well this is the way we are going to do it because I mean last year in [math pedagogy course] and even in this year in [math pedagogy course] we learned student-invented strategies and how those are so important... That completely discourages student-invented strategies if they are just going to be told this is the one that we are going to do. You have got to understand it this way. So it was a little aggravating but nothing too upsetting. It is nothing I cannot get over. (Elsa, Int. 2, 47:59)

Elsa expressed her frustration toward Ms. Blaileen for not building on the student strategies but instead limiting them to one strategy. She attributed the importance of student-invented strategies as being the reason Ms. Blaileen's teacher moves were unproductive. It was difficult for Elsa to witness students' strategies being devalued. Elsa saw Ms. Blaileen's actions as preventing the progress of the students. Although Elsa criticized Ms. Blaileen's actions, she also defended them. She used protective moves (Goffman, 1959) when trying to understand Ms. Blaileen's decision-making processes.

Elsa's issue with the curriculum of the EIP classroom came up again. In particular, she was disappointed by the students' performance on a benchmark test. It annoyed her the scores would tell a different narrative than her narratives with the students. She saw the benchmark as further evidence of the students' future progress being problematized. She criticized the assessment and how Ms. Blaileen's job was to prepare them for the state standardized test.

They did not even get a fair shot... I get really worked up about this. But it frustrates me because I feel it is the whole system that they are in. Because these 14 kids are EIP like they did not pass their [state standardized test] or they just barely passed it. So this teacher is in charge for trying to prepare them for the curriculum, for the [State standardized test]. But then also on top of that focus on that, but then also teach the standards for 5th grade. And so obviously those standards for the 5th grade are going to get brushed aside because her job is to make them pass the [state standardized test] so

they can go on to middle school. But then once they get them to middle school, what are they going to do? Because all this important 5th grade curriculum was brushed to the side. They failed their benchmark test. And then they are not going - no they might do great on their CRCT. Which I really hope that they do because I really want them to do well, but at the same point are they going to struggle again in 6th grade... [It] really tears at the heartstrings for me. I get upset. (Elsa, SG2, 0:28:38)

Elsa let the small group know about her frustration with the positioning of the students. Again, this related to the lack of progress the students would be able to make if Ms. Blaileen continued to focus on the standardized test and not on the 5th grade curriculum. Elsa was no longer confused by the curriculum choices but frustrated and disappointed. She decided these are negatives and hurting the students' progress. Elsa did not provide any solutions for these issues.

Elsa at Amos Moses Elementary Part III: Reflections on Amos Moses

Once Elsa's field experience at Amos Moses was completed, she was asked to reflect on how she had progressed as a teacher-of-mathematics. During the final small group meeting, Elsa wrote the following:

I feel that I have progressed a lot this year and have grown to be much more comfortable with answering students' questions and even teaching them new lessons or ideas about mathematics. I can confidently now teach a center without having to worry the whole time if I am doing it right or if I am going to be messing up the information for the students. I think I have learned a lot more this year on strategies to use to teach the students which has helped a lot but just doing more and more of answering students questions, breaking it down for them, and teaching the small mini lessons or center has really exposed to be more comfortable with the student. At the beginning, I was comfortable working one on one with students and really seeing what they knew, giving tips, and helping a student work through a problem... I think now I can confidently answer questions the students have, help to break down why something works if they are having a hard time understanding an equation, and to teach a small lesson where they would be practicing familiar topics and we would be getting practice or expanding upon those skills. I think the aspect that I would still be nervous for in the future would be to teach a brand new lesson to a whole class, that would still intimidate me a little but I would be comfortable with just about everything else. (Elsa, WP4, Lines 9–23)

Through her writing Elsa emphasized how comfortable she had become working with the students. She stressed how she was more confident about answering student questions and

teaching a center, but not a whole class. Part of developing her confidence working with students was Elsa felt she could "breakdown" the mathematics for the students. Her response to the writing prompt highlighted the areas Elsa accentuated during her third reflective interview and final small group discussions. It also demonstrated the events Elsa was still concerned about when it came to her growth as a professional.

Elsa began her reflective interview by focusing on the role Ms. Blaileen played in her experience at Amos Moses. As before, Elsa praised Ms. Blaileen's experience and classroom management skills, but critiqued Ms. Blaileen's mathematical practice. "So that was one way of going about it, and I do not think that was necessarily the way that I would choose would be the best" (Elsa, Int. 3, 0:03:22). Elsa developed a sense the students need to understand the why behind the procedures (tricks), and she saw Ms. Blaileen's practice as centering in on trick to do the exercises. Elsa believed the students would be more engaged and retain better what they were learning better if Ms. Blaileen did more than just worksheets.

We did great things like centers and stuff but especially in math, we just did the worksheet together... The kids totally knew to go from one center to another and how to act, but they did not know—they were not getting deep in thought at all. And so I think that is something we are learning continuously, even in our other subjects. That the students need to be engaged or else they are just going to be bored. And I felt like a lot of times they were bored and just getting the worksheet done... They are going to be more engaged and they are going to remember it better, which is one of the biggest problems in that EIP classroom. (Elsa, Int. 3, 0:03:22)

Elsa protected Ms. Blaileen before criticizing how she was not productively preparing the students for the upcoming 6th grade curriculum. Elsa's previous concern with EIP class emerged implicitly, but now Elsa had a possible solution to the problem unlike before. By engaging students deeper into the mathematics, they will retain the material better and be better prepared for the next school years mathematics curriculum.

Here Elsa was also able to find the compromise she needed in order to use her voice (Belenky et al., 1986) as the one-who-can-help. Elsa discussed how she could empower students by showing the why behind the mathematics. Previously, Elsa was concerned students were not learning the material deeply enough to succeed in their next year's mathematics class. Now Elsa had a plan and a way to help those students. She talked about going deeper into the mathematics when talking about students who struggled doing the mathematics assignment and not the general population of students. For example, when asked to describe what she was good at as a teacher, Elsa stated the following:

I think I am good at—I do not know if it was just the practicum I was in or the way I was also taught math but good at it - like explaining it; like why. Because if someone's working and stuck and they cannot go anywhere. I think I am good at breaking it down for them to further understand it. So I do not know if that is in the way things are taught but I feel I can get those students that do not understand it to at least be on the path to understanding it. They might not necessarily get it like that, but at least leave them with a better understanding than when they started... I have never really taught a math lesson. I have like run a center but I hope that when I am teaching the math that I can explain it in a simple enough way for all the students to understand it at the beginning and then go, like if they do not understand it, explain it from that beginning too. So that it does not have as many problems—like students do not have that many problems getting stuck further down the road. (Elsa, Int. 3, 0:16:42)

Elsa was not conflicted about when to teach conceptually as she was before. Elsa decided the why should only be shown to students who did not understand the mathematics. She alluded to the idea in her future classroom she would start with these strategies, but again teaching conceptually was attached to aiding students in understanding the material to be successful in their classes and standardized assessments. For Elsa, the conceptual understanding of mathematics was not necessarily needed to learn mathematics, only for progressing and being successful in school.

Elsa's desire to teach conceptually was promoted by the success the students were having when doing mathematics. She was asked to narrate the event having the greatest positive impact

on her perspective of students' mathematical thinking. She responded by emphasizing the deeper understanding she provided students when converting improper fractions to mixed numbers. Elsa saw evidence of the students understanding because of their change in disposition about their mathematics work.

Half the class was struggling with [converting improper fractions to mixed numbers]. And so I remember Anastasia and I would go around and we were like, okay well if you have five - if you have sixteen-thirds, what does that look like? And having them really draw it, then they understood it. They knew it was more than just like, all right here is my 'j'. There is my numbers because they would come up with these absurd things, like absurd numbers. When we would go and ask them does that make sense? They were like, no but I got it done. And so to go back and really get deeper into that so that they could understand it. I think it made like a big impact on their learning because they were like, well I can get this I can do everyone of them now. Rather than just like, well I did the worksheet so. It was like a good positive vibe that came from them because they were proud of what they did. (Elsa, Int. 3, 0:06:13)

Elsa, as part of her desire to be the one-who-can-help, looked for ways to impact students.

Impacting students was also a reason she wanted to be a teacher. This influenced Elsa's identity as a teacher-of-mathematics. So it made sense for Elsa's turning point to be about how she impacted a students' understanding of mathematics. It also was important this event aided the student in being successful in the classroom and demonstrated to Elsa the student had progressed.

Elsa confessed during her third interview she was most concerned with two aspects of being a teacher. The first was what she referred to as *knowing*. "I guess kind of just knowing... So like being able to really get into the standards and what I would have to teach and really knowing what I would be teaching" (Elsa, Int. 3, 0:18:03). Elsa wanted to gain a deeper understanding of the content, of knowing how to interpret standards, and knowing what to teach. This also included knowing how to respond to control of the classroom, but she does not foresee herself being able to truly know how to control a classroom until she is in charge of her own. In

other words, Elsa desired to have the ability to select the most appropriate action as the authority. Again, this could possibly be linked to her aspiration to be the one-who-can-help. By *knowing* the standards, the curriculum, the best course of action, and how to manage a classroom, Elsa could then be ready to aid the students in her classroom. She desired to have this voice in her future classroom.

In order to develop her knowing voice, Elsa attempted to find experiences aiding her in learning what she needed in order to know the best actions as a teacher. When she felt she had learned an activity, skill or strategy helping her to know, then she claimed to feel more independent and confident. Elsa foreshadowed this desire for knowing in her second interview when she credited her teacher education program for helping her in knowing what is best for students. She also attributed her growth in confidence and independence to her teacher education program in the third interview.

Being more comfortable and *knowing what I'm learning to teach* these students - maybe I did it a different way back in elementary school then they did it. Their way is not better than my way or my way is not better than their way, but we can all learn from each other has helped me do that and *reinforcing the learnings that were like we are doing in class, has helped me to have the confidence to teach them that*. (Elsa, Int. 2, 0:12:08, emphasis added)

I think learning in [the mathematics methods] class last semester helped me find it [independence] a lot because we tried so many different strategies and talked about ways that the students could learn. And *so knowing that something worked* and then applying it, and I was like, wait this is actually really great. And it worked for the students and they understood it, *really helped me to find my independence*. (Elsa, Int. 3, 0:35:58, emphasis added)

So I think I just really need to understand where the students are coming from, and giving them that curri - finding the curriculum and making it *so I would know [it] inside and out. So I can be comfortable delivering it to them*. (Elsa, Int. 3, 0:19:07, emphasis added)

Elsa leaned on her mathematics coursework to aid her in developing her professional identity. In particular, her ability to recontextualize (Ensor, 2001) what she was learning in her coursework

aided Elsa in finding her independence and being comfortable in Ms. Blaileen's classroom. The topics covered by Elsa's mathematics methods course and the content of Ms. Blaileen's class overlapped, which aided Elsa in recontextualizing. This was not the case for other participants.

From Elsa's concern with knowing it can be inferred Elsa had constructed a feeling rule (Hochschild, 1983/2012). In this case, however, Elsa was not explicit about her feeling rule, but instead provided actions and desires to avoid particular emotions as a teacher. I believe Elsa's aspiration to be the one-who-can-help had influenced her in deciding by *knowing* she could avoid feelings of helplessness and lack of impact. Consequently, she looked to her teacher education program to develop her knowing. Elsa was aided in this endeavor by the close connections between the program and the practicum. She does not, however, make any claims about how she became a knower independently of the program.

Elsa's other main concern was after she started teaching she would turn her back on the teaching practices she believed are best for students. In particular, she described the fear she had about teaching like her mentor teacher Ms. Blaileen:

My biggest fear is that I will not be able to do that [go beyond as a teacher] and I will get really overwhelmed. And so I will end up going just more like, all right. This lesson we have to do. This is how we are going to get it done and [we] got to move on, and not taking those needs for individual students and not digging deeper into that. Because I know there is a lot of times where there is not time for that. But I am concerned that I am just going to lose that all together because it is hard. (Elsa, Int. 3, 0:29:08, emphasis added)

She [Ms. Blaileen] definitely just taught them [students] one way the first day of the topic. And it was five minutes, and then they did worksheets on it to practice. I definitely do not think that is the way I plan on doing it. *Again, big fear that that is how I am actually going to do it.* (Elsa, Int. 3, 0:39:52, emphasis added)

Elsa came to the realization her desired ways of teaching would be challenging and difficult for her to enact. Her desire to do what is best for students (i.e. be the one-who-can-help) had her fearing becoming the lecture-based instructor she thought Ms. Blaileen to be. Elsa did not want

that to be her narrative. She did not want to be like Ms. Blaileen because of the lack in preparation she saw the students had for the next grades mathematics. She believed teaching the why would be better for the students in progressing successfully in the upcoming grade. She recognized the amount of work involved to be the ideal teacher she described in earlier interviews and the pressures and tensions experienced by teachers. She also recognized how easily one can turn their back on what they believe is best for students.

To Elsa, students need to be shown multiple strategies for solving problems if they are unable to invent their own algorithm. "You can show them an algorithm or different ways that work, and it ultimately it is up to them on how they want to get it done" (Elsa, Int. 3, 0:11:04). As a teacher-of-mathematics, she was responsible for showing students multiple strategies, but then also gave the students enough agency to decide on what strategy works best for them. Elsa also wanted to provide students with structure in the classroom because as a student she needed the authority to provide said structure. She stated the following when reviewing the characteristics of her ideal teacher:

I think I would definitely add showing them—I said showing them different ways and they can build off of it, but also showing them one way kind of. Because showing—like if I was a kid and I was like, well there is five ways to do it. I would be like, tell me the best one to do it. And so I might say like, this is my favorite way to do it or this is the type you are going to see most on the [state mandated exam] or something. But like giving them that giving them the flexibility to do what they want but also giving them the structure to do what they need to get done. (Elsa, Int. 3, 0:31:15)

So Elsa wanted to provide her students with enough agency to develop their own mathematical abilities but enough structure to be successful in school.

With her second major concern, Elsa was again not providing explicit feeling rules, but instead described the emotionality she hoped to avoid. She had decided specific teacher moves are necessary to avoid feeling particular emotions. Because she had a desire to be the one-who-

can-help and impact students in their progression through school, Elsa has decided teaching the why was best to help students progress. In order to feel like she was fulfilling her vision of teaching mathematics, Elsa needed to develop her practice to not match Ms. Blaileen's. However, Elsa seemed to have developed a different interpretation to teaching mathematics than emphasized in her program. Whereas her program had emphasized listening to students thinking and building on their mathematical strengths, Elsa had an image of mathematics teaching as showing students multiple strategies, and emphasizing one strategy to provide students with a structure. She also would provide the students the opportunity to select the strategy that would work best for them. So Elsa saw her teacher education program as legitimizing these ideas. Her successes with students learning conceptually through strategy demonstration further legitimized her images of teaching.

Elsa also sought to legitimize herself as an authority in the classroom, though she recognized it would not be possible to be seen as the full authority until she was the sole teacher in the classroom. Elsa would only feel like a teacher if she were given the authority of a teacher. She described her desired authority of a teacher in two ways. The first was having authority over the lesson and the other was having authority over the students. When asked for more details about what would make her feel like a teacher, she described both types of authority she pursued.

I definitely think that as simple as it is, *teaching a lesson would make me feel more like a teacher*. And not having, obviously I will have my mentor teacher in there in the fourth semester - student teacher in there, but *I feel like just having all students be like all eyes on you and to you deliver that information really feels like a teacher*. But then also if I need to—if they are all at recess and the other two teachers are like in the classroom. I could control them, and well not control them but manage what they are doing. And if I were to say, all right it is time to line up. That they would listen and *so I feel like being able to have that sole authority*, not authority but the words are not coming out right, but *just to know that they would be able to listen to me without having to look to the other teacher*. Would make me feel much more gratified in what I would do. (Elsa, Int. 3, 0:14:36, emphasis added)

Elsa believed having authority over the students meant being able to control behavior when needed. For Elsa classroom management came up much more in interview three than in the previous interviews. Elsa had previously claimed in her vision of self-as-teacher she wanted the students to see her as an authority figure. When she described her concerns about her future practice, the issue of being an authority returned. Elsa did attribute this desire to the avoidance of negative affect in her first interview. "I would plan on having them trying to be very controlled and not chaotic because the chaos really stresses me out...So like establishing that "activity" of control and—not control like calm ways to do things" (Elsa, Int. 1, 0:39:26). Elsa did not explicitly construct a feeling rule, but does establish a *repertoire of teacher* moves to avoid specific emotions.

Though she expressed much about her emotionality in Ms. Blaileen's classroom, Elsa claimed she did not significantly regulate her emotions while at Amos Moses. When asked directly about her regulation of emotions, she expressed she had to control her emotions more when observing Ms. Blaileen teach than when she was in control of a group of students.

I feel probably not as much while I was teaching or helping, but kind of more when I was observing. I feel I found myself getting aggravated when I was seeing a lesson being taught because it was taught so one-way street that I was like, well obviously these kids are not going to—I would get frustrated because I was like, these kids are not going to get that... I definitely do not do everything right, but when I am in the moment I feel it is the right thing to do. So I felt like, I mean I guess I was happy that they were getting it. But I was not ecstatic or whatever. So I did not feel there were as many emotions to feel. I guess I could have gotten frustrated if it was not going well but by taking a slow pace I feel most of the time it did go well. (Elsa, Int. 3, 0:20:17)

Elsa made a distinction between feeling emotions and having emotions. Though she recognized she was having emotional reactions to her teaching and the students' learning, this was different than being aware of the emotions she was feeling at the time of observing Ms. Blaileen or if a lesson was not going well. She mostly had to regulate her frustration when watching Ms.

Blaileen teach due to her only showing students one strategy, which conflicted with Elsa's desired ways of teaching. Elsa stated she did not have to consciously regulate beyond the frustration and aggravation she felt while observing Ms. Blaileen.

I believe Elsa's distinction between feeling emotions and having emotions was why she did not construct explicit feeling rules. Instead, she constructed a repertoire of teacher moves to aid her in avoiding the emotions she did not want to feel. So Elsa's goal in the classroom was not to regulate her emotions by being aware of her emotions, but instead to create an environment where she could avoid having to feel particular ways. This seemed to guide Elsa's emotional labor (Hochschild, 1983/2012) more so than the idea of constructing ways of being as a teacher.

When asked about how she decided what emotions to regulate and how, Elsa returned to the idea of the environment she would like to construct for her students and her position as the authority in the classroom.

I have seen teachers yell, and obviously that is an emotion of anger and frustration. And I always thought it did more harm than it did good because then students do not feel comfortable and if they are not going to be comfortable they cannot do their learning as well. And so I guess I always knew to keep frustration inside. And I guess when someone does really well I get happy for them. If they can do a problem and they have been struggling with it, I will be like, yeah that was really great. So I guess hiding happiness is not as—I do not know. Students like to know when you are proud of them or at least I think. And so I feel you do not really have to hide those happy emotions. It is just those times when you get frustrated. (Elsa, Int. 3, 0:23:52)

Elsa admitted she determined the emotions to regulate from her own past experiences. She believed positive affect did not need to be regulated, but should be expressed openly to students. Negative affect did need to be regulated in order to construct a comfortable and safe learning environment for students. Her position of authority was more than just control over the students and curriculum, but also having an authority over the emotions she feels as a teacher.

Overall Elsa looked back at her experience Amos Moses positively. Though she did not seek to be legitimized by her mentor teacher, she did lean more heavily on her teacher education program in order to legitimize her actions as a teacher. She implicitly discussed emotion rules by focusing on the actions and activities she would take to avoid events that would make her feel particular ways. Elsa's focus on students' progress and her identification as one-who-can-help were strongly influential to her ways of thinking about teaching and learning mathematics. These two aspects of Elsa also heavily influenced her emotionality in Ms. Blaileen's classroom. Furthermore, Elsa's apprenticeship of observation (Lortie, 1975/2002) guided her in deciding what emotions needed regulation and how necessary regulation of emotion was to creating the environment she desired for her students. To better understand the repertoire of teacher moves Elsa developed, an investigation into her emotional geographies (Hargreaves 2000, 2001a, 2001b) was conducted.

Elsa's Emotional Geographies

In this section I describe the characteristics I was able to tease out about Elsa's emotional geographies during her time at Amos Moses elementary. I begin by exploring each emotional space individually providing commentary on how her emotional geographies influenced her decision-making processes. I end this chapter by arguing Elsa's perspective during this time was still that of a student, and she did not see the classroom with her future self in mind. Elsa was not able to fully explore her prospective self because she did not position herself as a teacher but as a student instead.

Elsa's Moral Geography

Elsa's moral geography was characterized by her desire to aid students in progressing their mathematical abilities. Throughout her experience at Amos Moses Elementary, Elsa's

purpose was to teach mathematics so students could progress successfully. This was evident from the frustration, anger, helplessness, and other negative emotion she felt when observing Ms. Blaileen teach and the joy she experienced when seeing students' succeed in mathematics. Also the frustration Elsa experienced when envisioning the students' ability to be successful in 6th grade after being in the EIP class was evidence of her focus on students' progress. Elsa's voice as the one-who-can-help needed to be developed in order for her to impact the students' mathematical progress. These characteristics bounded her moral geography.

Elsa decided for the students to be successful, they needed to be shown multiple strategies emphasizing "the why" of the mathematics. This strong belief of Elsa's provided her with enough empowerment to work with Ms. Blaileen's authority and find, with the authorities permission, a space to use her own voice. Elsa finding her voice within Ms. Blaileen's class was an important first step in finding a space for her mathematical practice to develop. Finding creative ways to use her voice in Ms. Blaileen's class was necessary to do what she thought was best for the students.

Elsa specifically criticized Ms. Blaileen for only showing students only one strategy for solving mathematics problems. In the following statement, Elsa explained the issue with showing students one strategy and how they would be better prepared for standardized tests if the why was shown to them.

They were taught one way. They did the worksheets and they are done with it. I think if they took the time to understand what they were doing they could relate it to other topics. And I think they would be doing better on these benchmark tests... I mean I remember feeling terrible leaving when they were all—a lot of them were not scoring well and it was simple problems. Because I think if I remember this was the thing that I gave to them for the [mathematics methods] course. And so I knew that I set them up for something I have seen them do each time. So I was hoping that at least half of them would be able to get at least the steps right and when I did not even see that I was super disheartened just because they need to be remembering these things and yeah they will probably have a crash course the week before to try to review everything for the [state standardized

exam]. But is that going to be good for their education because then they are not always going to get a crash course before every thing that they do in life. (Elsa, Int. 3, 0:45:48)

This statement emphasized Elsa's desire to have students learn multiple strategies to demonstrate a conceptual understanding of the material. Moreover, Elsa was conflicted by the students not being prepared to demonstrate success on the benchmark tests.

Also evidential of Elsa's focus on progress was her growing frustration with the curriculum of the EIP classroom and the ways it left students unprepared for the next grade. This contrasted with her notion of being the one-who-can-help the students progress. She believed to be a teacher meant to help students be successful and if they are not going to be prepared for the next grades curriculum, then she was failing at her position. Elsa's frustration with her position was consistent throughout her interviews. During the second interview she looked back at what she had said about the curriculum of the EIP class.

It is like this whole EIP classroom thing is weird to me. And I do not know that I necessarily agree with it. And so I think that just by being in that classroom their expectations are automatically lowered for them. But they are normal 5th graders and some of them did pass the [state standardized test] but just barely. Still does not mean that they are not at the same level—levels as other 5th graders. They just need more concentrated curriculum. But I feel a lot of the times our teacher was like well they are on a 3rd and 4th grade reading level. So that is where they are at in math, which I think may—yeah some of them are definitely at that level for math but that should not be the expectation. You should try to teach them the 5th grade level and break down to 4th and 3rd if you need to. Attempt for them to, at least, learn the 5th grade stuff first because if you are setting their expectations at 3rd and 4th grade level obviously they are not going to exceed them and just automatically go to 5th... I think that they are obviously going to perform lower if they are set lower expectations for them. So at least give them the benefit of the doubt. (Elsa, Int. 2, 0:37:12)

Elsa concluded the students placed in the EIP had lower expectations from the others in the school. In particular, Ms. Blaileen's approach to the students' learning of mathematics was evidence to Elsa of lower expectations. This was problematic to her and she was frustrated by the lack of possible progress the students were given.

Elsa's ability to recontextualize her coursework aided her in finding legitimization for her voice in Ms. Blaileen's classroom. Elsa saw direct connections between what she was learning in her coursework and her practicum experience. This provided an avenue for her to put into practice the theory she was being introduced to in her coursework. The overlap between coursework and practicum justified what she believed could be done as a teacher-of-mathematics. Because she was no longer sought legitimization from Ms. Blaileen, Elsa sought it out from her teacher education program.

Elsa's Professional Geography

Elsa's professional geography was characterized by her desire to be the one who knows. Her description of someone who knows was not limited to mathematical content, but included knowing appropriate teacher moves, best classroom management strategies, and having knowledge of the standards and curriculum. Knowing was important to Elsa because otherwise she would not be able to be the one-who-can-help in the classroom. Elsa acknowledged her knowing needed to be further refined. Like Anastasia, Elsa also saw her teacher education program as being essential to legitimizing her identity as a teacher-of-mathematics. Elsa, however, showed limited awareness of the complexities of teaching.

Elsa's image of an ideal mathematics teacher included knowing the previously stated aspects of teachers' work. Elsa did see her program as supportive in becoming her ideal teacher, but she also recognized the program did not ask her to do some tasks (e.g. teaching a full lesson) she thought was needed to progress herself. When it came to mathematics, to be her ideal teacher, Elsa knew she had to revisit the content, but also know how the students' mathematics is connected.

I mean I would definitely have to go back and—I mean math was always kind of one of my favorite subjects so I liked to do it... Still when they are giving me a problem and I

am like, oh that is how I did it. Or like I can kind of remember it but I really think by going—it is still kind of the same, like knowing what the students know kind of what they need before so then to give them all like a plane, even field of what they need to know by the end of it. (Elsa, Int. 3, 0:19:07)

To Elsa, knowing was important in order to be the one-who-can-help. Her professional geography was concerned with her transitioning from not knowing to knowing what to do in a teaching situation. But she also wanted to know about the prerequisite knowledge and abilities students would need to succeed in the mathematics classroom.

Elsa did not show much evidence of becoming aware of the complexities of teaching. She did question the decisions Ms. Blaileen made (as seen above with her expectations of students), but there was no evidence of a realization of the difficult decisions teachers make in general or any problematic notions on her position as a teacher. Instead Elsa was still focusing on the classroom management aspect of teaching. The notion of classroom management was attached to both her professional geography and her political geography. Within her professional geography, Elsa saw classroom management as part of the knowing she desired. She wanted to feel like she had the ability and knowhow to be the one in charge of students. This was important to her because she wanted the students to be successful. Elsa believed by having good classroom management she could successfully implement her lesson plans, thereby feeling successful as a teacher.

I have heard that a lot of the times lesson plans really do not go how they are meant to go. So [if] it is a pretty calm day where no big outburst or anything happen and things like pretty much go according to plan and your kids are successfully improving or they are successfully doing the work you are giving them. I feel that is a pretty successful day. (Elsa, Int. 1, 0:23:06)

To Elsa feeling successful meant being able to implement the lesson plans. For this to happen, her knowing about classroom management, standards, assessment, and students' prior knowledge was important.

Elsa's Political Geography

Elsa's political geography was characterized by the power struggle between Elsa and Ms. Blaileen. Elsa's position in the "gray space" was the first power conflict she described having in Ms. Blaileen's classroom. She used the gray space metaphor as a way to demonstrate the uncertainty of her role in Ms. Blaileen's classroom. The gray space also was a way Elsa was able to describe her conflict with Ms. Blaileen's practice. This position silenced Elsa causing her to be unsure of how to use her voice, but then Elsa began to focus on the students and her teacher education program to legitimize her self-as-teacher. The teacher education program and Elsa's refocusing on students empowered her to find a space where she could use her voice in the classroom.

Elsa struggled with how much she resisted Ms. Blaileen's authority. She considered herself a "rule follower" and she attempted to remain respectful of Ms. Blaileen's position in the classroom. This could be seen with the amount of protective moves (Goffman, 1959) Elsa used. When she was asked to read part of her 2nd interview in which she described breaking from the gray space she stated the following:

It made me sound really rebellious. Being like, I do not care what my mentor teacher did. I am going to do it this way anyway. And I remember feeling that awkward tension of like wanting to help the students and not really asking my mentor teacher if that was okay... I think it was just this feeling of me being like I am not doing it the same she is doing it. Is that okay... I mean I do still think that it helped—it really benefited the students and I think I saw their growth. And so I probably would have done it again. I probably, maybe would have gone about it a little different way and said, hey this is how we are learning it. Do you mind if we show the students this? I think it would really help them. Or when she was like planning things if we could like ask to implement that part of it. I mean it did not stop me from doing it. So. I guess, I don't know, I guess that I would probably do it again. (Elsa, Int. 3, 0:39:52)

Elsa was at first surprised by her past rebellious sounding self. She recalled her past emotionality and how feeling she was doing the best for the students was enough to break from the gray

space. Although Elsa struggled with finding her voice as a teacher-of-mathematics, she was able to enact her voice regardless of the pressures and tensions of Ms. Blaileen's authority. She emphasized how strong her beliefs were about what she was doing by claiming if she had to repeat her experience she would probably do it all the same.

By the end of Elsa's practicum, she still felt the awkwardness and tensions, but to a different degree. The power struggle between Elsa and Ms. Blaileen continued. Elsa could not win over Ms. Blaileen because of her position as a student. Elsa conceded it was not her place to *be* the teacher in the classroom.

I guess I never thought it was my place to feel like a teacher. I could go and tell them like, yes it is okay to go to the bathroom or explain how to them—how to do a problem. Or if they are acting out like go and stand by them. But I never felt I had the authority of the class. But I do not think it was ever really given to me either. (Elsa, Int. 3, 0:13:32)

Elsa confessed to being given some authority over the students, but she did not feel she had the authority of the class. As previously described, being able to control the class was important to Elsa. Authority was needed for becoming the one-who-knows and to be the one-who-can-help in the classroom.

Elsa described her not-teacher-but-not-student position as a teachery position. To be a full teacher required the authority of the lesson and the classroom. This teachery position demonstrates how Ms. Blaileen's authority influenced Elsa's decision-making processes. Elsa had to take into consideration Ms. Blaileen's authority when deciding what she could or could not do in the classroom. Elsa wanted to avoid "stepping on her toes" when she was in classroom. She was respectful of Ms. Blaileen's authority and had to creatively construct a space to use her voice.

Elsa's Sociocultural Geography

Elsa's sociocultural geography did not have a significant theme emerge. When Elsa discussed social aspects of teaching (e.g. issues of race, gender, socioeconomic status, etc.) it was in a general sense. These issues also did not arise unless specifically brought up by others in the small group meetings or by the interviewer. Sally in the third small group meeting discussed her working with students of low socioeconomic status. Elsa responded to her issue with a similar story. She was asked to say more about it during her third interview:

There are some things you cannot fix. Like their home situations, you cannot fix that, but you can make the best of what you have in the classroom... If they are not getting any attention at home, so they are screaming for attention at school. Like you can give them that attention in a positive way, rather than letting them blurt out and do different disruptive things. And so that is a situation—I would not be able to fix their home life but I can make it a positive thing in the classroom. And that is definitely a lot easier said than done because that often comes with behavioral issues that they have had their whole life... If you see that they are always blurting out. Call on them before they can get it out. Because I feel like if you call on a kid, they are going to give a more respectful answer rather than just blurting something out for attention. There is definitely not one answer to any situation. (Elsa, Int. 3, 0:48:59)

This was the only statement of Elsa's showing a glimpse into her sociocultural geography. She was explicit about her interaction with students of low socioeconomic status. She twisted this experience, however, to be about classroom management and the lack of authority she had outside of the classroom.

There was no evidence from her interviews, small group meetings, or writing prompts Elsa was attuned to any particular social aspect. Her desire for knowing and being the one-who-can-help seem to be localized to the classroom. I believe her desire for knowing had not yet expanded to include larger social aspects. She also may have felt she could only provide limited assistance outside of the classroom, and therefore not being in a position where she could make a strong impact on the students' lives. Consequently, there did not seem to be a strong affective

response to social issues because they were not considered in her narratives nor framework used to make sense of practice. I believe if her desire for knowing was expanded to include the awareness of master narratives, Elsa would have constructed a more evident sociocultural geography.

Elsa's Physical Geography

Elsa's physical geography was characterized by her limited presence in Ms. Blaileen's classroom. This was a consequence of the design of the teacher education program. Elsa felt being at the school once a week was limiting her experience. For example, she described in her next practicum she would be better at finding her position because she will be at the school more often.

I think it is going to be a little bit harder to make that place, but I think it will also be easier in terms of you do not have these two people coming in once a week cause that is also uncomfortable. That is also not normal. (Elsa, Int. 3, 0:37:39)

Elsa did not discuss her limited presence as much as some of the other participants. She did, however, recognize the constraints of her limited presence, specifically in finding her position and becoming comfortable with the students. Elsa was, for the most part, comfortable with being in Ms. Blaileen's classroom once a week. Even though she brought up this issue, she did not attach strong emotionality to it. Consequently, Elsa's physical geography was not producing powerful affective reactions.

Elsa's emotional geographic characteristics demonstrate the ways her emotional spaces influenced her ways of thinking about teaching and learning mathematics during her practicum experience. These characteristics influenced Elsa in how she positioned herself in Ms. Blaileen's class, but also in what actions she thought were possible for her as a teacher. There is evidence of her construction of four boundaries within her emotional geographies. These aided her in making

sense of the profession and in forming her vision of future self. To her this included a repertoire of teacher moves to avoid feeling particular emotions. Table 12 summarizes the main themes within each of her emotional geographies.

Table 12
Characteristics of Elsa's Emotional Geographies

Geography	Characteristic(s)
Moral	Progress Demonstrate multiple ways of doing mathematics
Professional	“Knowing” the curriculum and the best teacher moves Classroom Management
Political	Teachery position (No authority of lesson nor students)
Sociocultural	N/a
Physical	One day a week

Conclusion: Elsa's Powerful Student Identity

Throughout her experiences at Amos Moses elementary, Elsa focused on being able to help students in progressing as doers-of-mathematics. Even though Ms. Blaileen, Elsa's mentor teacher, did not validate Elsa's voice and identity as a teacher-of-mathematics, Elsa was still able to find legitimization through her teacher education program and the students' successes. I believe Elsa's conflict with Ms. Blaileen's teacher actions provoked Elsa to seek out legitimization from her teacher education program. Elsa also developed a *faith* in her program, although not as strong as Anastasia.

To Elsa the program was supportive in her endeavor in becoming her ideal mathematics teacher, but she was still positioning herself as a student during her practicum experience. When asked about her professional development she seemed to be discussing her identity from the

perspective of a student. Take for example the following statement made when Elsa was asked to describe if others outside of education understand the difficulties of teaching:

No, I do not think so one bit... They are always like, oh teachings easy. You do not have any tests. I am like, well yeah but I also am taking—technically I am taking 15 hours but I am spending two of those hours are in the lab and those are 8 hours days. So if you are going to tell me it is easy, then I want you to go ahead and do it. Because it is not just like, all right here is your material. You have to teach it. I always tell them, you have to learn behavior management, and how a classroom works... It is not as easy as just putting a math problem up on the board and saying all right this is how you do it. So. I get a little defensive but I am proud of what I do. And I do not want people just to be like, oh you are a teacher, like that is so easy. (Elsa, Int. 3, 0:12:23)

This was not the only time Elsa described learning to teach when asked about the work of a teacher. "I think I felt more overwhelmed by the assignments we had than I did by the actual teaching. I felt like comfortable in the pre-school and 5th grade classroom like I felt like I had a role there" (Elsa, Int. 3, 0:30:12). Elsa's positioning as a student was stronger than her positioning as a teacher. She was looking at becoming a teacher from the perspective of a student. This explains why she focused on knowing more so than other participants.

Overall, her teacher education program was the structure she needed to contain the negative affect she felt in Ms. Blaileen's classroom (Brown, 2008). Elsa was legitimized by her program and was able to construct a space in Ms. Blaileen's classroom to use her voice in the classroom, to seek out legitimization, and (re)construct her identity as a teacher-of-mathematics.

APPENDIX G

KIDA'S NARRATIVE

I know the math content but I do not necessarily know how it is being taught because we learn stuff in our teacher prep, which is different from what we grew up learning. And so like what I grew up learning is inherent. So I have to unlearn that.

- Kida (Follow-up Int.)

In this chapter, I discuss Kida's experience at Amos Moses Elementary. Kida was partnered with another student in the mathematics education program, but her partner did not participate in this study. I will begin by giving Kida's background and describing her time at Amos Moses. Thereafter, I will discuss Kida's reflection on her experience and the feeling rules she constructed. I conclude the chapter by describing the characteristics of Kida's emotional geographies (Hargreaves, 2000, 2001a, 2001b).

Biography of Kida

Kida grew up in a suburb of a major metropolitan city in the southeastern United States. She was the oldest of four, which was influential in her deciding to become a teacher. According to Kida, being the oldest sibling made her more of a leader but also bossy, most importantly it positioned her to be more of an instructor for her siblings. This carried on until high school, where Kida enrolled as a peer leader and was assigned field experiences in kindergarten, 1st, and middle grades classrooms to aid the instructor. She fell in love with the kindergarten classroom. She found the environment to be "natural to me" (Kida, Int. 1, 0:04:13). These experiences solidified Kida's desire to be an elementary teacher.

Kida saw herself as being good at mathematics but not as good as her brother. She considered him a mathematics "wiz" because he performed better than her in secondary mathematics courses. He went on to study engineering, which only legitimized his superior mathematics ability to Kida. Kida also went through a low point in her relationship with mathematics her brother avoided because her involvement in extra curricular activities hindered her ability to do well in mathematics.

I always enjoyed math. I felt it was a challenge and a puzzle. So it was always something that you had to unlock. So it is kind of a game but at some point probably late middle school, early high school I started to have a bad relationship toward math. Not because I was not capable but just cause I felt I could not give the time and attention that I needed to in order to be successful because of my other subjects and extra curricular and stuff. But my brother, who is 18, is just a math wiz.... So there was always that tension there of I know that I am capable but I feel like I do not have the time and I do not love it like he does. (Kida, Int. 1, 0:08:52)

Kida did not see herself as having the same passion as her brother when it came to learning mathematics. Moreover, her schedule prevented her from dedicating the time needed to study mathematics to get the same grades as he did. She recognized the tension she felt at the time.

Although Kida's parents emphasized education and mathematics, the school Kida attended also promoted mathematics. Even though the school seemed to stress mathematics by scheduling an extra period for learning mathematics, Kida did not feel the added time was beneficial to her. The teacher of the mathematics enrichment interval frustrated Kida because the teaching did not challenge her. Additionally, Kida felt the teacher would not call on students who knew the correct answer. This was disappointing to Kida because "I was eager to be right and be heard but I was not in that class" (Kida, Int. 1, 0:10:19). Early on as a student, Elsa was looking to be heard and to have a specific voice in the classroom. The voice Kida sought to have legitimized by the instructor was the voice of someone who knew the answer. She did not receive the legitimization she sought and was frustrated by the teacher.

Throughout her schooling, Kida was frustrated by her mathematics teachers for not challenging her enough. When she began to not do as well as she wanted in her mathematics courses, she became frustrated at herself for not meeting her own expectations.

Then in middle school, I had a really awful 7th grade math teacher. She was just very confusing and would make us feel like we were doing something wrong when she was not being clear in her instruction. So that just kind of was a bad experience because here up to this point I had had such great experience with math and math teachers... so that was just kind of damper. And then 8th grade it was all right. I felt like our teacher would almost overteach. And so that was frustrating cause it was supposed to be a gifted class but I was like, I already know this. So you do not have to keep teaching it.... It was the new accelerated program. So your course was what the previous years sophomores were doing. So I started that and like I said I just did not have the time to dedicate to get the A that I wanted. So that was really frustrating cause I felt like I was failing even though I was not but it just was not what I was used to being above and beyond. I actually had to apply myself a lot more. (Kida, Int. 1, 0:10:19)

Kida desired to be above average. She set high expectations for herself and if her teachers were not helping in achieving those expectations "going above and beyond" then she became frustrated with her experience.

Although Kida's experiences in mathematics classes were overall frustrating to her, she did have some pinnacle experiences in mathematics classrooms. These experiences mostly revolved around the legitimization of her desired social identity of being the one-who-knows.

I was just really set on getting it right. And so I stayed up late and studied and studied. And there was this one, it was an airplane problem or something.... It was a difficult problem and our teacher said it was going to be on the test or something similar. And so I was dead set on getting that right. And I remember mastering it and it was just such a great feeling because I just had not had that success in forever. And then also I remember being at the lunch table the period before we were taking our test and I was the expert on this problem. So I was teaching my fellow classmates who were about to take the test.... So that was just a great feeling to be the person again who knew what they were talking about. So yeah that was really great.... I took statistics my senior year. And it was AP statistic... At some point in the semester everything just clicked. I was doing fine but then there came a crux where people started to not understand but I just excelled. And then I went on to get a five on the exam. And I just love statistics, which most people hate statistics so it is kind of weird. But yeah I just remember really feeling like a great sense of self-efficacy and then like I can do this. I know what I am talking about. And I had not felt that about an entire class for a while. (Kida Int. 1, 0:16:04)

In her secondary mathematics classes, Kida desired to be seen as the one-who-knows—the one who understands the material and will be successful by getting the correct answers. Her narratives show her desire to be seen as such and worked on being legitimized as such. Being positioned by others as the one-who-knows provided Kida with feelings of success and achievement. Her strong self-efficacy about statistics was a consequence of her being successful compared to her peers. Kida's goal, however, was only to be able to get the correct answers and be able to explain how to solve the problems to others. There is no evidence of concern for conceptual understanding.

Kida also focused on the differences in language between the mathematics she will be teaching and the mathematics she learned. Kida believed the ways of talking about the mathematics had changed since she was in school. Consequently, Kida interpreted part of learning to teach as becoming acquainted with the new mathematics language. She was concerned about this new language and her ability to use it appropriately. Furthermore, she did not want to fall back on the ways she learned mathematics.

I know that from when I was in elementary school to now so many things have changed, so just adapting the right language and putting that into practice and being held accountable if we are not using the right language. Cause it is so easy to fall back to what you learned for the 12 years you were in grade school... I definitely want to get more mastery of that [language of mathematics] before I actually teach on my own. (Kida, Int. 1, 0:20:29)

Kida was aware her apprenticeship of observation (Lortie, 1975/2002) was lacking because how she learned mathematics was not how students learned today. She could not trust the mathematical language she had attained. Instead, she recognized her mathematical language needed to be recontextualized for students. This belief of Kida's is evident throughout her

experience at Amos Moses and in how she attempted to connect her coursework with her field experience.

Kida did feel like she had the mathematics content knowledge but the shift to teaching with students' thinking in mind still scared her. She was concerned she would not be the one-who-knows. She was willing to modify her idea of the one-who-knows by positioning herself as willing to learn from the students. This was her way of compromising her desired position with her lack of pedagogical content knowledge.

I feel I have the ability to but like I said just it kind of scares me, just the new language and new methods. These kids that I will be teaching [have] started from a totally different curriculum than I did. They will have it down I feel sometimes better than me. So just allowing myself to learn from the kids but then also it scares me I feel like I am going to have to invest a lot of time in order to be an impact—effective instructor. Which I am willing to do but also it is just kind of daunting. Like what if I do not do it enough? Or like what if I cannot—I do not understand this or whatever. But I have seen, being in different schools and stuff, I have seen a lot of collaboration among grade levels and what not. So things like that, that are set in place make me a little less weary of doing it on my own. (Kida, Int. 1, 0:25:53)

Although Kida compromised her notion of the one-who-knows, she was still fearful of not being able to meet the standards she has set for herself. She found relief in the collaboration she saw in the schools. This made her feel less like she would be on her own. She found security in the support system she believed would be available to her as a teacher.

Kida's vision of practice entailed students' developing a productive disposition toward mathematics. She wanted students to engage in the mathematics in ways interesting to them (e.g. gardening). By engaging students in mathematical applications, Kida can produce students with positive disposition toward mathematics. She did not want to be responsible for attributing a bad taste for mathematics early on in the students schooling. Kida's desire to make mathematics more engaging to students was also important because she believed most students saw mathematics

itself as boring due to repetitive exercise work. She saw manipulatives as necessary in this endeavor.

Cause I would like to teach in the earlier grades. And so I do not want them—me to give to them a negative taste of mathematics from the get go... Just being able to allow the students to teach each other and be hands on in math cause it can be extremely boring to do numbers and numbers. So like manipulatives especially early on.... Just align the kids to engage more that way. So it is not like uh (disgruntled sound) math. It can be a positive experience. (Kida, Int. 1, 0:37:51)

Kida was consistent with her focus on making mathematics more of a positive experience for students. As most of her writing prompts showed, she had a strong focus on developing students' productive disposition, but also on creating a positive environment for students.

During math a couple weeks ago he did not want to participate. So, I pulled him aside and we worked together. During this time, the class answers math problems on their personal whiteboards. I created “megaboard”—three boards combined—for [student] and I to work on. This small change motivated him to work and we had a very successful math lesson! This following week, [student] automatically approached me to work together once again as if it were a routine. This made me smile because as far as I have observed [student] has a negative relationship with many of the teachers. More so, he never WANTS to participate during math. So it meant a lot to see that I may be a positive adult in his school life. (Kida, WP2, Lines 10–19)

I think she intended for us to just work with naming numbers using these materials the whole time, but this soon bored the group. So, I decided to implement the lesson I had seen her do weeks earlier. My partner had not seen this, so I did it on my own. I instructed them to make the pictures using cheerios and pretzels then to name their number. It went surprisingly well, especially considering the fact that I don't think she thought they could do it. My mentor seemed to be surprised and impressed that this group of students had completed the activity. (Kida, WP3, Lines 16–24)

Overall, Kida came into her practicum experience with many goals and objectives for herself. She was determined to learn the language or discourse being used in mathematics teaching. She also wanted to learn how to create a positive learning environment for students. Finally, Kida desired to make learning mathematics engaging so students do not develop a negative disposition toward mathematics. All this contributed to further forming her identity as one-who-knows in the classroom.

Kida at Amos Moses Elementary Part I: Avoiding the Gray Space

Kida was placed in Ms. Del Davis' 1st grade class at Amos Moses Elementary. Kida related to Ms. Del Davis early on because she was an alumna of Kida's teacher education program. Kida saw Ms. Del Davis as someone who had successfully transitioned from "not being an actual teacher to actually having your own classroom" (Kida, Int. 2, 0:07:23). Ms. Del Davis having this position provided Kida with the cultural broker (Aikenhead, 1997; Jegede & Aikenhead, 1999) she desired. Having already gone through the program gave Ms. Del Davis some clout Kida valued. Kida trusted Ms. Del Davis as being more in-the-know about what it meant to be a teacher than her program instructors. In other words, Kida positioned Ms. Del Davis as the one-who-knows about teaching and learning in her narratives.

Because Ms. Del Davis was a strong cultural broker, Kida did not feel she was positioned in a gray space like Anastasia and Elsa. Kida felt she knew what her position was and knew what her responsibilities were in Ms. Del Davis' class. Kida also attributed Ms. Del Davis' age as a reason for her being able to broker her into the classroom culture.

Not as much. Just cause my teacher is younger and she's very just like open to our help. Because I think in some situations—she is just a wonderful teacher and I think she feels helpless in a lot of situations cause like this is only 2nd year teacher teaching 1st grade. And here she has a very hard classroom.... Like from our perspective you [Ms. Del Davis] seem to know what you are doing. So I just kind of—like I said I usually fill in and help the higher students because the lower students are already receiving additional help.... I do not really feel the gray area as much. (Kida, SG1, 0:22:17)

Kida felt there was a space in the classroom where her voice could be used to help Ms. Del Davis in creating a positive environment for students. Kida felt comfortable using her voice and did not feel any pushback from the authorities in the room. The authorities did, however, prevent her from using her voice with specific groups of students. Mostly the lower level students who were

already receiving "additional help." She conceded to the authorities and felt she could aid more with the higher students. This was the space Kida found where her voice could be used.

Kida also was able to avoid the gray space because of her perspective on the students in Ms. Del Davis' class. She believed that because the students were younger (1st graders) they did not have as much resistive power to her as an adult. Kida's belief the students are not able to resist her voice influenced her actions in Ms. Del Davis' classroom.

I do not so much feel in a gray space. I think partly because they are younger. So that gives a way to more teacher intervention because they need it regardless if they recognize it. Where in older grades they have to recognize it for them to let you in, where as, this you can just more avail yourself. (Kida, Int. 2, 0:47:36)

Kida's voice had a power over the younger students in Ms. Del Davis' class, which was not as strong with older students. Kida's assumed power provided her with the ability to construct relationships with the students in Ms. Del Davis' classroom. This power fit into Kida's vision of self-as-teacher because it provided her with the ability to change dispositions of student toward mathematics. Additionally, the younger students being less resistive to Kida's voice allowed her to be a stronger intervention in the classroom.

Kida sought to have her voice be seen as useful in Ms. Del Davis' classroom. She took advantage of situations to work with students to change negative dispositions toward mathematics to positive. She did this by attempting to engage the students in mathematics in more interactive ways. She shared the following narrative during the second small group meeting:

Our teacher has made calendar time basically math time. It is called like CGI or something. Just cause there is so little time to teach math so that is the first math instruction they have during the day. They sit on the rug and each person has their own personal white board and marker and she does problems whatever.... Seth came back in the room and the first couple of weeks I observed he—one week he kind of threw a tantrum. He had this jacket and was just whipping it around because he did not want to participate. And my teacher is to the point where she does not always make him because

it is just hard because then you lose the rest of the class by just getting him to be a part of it. And so sometimes she will be like, well if I make the problem about you. Will you do it? Sometimes that works.... So he comes in this one week and I was like come over here, cause I was going to try to deal with him so that my teacher can focus on teaching the rest of the class. And so we sat at the table and it was just us two and I was like, let us make a board with three different boards. So we made a mega-board and put it on the table and that just captivated him. So just by doing that little thing... he was not like following along exactly with everyone else. But he was definitely more engaged and not being a distraction like he usually was. And so then the following week, I was like, okay that was just a one time deal. He comes up to me with three boards in his hand. He is like, okay we got to do it again. (Kida, SG2, 0:12:19)

Kida interpreted Ms. Del Davis' lack of authority toward Seth as an opportunity for her to use her voice as a teacher-of-mathematics. She took advantage of this space to attempt to change Seth's disposition toward mathematics. To Kida, she was successful in doing so because she found a novel way to engage the student with the mathematics in the classroom. This event legitimized Kida's desire to change students' disposition toward mathematics. It was also justified in the small group meeting as the participants provided Kida with praise for her teacher moves in response to Seth's disengagement in the classroom.

Kida at Amos Moses Elementary Part II: Disconnect between Field and Coursework

After a number of weeks at Amos Moses, Kida continued to find spaces to use her voice in Ms. Del Davis' classroom. She provided no evidence of pushback from Ms. Del Davis for the use of her voice, nor did she provide any evidence of having to compromise her voice. For the most part it seemed Kida was able to project her identity as a teacher-of-mathematics without problematizing Ms. Del Davis' authority. Kida was not concerned with the ways her voice was used. She felt she was progressing at Amos Moses because she had to think more like a teacher.

I felt I progressed as a teacher because I had to thoughtfully think of how I worded things.... I called on a student who I knew would have the right answer to come and write it on the board. But then it took him forever to write on the board. And so I was like, note to self do not get students to write on the board because they can just as easily tell it to you and you can write it up there for them. So yeah that was just a big learning

experience about watching my language as in like math language and how you deal with students in that setting. (Kida, Int. 2, 0:11:01)

Kida had to be more mindful of the language she was using when positioned as the authority in the classroom. She progressed as a professional because she was given the opportunity to use the discourse of the community she was looking to join. It was important to Kida to get the opportunity to put into practice the ways of talking about mathematics. Her previous conviction mathematics teaching and learning were different from how she learned mathematics influenced the value she placed on this experience.

Kida's focus on the students' productive disposition toward mathematics continued as well. In the second interview, she emphasized students seeing the importance of learning and doing mathematics through the application of mathematics in everyday life. In her opinion students do not like mathematics because it is a foreign language and they do not see the applicability of the mathematics in their lives. Therefore, to have students engage in the mathematics it was necessary for the teacher to make the mathematics meaningful.

I think that some students feel it is not useful and it is just kind of like a foreign language, which sometimes rightly so. Cause like I said some teachers teach it without any context. And so they do not see the usefulness of it. So like not only do they not understand it but its like there is no reason for me to understand it.... I definitely have seen that in current and past experience with kids who struggle in math.... I do not know. There have been times in my life where I do not like math. So like I said I just feel like it is kind of foreign. Like even if I do grasp this so what? You know? What is—how is that going to be beneficial? So that is really unmotivating if you are not good at something and then on top of that you do not see the merit in it. There is no motivation to do that. (Kida, Int. 2, 0:30:42; 0:31:40)

Kida referred to her previous position as a student who disliked mathematics (due to her time commitments and bad teachers) to show she understood the position of students who struggle. From her previous position, she knew to motivate and engage students in mathematics it was necessary to have the students find value in the mathematics content they are learning.

Kida felt it important to promote the applicability of the subject for the students' learning of mathematics and it was a fundamental requirement to being a teacher. Communicating the practicality of the subject was necessary for the teacher. By giving students more contextualized problems she could demonstrate to students the usefulness of mathematics.

I think to be a math teacher is to communicate to students how integral it is to, not daily existence, but just life in general, which for an elementary school teacher there are a lot of concepts that you learn that are integral. Like fractions, you do not always call them fractions, but you have percentages in everyday life. When you are handling money you cannot sit there and count on your fingers, so communicating that and the need for it. But then also making it engaging through that... when I have had math teachers who I do not—who I dislike it is because it is very like book, worksheet, book, worksheet. There is not a lot of hands on. This is where I am using this. This is how it is useful type stuff. More like real world examples even. (Kida, Int. 2, 0:17:14)

Kida again used her previous experience as a student to justify her views about the application of mathematics as a need to convince students of its value. She also emphasized the necessity of making mathematics engaging to the students. The use of hands-on activities seemed to be more powerful as a way to engage students in the mathematics rather than to provide a deeper understanding of the mathematics.

For Kida, the disposition of the students toward mathematics and the actions of the teacher went hand-in-hand. The teacher was responsible for providing the students a model of the how they are to feel toward the mathematics. Being disingenuous or lacking passion toward the content was not acceptable to Kida because it might influence the disposition of the students. Kida believed she could impact the disposition of the students because of the influence her 7th grade teacher had on her disposition.

In 7th grade... My teacher just was very disorganized. And was not very coherent in her own reasoning. So it was hard to follow and I just did not feel like activities had a lot of meaning. It was just kind of sporadic... So there is a lot of that, a lot of disorganization. At one point she blamed me for losing something that I actually turned in but she had lost it. So just, I guess, it was evident that there was a lack of attention to detail.... So how that translates to me as a teacher, it is like I had talked about earlier, I felt she did not

have a passion or a desire to do math. So she's just teaching just because. And so that made the class especially miserable. And like I would say that that probably made a lot of people hate math as well.

Kida's desire to positively influence students' disposition toward mathematics meant she was responsible for creating meaningful (applicable) activities for the students. She also needed to model the disposition she desired the students should have. From her experiences with her 7th grade teacher, Kida had the evidence she needed to justify her beliefs. This did not always mean the activities needed to be engaging because of the mathematics. "Fun" activities, in Kida's point of view, were sufficient to meet her desired image of self-as-teacher, as seen from the affirmation she got from making the superboard for the student.

Kida's focus on the discourse of mathematics reappears in the previous passages. Kida frequently used this metaphor to make sense of her perceived discrepancy between the ways she learned mathematics and the way students are learning mathematics in schools. Her objective in the teacher education program was to become familiar with this language. I conjecture Kida's grandmother's emphasis on bilingual education may have influenced Kida's use of this metaphor. She had been aware of the struggles of those who are learning English as a second language, and used her background to make sense of students' struggles with mathematics. As Atwell-Vasey (1998) wrote a metaphor, "relies on the imagination of its users to see that we can only include some elusive phenomena in our talk by letting other things, more sensible to us, stand in the position of the more elusive phenomenon" (p. 11). Kida used the language metaphor as a way to describe the disparity she believed existed between her ways of learning mathematics and the ways her program expects her to teach mathematics. Metaphors have warranted and unwarranted assumptions behind them (Markham, 1999). To Kida, the language metaphor did not cover her lack of understanding of the history behind the development of the mathematics curriculum.

Kida, in the second interview, also became aware of a more frustrating disparity. When asked what obstacles she foresaw in becoming her ideal image of a mathematics teacher, Kida described the differing imagery of teaching she interpreted from her teacher education program and her experiences at Amos Moses. Kida believed the teacher education program had lost touch with what was feasible in the field. She claimed this was not true in the mathematics education courses, but this could have been because the interviewer was part of mathematics education department. In general these disparities worried Kida because she was unsure of what a teacher is to do in those situations.

I think there is definitely a disequilibrium between what we are told to do and what is feasible. And I have observed this a lot... I feel people who are higher up forget ever having taught. And it is like once you go passed a certain point it is just like you forget actually being a teacher. And you are putting all these regulations and have to's on the teacher's plate. But not realizing... if it is even feasible. And so I have observed that specifically this past week.... Not particularly in math at [Amos Moses] it was in reading but it is still—the teachers are doing this which is working for them and which by most people's standards are following the requirements. But then the instructional coach [at Amos Moses] is telling them that that is wrong. And they need to do this and this and this. Yet, here she has not actually ventured into the class to see how it works. So I just see a lot of frustration between teachers and those who are in charge of teachers, lately. So that's kind of scary. (Kida, Int. 2, 0:21:18)

Kida's desire to be the one-who-knows was being challenged by the pressures of those in authoritative positions Ms. Del Davis and the other teachers were facing. She recognized her own ways of knowing would be challenged by those in administrative positions. This scared Kida because she was seeing ones-who-know (Ms. Del Davis and others) being positioned by the authority as not knowing without ever having stepped into the classrooms. Thereby, the authority lacked evidence for the positioning making it difficult for Ms. Del Davis and others to argue against. Kida feared this could be a position she would be put in as a teacher. She was concerned other authorities of the school might threaten her voice as a teacher, as the authority in the

classroom, and the one-who-knows. Therefore, she was made aware of a problem for her future image as a teacher-of-mathematics.

At this point, I believe Kida seemed to be oversimplifying situations. She did not appear to be making any effort to understand the commonalities between her teacher education program and the school environment at Amos Moses. She continued to concentrate on differences only. Her negative affect blocked her from seeing the similarities that existed. Although Kida was more aware of the disparity between her teacher education program and her fieldwork, she still believed the teacher education program was supporting her in becoming her image of an ideal mathematics teacher. She did claim the professors, though not her mathematics methods course instructor, failed to acknowledge Amos Moses was not a "perfect reality." To Kida, the professors envisioned the field experience as being constructed of experiences cohesive with what they were discussing. In other words, Kida believed the instructors' imagery of teaching and learning should have matched the field component and when it did not, Kida was unsure of which authority to listen too. This positioned Kida in a difficult position because she desired to be the one-who-knows and required the voice of the authority to tell her what is the best way to act.

Sometimes I will bring that up in class like I know you say that you do not like this technique but the fact is that this school is implementing that so we have to do it whether or not we do not like it. And they are just kind of like, okay [and] do not really address it. So it is like—it is like well, I don't know. It just puts you at a hard place because...nobody is winning in that situation. (Kida, Int. 2, 0:25:18)

Kida confronted the authority of her professors, but it is noticeable Kida had already made her decision the authority of the field experience was more powerful. She attempted to find a resolution to please both authorities. She saw her field experience as the real work of a teacher

and the course as being a more theoretical perfect reality. However, she did not receive any help in finding her compromise nor did she seem willing to look for a compromise.

Kida's mentor teacher and the other 1st grade teachers at Amos Moses further justified the divide between coursework and the actual work of a teacher. Kida held Ms. Del Davis and the other 1st grade teachers to high regard because they were alumni of the same program as her. They were also members of the community of practice Kida desired to join. From previous data, Kida did not see her professors or those who were too separated from the field as understanding the work of a teacher any more. So Kida highly valued the opinions and advice of the teachers at Amos Moses. The voice Kida was using to construct her identity as a teacher-of-mathematics (narrative) was the voice of the 1st grade teachers and not her programs.

My [Amos Moses] teacher, she is a [university] grad and so [are] two of the other 1st grade teachers are also. And they are a team. And so me and my partner and then two other girls are in 1st grade and then the three of them were just talking about how they—the teachers brought up that how at [university] they have all these like, oh this is what you should do. Like this is and a perfect classroom blah, blah, blah. But then when you start teaching your face with the realities of what you actually can do. So. I think they are preparing us well but then also sometimes do not accept that it might not be exactly the same or how it should be. (Kida, Int. 2, 0:25:18)

Kida was not looking to rebel against the current school system like some of the other participants. The members of the community had more power in influencing Kida's ideas about how teaching and learning mathematics should be done. Kida sought to be legitimized by Ms. Del Davis and the other 1st grade teachers. Their position, as working teachers, highly influenced Kida's views of her teacher education program.

Kida was torn about the influence of her teacher education program. She did see some positives from the mathematics methods course, especially when her professor would act like a confused or struggling student, "which was so great because that is exactly what happens in the school. And I think that some teachers pretend that does not happen or just do not prepare you

for it. Um so that's been great." (Kida, SG4, 0:06:08). Kida sought to be shown the "real" teaching experience. She recognized she needed to be shown the new ways of learning mathematics, which her teacher education program was beneficial in showing her.

I do not mind like learning the new way but it is—it is also hard just cause not everyone is on board if that makes sense. So like I would agree with many of the things she [mathematics methods instructor] says but like in our own experience I have not necessarily seen this in my class but from hearing different people's personal experiences with Amos Moses and what not, just because we are learning it, how to teach it, does not mean that practicing teachers are doing that. So it is hard cause not everyone's on the same page. (Kida, Int. 2, 0:01:43)

As someone who was learning to teach, Kida desired more cohesion between her teacher education program and her field experiences. She wanted Ms. Del Davis, her university instructors, and the administration to be on the same page. With these conflicting authoritative voices, Kida was unsure of which one to use or listen to in constructing her own. Kida wanted to be told what to do. The reconciliation she sought did not seem to be her responsibility but instead the act of compromising should be of those in power.

The differing voices Kida attempted to please were overwhelming for her. She described feeling frustration and helplessness by the position she interpreted the various demands had put her in. The desire for cohesion between her experiences was an expectation not being met.

Additionally for Kida, as a student she needed to know which voice to please in order to continue her program.

Well I described a feeling of frustration because not even being a like practicing teacher yet, I feel frustrated and helpless when I am being told from my professors one thing, observing another thing, and seeing that their administration is telling them another thing. So you are caught in this gridlock of what to do. Like who do I please? Who am I trying to please? Basically. Ideally everyone would want what is in the student's best interest but that is not always the case. So that is frustrating to see—like I said a feeling of helplessness because sometimes it feels like whatever I do someone will disagree with. Or whatever I do someone will be happy with, you know. And then seeing that from my teacher as well like her feeling that way. (Kida, Int. 2, 0:43:40)

Kida saw herself between a rock and a hard place. She was in a no-win situation. Seeing Ms. Del Davis in the same situation did not provide Kida any positive outcomes for her image as self-as-teacher either. Kida seeing the teacher as the one-who-knows continued to be problematized. In the end, Kida decided it was best to please the professors because they are the ones giving her a grade. So Kida's choice of which voice to use was based on the interest she had in graduating and not in becoming the teacher she wanted to become. The theme of not wanting to give the time and work to doing her best is repeated after having started in her 7th grade class.

Kida at Amos Moses Elementary Part III: Looking Back at Ms. Del Davis' Classroom

After completing her practicum experience at Amos Moses, Kida was asked to reflect on her time there and how she had progressed. The fourth writing prompt asked Kida to write about how she had grown over the past semester. It also asked her to describe a powerful event during her time at Amos Moses. She wrote the following about her development as a teacher:

Prior to this semester, I felt as though I had a good grasp on understanding various mathematical concepts myself. However, I had limited knowledge on how to translate these ideas into a classroom of how students think in mathematical terms. I had one-on-one experience working with students on math problems from last semester, but not in a whole group setting. From my whole group teaching experiences this semester, I have seen how differentiation is not only beneficial, but necessary in order for a classroom to run smoothly. [Mathematics methods course instructor] has done a phenomenal job at teaching us how to ask students valuable questions and try to understand the workings of students' thoughts. I also have enjoyed how she has introduced us to a variety of manipulatives and allowed us to use them as students would. More so, she has communicated that manipulatives have a purpose and must be a tool to enhance the lesson. If not, they become a distraction or extra work for a child. Working in first grade, this experience with manipulatives has been extremely relevant. First graders still work with base ten problems and through this I have been able to develop precise language when helping children use such manipulatives. (Kida, WP4, Lines 11–25)

Kida began by discussing the importance of a teacher differentiating instruction for students. She did not discuss differentiation, however, in any of her previous interviews or small group meetings. In her 3rd interview, which occurred after writing prompt four, Kida was asked what

she was going to continue working on as a teacher-of-mathematics. She replied, "I have always heard of doing differentiating when you are—lesson plans you have to do that, but in action I can see how it is harder. And so it is exhausting" (Kida, Int. 3, 0:31:45). This is the only mention of differentiation during the interviews.

When sharing what she had written for the prompt during the fourth small group meeting, Kida's inclusion of differentiation made more sense. Differentiation was seen to fit within her progressed vision of teaching and learning mathematics because Kida saw the teacher as having to take ownership for developing students who are mathematical thinkers. This meant a teacher-of-mathematics is responsible for influencing students to see mathematics in a positive light, which aligned with her previously mentioned beliefs.

Just like the importance of differentiation, I guess because I saw teaching whole group lessons in the class a couple of times and stuff like that—just kind of how necessary it is. If students want to understand and like coupled with that how a lot of the own-ness is on the teacher to have like mathematical thinkers or strong mathematical thinkers cause like a lot of the people have negative feelings with math and I think a lot of that is attributed with their instructor. So like we talked about lesson planning and stuff like that how you have to formulate good questions to bring about that thought. It is not always going to happen like naturally. (Kida, SG4, 0:06:08)

Kida attributed students' positive feeling toward mathematics to the ways the students feel about the instructor. There is an implicit feeling rule (Hochschild, 1983/2012) attached to this belief. Kida must control her face (Goffman, 1959; 1967) or exterior presentation to convince the students she has a passion or productive disposition toward mathematics. She needs to do so in order to change the dispositions of the students who see learning and doing mathematics negatively. Consequently, Kida will need to regulate her emotions appropriately to give the students the face she wants them to see. She stated her feeling rule more explicitly later in her third interview:

I think that it is important to be excited and joyous while teaching. And just show that you genuinely like learning because I think that a lot of the times we are really harsh on kids and they are like, in like elementary school. They are only up to 11 years old. So it is learning at this stage especially should be really hands-on. It should be fun. It should not—we should not act like it is always boring because it is not. And also it is just being able to just have a good attitude a lot of times because I know that when my teachers would act like they would not want to be there, but like I do not want to be here either. (Kida, Int. 3, 0:23:12)

Kida justified her professed actions as a teacher-of-mathematics using her previous experiences as a learner of mathematics and with her beliefs about mathematics learning needing to be fun and hands-on for the students.

Kida also mentioned the importance of the use of manipulatives in the mathematics classroom in her fourth writing prompt. Ms. Del Davis used manipulatives frequently to aid the 1st graders with the construction of numbers. Kida witnessed the use of manipulatives from those in the field. This further validated the need for learning about manipulatives in her coursework. Consequently, Kida found value in how the mathematics methods instructor legitimized the importance of manipulatives in the teaching and learning of mathematics. Kida emphasized the language the teacher needs to use when students use manipulatives. For Kida, the language used was attached to the manipulation of the manipulatives and she needed to learn the appropriate discourse. Her mathematics education program supported her in this endeavor.

We hear a lot and we learned a lot about how kids are visual and like having manipulatives. Well [manipulatives] just like helps their minds learn. And I always believed that but I actually saw it in action last semester. How just manipulating something can just like increase understanding so much.... It is easy as an adult sometimes to think like, oh we will just teach the algorithm. Like that simple because they just learn the steps and then they know. But I see now that kids might know the algorithm but they have no idea what happens behind it. I am also tutoring a 3rd grader in math and I see that all the time with bundling and ungrouping. And she does it but she makes a lot of mistakes cause she is not understanding what is happening behind the process. And so knowing that, it has just helped me to understand how important visuals can be. But also if they are used incorrectly then they can be a bad thing. So being careful as a future teacher about the language that I use associated with teaching math. And then also just like being very clear about how to use the visual objects in making sure those

reinforce whatever we are learning instead of making it more confusing. (Kida, Int. 3, 0:16:57)

Kida demonstrated an awareness of conceptual understanding in the learning and teaching of mathematics. This is the only time during the interviews, small group meetings, and writing prompts Kida mentions conceptual understanding.

I believe Kida's attention to manipulatives in both Ms. Del Davis' classroom and her mathematics methods course had constructed a space for her to be cognizant of conceptual understanding. She was even able to look back at her own tutoring experiences and realize the lack of conceptual understanding the student had. Kida changed her narrative of self due to the after-education (Brown, 2008) she experienced through reflection. Therefore, Kida placed more value on the "visuals" the manipulatives provided to the students. Her language-of-mathematics lens generated trepidation within Kida toward the use of the manipulatives with students. She had to be cautious of the language she used when directing students' use of visuals. She was concerned students may develop unproductive mathematical ideas if they used the manipulatives incorrectly. Kida's awareness of the power of language in the learning and doing of mathematics was consistent throughout her participation in the study. By the end of her time in Ms. Del Davis' classroom, Kida was beginning to expand her thoughts about mathematics learning to include conceptual understanding and the part language plays in students developing their mathematics.

The students in Ms. Del Davis' classroom legitimized Kida's identity as a teacher-of-mathematics. When asked to describe an event having the greatest positive impact on her perspective of students' mathematical thinking, she retold the story of Seth, the misbehaving student whom she had gotten to do his mathematics work by creating a "superboard." In her retelling of the narrative, Kida added the following:

Seeing how applying that time or dedicating that time to work with him was actually beneficial and so I do not know if he is doing—keeping up with it this semester, but I would hope that he was. And regardless I will always remember just my work with him because it was proof to me that I can make a difference in children's feelings about math and just feelings about different subjects in education. And like working to present content in a variety of ways is very valuable and it definitely does change their perceptions about it I guess more or less. (Kida, Int. 3, 0:19:44)

Kida was empowered by her experience with Seth. She found her identity as a teacher-of-mathematics to be legitimized by her experience in changing Seth's disposition. He was an existence proof. This provided her with enough evidence to see her actions as possibly influencing students' feelings toward mathematics. The event was powerful enough for Kida to believe she could generalize her belief toward any content.

After looking back at her time at Amos Moses, Kida retained there was a distinct separation between her coursework and the actions in Ms. Del Davis' classroom. She did not seem as concerned about the disparity as before because Kida determined the reasoning for the incongruences in teaching strategies and methods.

I see that disparity still. Like with what I was telling you about long division. The method that we use, I have never seen it before. So I do not necessarily doubt that they use these other methods at some point that we learn but at the same time I feel like there is so much emphasis on math these days and not teaching misconceptions that it has spread like—it has just bred a ground for all these different ways of doing it. And so teachers have, or schools, or grade levels, whatever—have all these different places to pick from and so I think that is part of the reason we do not see exactly the two methods that we learned in our math class line up with what we are seeing in the school. (Kida, Int. 3, 0:45:01)

For Kida, the societal emphasis on the learning of mathematics has created a space with varying ways of teaching mathematics. Due to all the ways available to districts, schools, and teachers, it makes sense a disparity exists. There is no way the teacher education program could show prospective teachers all of the possible ways available to teach mathematics.

It is possible Kida's position as the one-who-knows to have relaxed over the course of the semester. She had already previously shifted her meaning of what it meant to be the one-who-

knows. At this point, Kida just needed to know what is expected from her according to the choices the school and/or teachers make. So She only needs to know the strategies chosen by the teachers at the school she works in. It could be Kida saw her participation in the community of practice as being more locally dependent than being a more global participation. In other words, the community of practice was not a general entity made up of teachers, but the community is made up of the teaching staff at a particular school or district. Kida then will learn how to fully participate in a school when she learns the more local expectations of her. The teacher education program cannot prepare her for all the possible ways of teaching mathematics out there.

When asked about her emotion regulation while in Ms. Del Davis' classroom, Kida recognized she did regulate her emotions. In particular, she emphasized the need to regulate her emotions in order to communicate to students about their behavior in the classroom. Kida wanted to use her emotions as a feedback system to the students in order to create the classroom environment she desired.

I do monitor my emotions or whatever but at the same time I want my students to know when I am angry or when I am disappointed or whatever. Because that communicates to them like oh I need to get it together. And I feel like by being real with my students they can gain more respect for me in a way. And just seeing that I am a human. I am not a robot. And at the same time understand that it is okay for them to have an off day. (Kida, Int. 3, 0:34:510)

Kida stressed the need for the students to see her as a "real" person. She saw her emotionality as a way for students to recognize her as more than just a robot. By being seen as a person, Kida will get more respect from her students. Kida lays out another feeling rule she had constructed. For students to see the teacher as a real person, one needs to show a range of emotions. This in turn will construct a classroom environment conducive to learning.

Kida also went on to say how controlling one's emotions in the classroom is necessary to do the work of a teacher. Teachers control their emotions to regulate how much they let students

"in" to what the teacher is feeling. This can be used to the benefit of the class. Kida confessed then a teacher's emotional regulation is part of the job. She stipulated, however, one has to control his or her emotions in a realistic fashion. A teacher should not be producing a persona that could be perceived as artificial.

It is like control of emotion in that you need like how much you let the students like into what you are feeling and manipulating that in a way that will benefit the classroom. But it is not control of emotion in that I am going to be happy all the time because that is unrealistic and kind of weird. Cause I know I have had teachers, even in college, who are like, oh I am always happy about that. Like you all did not do your work, oh well that is okay. And it is like, that is bazaar. Please do not act like that because that is a very confusing—also pretending to be happy but then at the same time yelling at us. That is just really confusing. So I think it is important to—like your emotions to match with what you are saying and all that should be tied into what you are trying to convey to your students. What is going to foster the classroom environment and make it better. (Kida, Int. 3, 0:36:58)

Kida wanted to emote a range of emotions in order to convince students she is a person. The teacher has to control the emotions to create and foster a positive classroom environment. Kida shared another constructed feeling rule that goes hand-in-hand with her previous rule: The demonstration of emotions needs to match or coincide with what one is saying. For Kida, the message she sends to students is important because part of the students' productive disposition is enveloped in the projected feelings of the teacher.

Due to the entanglement of emotions in the classroom between teacher and student, Kida desired to make sure as a teacher, she would use her emotions as a way to control behavior and provide students feedback on their actions. This could be linked back to her beliefs about the teacher needing a positive disposition to change students' dispositions. Emotions were a tool the teacher used to change students' disposition. Kida is the only participant to see emotions as a tool in the classroom. This was in line with the teacher described by Cobb, Yackel, & Wood (1989).

Kida confessed to being influenced by her mother in deciding how she should control her emotions in the classroom. Kida's mother was a counselor and grew up in a household where sharing emotions and not "bottling" or hiding them was the norm. She accredited her background for her being "pretty transparent and just know[ing] when to... act like I am okay when I am not" (Kida, Int. 3, 0:41:59). Kida also attributed learning when and how to regulate her emotions in the classroom to her experiences as a student and working with Ms. Del Davis.

Then also just like seeing my mentor teachers and what works with students and in my own experience with my own teachers. So I do not think anyone has ever explicitly talked to me about it but it is just more through observation. And then I know my mentor teachers especially a lot of the times they have like a very happy disposition but then they will tell like me or my partner or whatever like everything that is going on behind that. And so I guess seeing both sides of that has helped me to formulate my own way of going about it. (Kida, Int. 3, 0:41:59)

Kida's peripheral participation in the community of teachers at Amos Moses provided her with some of the insight she needed for formulating her teacher feeling rules. Seeing those in the field was important to Kida because of the value she placed on those she interpreted as belonging to a community of practice. Kida desired to formulate the voice of those in the community.

Overall Kida's emotional regulation was seen as a tool for communicating with students. Consequently, the feeling rules Kida constructed revolved around providing feedback and constructing an environment fostering students' learning. Kida's feeling rules did not specifically relate to the learning and doing of mathematics, but instead on the relationship between the student and teacher. Ms. Del Davis was successful at being a cultural broker to Kida and provided her entry in the classroom with a determined role and understanding of expectations. There was no power struggle between the two. Kida found legitimization of her identity as a teacher-of-mathematics because of how her actions matched the community of teachers and through the students' success in the classroom with her enacted teacher moves.

Kida's Emotional Geographies

In this section I describe characteristics of Kida's emotional geographies during her time at Amos Moses Elementary. I begin by exploring each of her emotional geographies individually providing commentary on how each of her emotional geographies influenced her decision-making processes. I end this chapter by arguing that Kida's identity as a teacher-of-mathematics had not wholly split from her identity as a teacher in general.

Kida's Moral Geography

Kida's moral geography was characterized by her strong desire for students to have a positive disposition toward mathematics. Her purpose as a teacher-of-mathematics was to change and maintain students' productive disposition toward mathematics. Many of Kida's desired teacher moves revolved around aiding students in learning and doing mathematics in a "fun" engaging way. The mathematics itself was never what was engaging; instead Kida focused on the actions the students would participate in to engage them in the activity of doing mathematics. Each example Kida brought up, mostly the student Seth, involved teacher actions changing the disposition of the students toward learning and doing mathematics but not necessarily toward the mathematics itself. She stressed, however, the importance of making mathematics useful to the students.

So I think as a teacher it is scary especially in math because so many people hate it these days, to make it relevant and making it exciting but also portraying it in an understandable way. Cause that was another thing, one of my—the teacher in 7th grade her—I really disliked. She would come up with these examples that vaguely related or just were not really enriching our understanding. They were just making it more confusing. So I never want to do that but that is—it is hard to, you know make it exciting but also helpful. (Kida, Int. 1, 0:20:29)

Kida's 7th grade teacher set the example of what not to do in the mathematics classroom. Kida's desire for clarity, engagement, and valuable tasks were influenced by her "dark period" with

mathematics. She recognized the challenge to teaching mathematics in the ways she desired.

Like those studied by Drake et al. (2001), Kida's "roller coaster" relationship with mathematics influenced her perception of learning and teaching mathematics.

Kida's actions in Ms. Del Davis revolved around the notion of students' productive disposition. She enacted particular teacher moves in an attempt to have students engage with the mathematics in meaningful ways from Kida's perspective. Take for example Kida's influential experience with Seth. Her action of taking the white boards and creating a "superboard" was an engaging and fun way to have Seth interact with the mathematics. Her future interactions with Seth required her to take the position of motivator as he continued to engage with the mathematics.

By availing my "assistance" (i.e. sitting next to him and cheering him on), I have seen him complete morning work full of mathematical equations. Most recently, I convinced Seth to partake in the class's "smart cookies" program—a timed assessment of addition and subtraction problems. If the students complete all the problems within the given time, they get to move to the next level. The very first time Seth did this he moved on to the next level. I was overjoyed and so was he! These particular experiences (as well as others that I don't remember) with this one student have allowed me to see how taking interest in a student can foster their own success. Furthermore, simple modifications will breed successful results in many situations. (Kida, WP4, Lines 32–41)

By taking interest in Seth as an individual, Kida was able to shift his disposition toward mathematics. Kida being apart of Seth's success with the "smart cookies" program legitimized Kida's beliefs about the teacher moves she enacted. Although she focused on Seth during her interviews, writing prompts, and small group meetings, Kida admitted to there being other experiences with students legitimizing her as a teacher-of-mathematics.

Kida's perceived disposition of the students toward mathematic influenced her decision-making processes in Ms. Del Davis' classroom. Her actions with Seth, and other students, were guided to accomplish her goal of having students have a positive disposition toward

mathematics. Kida believed the disposition of the students was attached to the disposition the teacher had toward the content. This influenced Kida's feeling rules about having a "joyful disposition" as a teacher. Consequently, Kida's ways of deciding on the most appropriate teacher move involved how she could engage the students best in the mathematics. For Kida, this meant focusing on manipulatives, differentiation, and other actions making learning mathematics fun.

This also encompassed creating a particular environment for students to foster learning. Most of her developed feeling rules about teaching involved creating a particular environment for students. She even focused on the environment created by Ms. Del Davis when observing the students carpet time.

The children are gathered on the rug and have their own personal whiteboards with a sock and dry erase marker. This method is often effective as there's a low risk if you get the wrong answer (it's easy to start over) and whiteboards for many children are fun! However, this format is not conducive to struggling students' success. There is one student in particular... who always arrives at the correct answer, but can never explain his reasoning. This is troubling because it is assumed that he simply copies a partner's board. This may be correct, but why does he feel the need to do so? It makes me sad that he feels he cannot admit he needs help even in such a low stakes environment. (Kida, WP2, Lines 26–37)

Kida criticized the carpet time ritual for not being conducive to the struggling students in the classroom. The expectations students need to get the correct answer to portray themselves as knowing mathematics was troubling to Kida. She wanted the students to feel comfortable asking for help when needed.

Kida's Professional Geography

Kida's professional geography was characterized by two strong concerns. The first was her desire to put to use the appropriate mathematical language in her actions as a teacher. The second was the growing disparity between her teacher education program and what was happening in the field. Both of these aspects colored her perspective of the job as a teacher while

at Amos Moses. From the beginning of her participation, Kida referred to the metaphor of language as a way to describe the discourse of a teacher-of-mathematics. It also aided her in making sense of the perceived differences between her ways of learning and doing mathematics and the ways students were learning and doing mathematics at Amos Moses. The differences frustrated Kida and she needed a way to cope.

And what misconceptions a student will have and how do we address those. And how do we make sure that our language is so that it does not feed into those misconceptions. So like we can be especially clear, which is frustrating sometimes you now because it is not necessarily how we were taught. But we definitely want to do what is best for the students. So it is like I am learning—I guess I am unlearning and then learning how to communicate as a math teacher. (Kida, Int. 2, 0:00:05)

The act of unlearning was frustrating to Kida in part due to her desire to be the one-who-knows. This seemed to have subsided with time as she became more comfortable in the uncertainty of knowing as a teacher. Her ways of knowing shifted from more global ideas to more localized acts of knowing. She desired to know how to fit into the community of teachers at a particular school because they will have their own selected ways of doing and learning mathematics.

Her desire to use the appropriate language was a powerful force in Kida's decision-making processes. For Kida the use of mathematical language made a difference in how students learn and do mathematics. The power of language was important to Kida because the words she chooses to use could perpetuate misconceptions. When using manipulatives to explore mathematical concepts the use of language was particularly important.

The other day I was helping a student “build numbers” and used the language “ten sticks” and “one sticks.” He pointed it out to me, asking, “What is a one stick?” I paused, confused and realized that I had misspoken. “Sorry, just ones.” This interaction was a bit disconcerting. How many times do I use incorrect language but students don’t point it out to me. If students don’t know the correct language, they won’t know to correct me. This was a reminder to be careful about what I say even in the most casual teaching scenarios. (Kida, WP3, Lines 31–37)

Kida's actions in the classroom were guided by the language she was experiencing in Ms. Del Davis' classroom and in her mathematics methods course. These authoritative voices were influencing the voice that Kida was developing in her program. As part of her work as a teacher the language she used was important in order to become a member of the community she wished to join. Using the appropriate discourse is one way of convincing others of belonging to a group or community (Gee, 2001; Wenger, 1998).

The disparity between her coursework and the field experience concerned Kida. This was not so much a problem for her future work as a teacher, but in becoming a teacher. The disparity frustrated Kida because she desired to see more cohesion between her program and the work of the teacher. She began to lose her confidence in the program as she positioned the professors as being outside the community of teachers she desired to join. Kida's frustration focused on her not learning concepts beneficial to her as a teacher.

It is just like frustrating sometimes because I feel, not necessarily in math, but sometimes I learn things that I know will not be beneficial later on because I am seeing the reality. So it is like we are pretending this is actually going to work kind of thing. And so ideally it would be great if there were more communication between the teachers and the professors... And even just acknowledging the fact that it is going to be difficult and that it is not going to be as easy as I say in like addressing that fact. This is what you can do even though you may not have this perfect classroom to teach in. But like this is how you can compensate type thing. But they feel there is not even that because they do not want to acknowledge that it might be more difficult then they let on. So. I think their just needs to be more of a realistic perspective. (Kida, Int. 2, 0:28:09)

Kida experienced reality, the real work of a teacher out in the field, and her professors were not discussing the phenomena she was experiencing. The discrepancy between the two was problematic to Kida who wanted to learn how to teach. She wanted there to be more communication between the two components of her education. Kida did not want to have to pick and choose between the voices of authority. Her perceived disparity may be more because Kida was rebelling against having to reconcile a range of contexts and realities. She recognized

learning to teach was a challenging process, but she was expecting the authority to explicitly tell her how to teach. Kida kept looking for voices of authority to tell her exactly what to do rather than voices of authority suggesting a general trajectory. She ended valuing the authority of those in the field more so than those in academia because they were telling her what one does as a teacher. She desired a shift in the voice of the authority of her professors to match or be similar to those in reality.

Kida's decision-making processes were influenced by these disparities. Kida was attempting to develop her voice as a teacher-of-mathematics and the clash between the two authoritative voices made it difficult for her to know whose voice to take up. The disparity pushed Kida to choose which one to listen too. She wanted them to be similar but that was not the case. Her decision to see the "real" experience as that of the field guided her ways of knowing within Ms. Del Davis' classroom. Additionally, Kida's choice to listen to the practicing teachers was legitimized by their argument the teacher education program was too theoretical and not practical enough. Kida though never questioned the teachers' talk. The assumption is Kida did not question the teachers at Amos Moses because of their membership in the community of practice Kida wished to join. So Kida valued the work happening in the field more than her coursework. Kida, however, did leave a space for the coursework to influence her actions in the classroom. Though she was skeptical of what her professors discussed.

Kida's Political Geography

Kida had no major theme within her political geography. Throughout her time at Amos Moses, she did not have any power struggles with Ms. Del Davis, nor did Kida's envisioned ways of teaching and doing mathematics clash with Ms. Del Davis'. Kida was able to enculturate herself into Ms. Del Davis' classroom with no issues. This may be due to Kida's recognition of

the different ways students learn and do mathematics in schools compared to how she had learned and did mathematics. With this in mind, Kida was more open to the actions of the teachers and students in the classroom. She was less resistant and eager to accept Ms. Del Davis as the voice of authority without question. She knew her voice as a teacher-of-mathematics would have to compromise and change as she became more acquainted with the students' mathematics at Amos Moses.

Kida did point out the power struggle Ms. Del Davis had with the administration, which led to Kida interpreting Ms. Del Davis as feeling helpless. Ms. Del Davis felt pressure from the Amos Moses administration and instructional coach to implement certain actions in the classroom. However, the teachers felt those were already being enacted.

I think she feels helpless caught between what the—like her classroom, which she obviously knows very well, and how other people are defining her classroom... Then it does not help that the administration and what not are imposing different things on her. Not necessarily in math but we were in the professional development meeting this past week and there is just—there is discrepancies what the 1st grade team was doing and what the coach was saying. But they felt they were aligning with what needed to be done and knowing their students it was working for them. So it is hard to have a somewhat outside force tell you that that is not correct. So I think that is where she feels helpless. (Kida, Int. 2, 0:51:53)

Kida's interpretation of Ms. Del Davis' position showed she was aware of some power struggles between teachers and administrators. Kida did not describe any compromise made between the teachers and the administrators of Amos Moses. For the most part, it seemed Kida witnessed the teachers resisting the administrations and instructional coaches claims about best practices. Though Ms. Del Davis felt helpless, Kida did not discuss how Ms. Del Davis coped with the feelings of helplessness.

Kida's Sociocultural Geography

Kida also had no major theme emerge from the data of her sociocultural geography. The only times Kida discussed larger social issues were when other participants or the interviewer directly asked her. Kida had no particular social aspect she mentioned in her narratives when answering to the others. She often continued in the same vein or answered vaguely. For example, Kida was asked in her last interview if she was concerned about larger social factors when she starts teaching. She answered by describing the school she started her recent field experience.

The school that I am in now—I just see a lot of issues caused because of home life and just financial issues and broken families and what not. And so I see how that is hard to navigate but at the same time the community of teachers really works to combat that. And so I think it depends a lot on the school and the administration. Not just you as a single teacher in how to navigate those kind of situations. (Kida, Int. 3, 0:51:29)

Outside societal forces were to be handled in a case-by-case scenario. The community of practice she would be participating within will work together to handle these issues. So Kida saw these sociocultural issues as being localized and would not be able to know how to handle these scenarios until she had joined a particular community.

Kida's Physical Geography

Kida rarely mentioned the amount of time or the physical proximity she shared with Ms. Del Davis. It was not problematic to her as a student or someone who is in the stage of becoming to only be at Amos Moses once a week. Though Kida valued the field experience component, she was content with the time spent there. There was no evidence of her desiring more time at Amos Moses or with Ms. Del Davis.

Kida's emotional geographic characteristics showed the ways her emotional spaces influenced her ways of thinking about teaching and learning mathematics. Kida sought out to learn the discourse needed to teach mathematics in the "new" ways students were learning.

Moreover, she wanted to aid students in developing a productive disposition toward mathematics by seeing the usefulness and application of the content they were learning. Kida sought out engaging activities and teacher moves to motivate students to do mathematics. These moves did not necessarily make the mathematics itself more fun for the students. To accomplish this Kida listened mostly to the voice of the teachers at Amos Moses, but remained open to the ideas her mathematics methods instructor discussed.

Kida constructed explicit feeling rules to aid her in constructing a learning environment to foster learning, although not specifically the learning and doing of mathematics. Kida's mother and her experience observing Ms. Del Davis influenced her constructed feeling rules. For Kida, a teacher needs to have a joyful disposition toward the content. The teacher also needs to use her emotions to communicate to students about the breaking or satisfaction of norms. The teacher also regulates her emotions in order to use them as a tool to control behavior in the classroom. Finally, the emotions the teacher emotes need to make sense with the language the teacher is using; the messages should not contradict one another. Table 13 summarizes the main themes and characteristics within each of Kida's emotional geographies.

Table 13
Characteristics of Kida's Emotional Geographies

Geography	Main Theme(s)
Moral	Positive disposition toward mathematics
Professional	Use of appropriate mathematical language Program and field disparity
Political	N/a
Sociocultural	N/a
Physical	N/a

Conclusion: Kida's Inability to Fragment Her Identity

Throughout Kida's experience at Amos Moses Elementary her narratives were guided by her desire to provide students with engaging and valuable activities that would in turn influence them to see mathematics as useful. She constructed feeling rules allowing her to create an environment fostering the learning of the students. Her voice was not stifled nor did she have to compromise with any of the authorities speaking to her. Kida saw her teacher education program and her field experience as disconnected, yet she still found legitimization from the students and teachers at Amos Moses Elementary.

Throughout this endeavor, however, Kida preferred to see things in general instead of seeing specific moves and actions a teacher-of-mathematics would need to enact. Kida's identity had not fragmented itself into the various content specific identities an elementary teacher constructs or develops. The notion of a teacher was seen as good enough. Kida did not experience a strong enough intervention to complete the split. Without the split it is understandable why Kida would be lacking a clear vision and narrative of mathematical practice beyond the affective needs of students. Kida described her vision of teaching mathematics in the third interview:

I guess just students being engaged and how I have seen my teacher now do it. Its writing on the board or writing on chart paper and having that as a reference for later. So I guess them listening to me but also listening to the point that they are engaged in asking questions cause I do not want it to ever just be myself talking and not knowing whether or not they are grasping it. (Kida, Int. 3, 0:46:57)

There was no evidence Kida had reflected and considered deeply the students learning of mathematics. Kida was stuck on making the mathematical learning experience better than her own 7th grade experience.

Kida showed she was open to the ideas of others, but mostly those she saw as belonging to the community of practice she wished to join. The perceived disparity between her coursework and field placement made it more challenging to split her identity because she was mostly concerned with being legitimized as an active participant. Kida saw no need to fragment her identity as a teacher to consider her identity as a teacher-of-mathematics. I believe Kida began fragmenting her identity because of her careful consideration of language. In the future Kida's language desire may provide a space for further fragmentation of her identity.

Overall, Kida's teacher education program was a voice Kida could listen too but she preferred the voice of those on the field. There was no evidence of Kida finding legitimization from her teacher education program. Her identity as a teacher was legitimized from the students in Ms. Del Davis' classroom and the community of teachers at Amos Moses Elementary. She found a space to use her voice as a teacher-of-mathematics and found success. In Ms. Del Davis' classroom she found a space to use her voice, sought out legitimization, and began (re)constructing her identity as a teacher-of-mathematics.

APPENDIX H

SALLY'S BIOGRAPHY

Yeah, moral of the story, we do not learn these things until we are actually in the field. We take all these classes on theory and then forget about it. Then we are in the field and it is like crap. We have to remember what we learned about a year ago.

- Sally (Follow-up Int.)

In this chapter, I will discuss Sally's experience at Amos Moses Elementary. Sally was partnered with another student in the elementary teacher education program, but her partner did not participate in this study. I will begin by giving Sally's background and describing her time at Amos Moses. Thereafter, I will discuss Sally's reflection on her experience and the emotion rules she constructed. I conclude the chapter by describing the characteristics of Sally's emotional geographies (Hargreaves, 2000, 2001a, 2001b). Sally was sick and did not attend the first small group meeting nor complete the first writing prompt.

Biography of Sally

Sally grew up in the suburbs of a major metropolitan city in the southeastern United States. She described her neighborhood as being an upper-middle class area. She was the oldest sibling in her family. While discussing her background, Sally emphasized her academic achievements. This included being identified as gifted at an early age, completing honors and AP courses in high school, accomplishing an honors degree at the University, and completing two bachelor degrees along with a masters in education simultaneously. Thereafter, she described herself as being stressed and highly motivated.

Sally did not have any family members with careers in education. Her parents strongly emphasized education because of their achievement as students. Sally stated the number of

degrees her parents had and the success they had working in business. According to Sally, her parents were business-minded people and would laugh at her and her siblings for choosing to go into education. "They do not understand. They laugh at us all the time, but I hate business. I think it is stupid." (Sally, Int. 1, 0:01:07). Sally's parents pushed her to be successful in school and provided her with supplemental content resources during the summer months to get ahead on her education.

Before deciding to become an educator, Sally had examined some other careers through volunteer opportunities. Each of these experiences did not fit into Sally's vision of her future self. It was not until she began working with a friend at a mathematics-tutoring center Sally found what she wanted to do as a career. Sally began describing the center by exclaiming how when she worked there it was the number one center of the 160 in the country. She fell in love with the students and enjoyed working with gifted students. She began to realize she really enjoyed going to work.

I loved that [working at the mathematics-tutoring center]. And then I just worked with kids. Then I started baby-sitting all of them because I became close with them and I loved watching them growing up. And loved having that big of a part in their lives. (Sally, Int. 1, 0:03:10)

Sally's work at the mathematics-tutoring center was very influential, not only in developing the desire to teach, but also in forming her beliefs and narratives about teaching and learning mathematics and her perception of her teacher education program.

Sally felt the schools she attended emphasized the learning of mathematics through school-wide competitions. These competitions fueled her competitive nature. Sally shared a narrative about her in 2nd grade and how the mathematics competition between classmates emphasized being successful in mathematics.

We always would do these activities on Monday[s] and then we would turn them in. And then they would kind of grade us. And I remember there being a star chart outside based on how many you got right. And then if you get all of them right it was a gold star. If you missed one, it was a blue star. And it went on like that. And it was me and one other boy, he is at Harvard now so I think he ended up beating me. But I remember the two of us were like straight gold. And at the end of the year we got an award for that because we were the only two in the entire 2nd grade or whatever that made all gold. So I remember they did that. It was competition but in a fun way. (Sally, Int. 1, 0:10:34)

Sally enjoyed sharing her successes in school mathematics. She also described how lucky she was to attend the schools she did. Sally made sure to describe her teachers as being the best of the best because her 3rd, 4th, and 5th grade teachers were national board certified and each had been county teacher of the year. Sally valued her past teachers due to their status.

Sally also believed the community where she grew up emphasized education in general. She warranted her claim by the geographic location. Her home suburb had a high SES and as she described it "all our taxes go straight to downtown [city name] pretty much" (Sally, Int. 1, 0:14:27). She also claimed, due to the high SES of the area, the expectations for students were very high. She provided the following evidence of her claim:

I mean I am in the honors program here. I got a 2200 on my SAT, graduated with a 4.1. I was 60th in my class. Our grade was the most competitive to ever go through our high school ever. I mean we have five kids at Harvard, more at Columbia, a bunch at Stanford... It was more my peer environment more so than the greater community cause we were competitive as all get out. I mean if I got a 90 then she had to get a 91. If she got a 91, then fine I will get a 92... We all had to be better than the next person. So we all got super involved with everything. I mean I was the president of three different clubs because I had to beat my best friend who was doing this. And even now, like my best friend and I are still like that. I am going to get my three degrees in four years... She is a double major, with two minors, and three certificates in four years. (Sally, Int. 1, 0:14:27)

Sally grew up in schools and a community nurturing a competitive environment. So status was important to Sally as evident from the ways she emphasized earned credentials and test scores.

Sally was asked what she expected of her current (second) mathematics pedagogy course. Her response was direct. She did not expect anything out of the class because she did not get

anything out of the previous mathematics methods course. The previous experience and training she received at the mathematics-tutoring center was significant. She saw no way her current mathematics methods course would help her in advancing her practice.

I understand the concepts and I am good with these concepts. And I am—like for [mathematics-tutoring center] we needed to do training every month. So we had to do [mathematics-tutoring] university, which was 20 hours of our own time going through and watching videos of people and going to seminars with our bosses, who were both mathematics majors in college... So I mean we did that 20 hours every other month of learning math and learning how to teach math. So I have a very very good foundation in math. So I do not know how much more I can really get out of it. But I mean I am saying that as someone who has always been in the advanced math classes and taught math for two years. (Sally, Int. 1, 0:21:21)

Sally believed the training at the mathematics-tutoring center provided her with enough pedagogical content knowledge and mathematical content knowledge for her as a teacher-of-mathematics. Her previous methods course was not a strong enough intervention to change these beliefs. Sally had devalued her teacher education program in terms of what she could learn about teaching mathematics, but she valued the status she could attain from the degrees she will earn.

During the first interview Sally defined success as a teacher as being able to demonstrate flexibility with the lessons to do what is best for students. She linked flexibility with a teacher's classroom management capabilities and student engagement. To Sally, engagement in the material was directly related to classroom management. So if a teacher's lessons or classroom is not under control, then the teacher needs to change his or her actions in the classroom to better connect the material to the students. "In math, [students] have to be actively engaged the entire time in order to learn... You have to be up there and entertain the kids and keeping them engaged" (Sally, Int. 1, 0:29:24). Therefore Sally believed learning requires the engagement of the student and it is the job of a teacher to connect the material to the students to keep them engaged.

Unlike some of the other participants, Sally had a vague vision of self-as-teacher. She confessed when envisioning her future self she does not "really go that far into it." (Sally, Int. 1, 0:31:50). She described her future classroom would be set up like her 4th grade teacher's room because it was her favorite as a student.

My 4th grade teacher she was the best. Or she was my favorite because...we all each [had] a pair of slippers. So when we are in class we could just like wear our slippers. It was like that with our books in our cubbies in the back. So I just always imagined it set up like my 4th grade classroom because that was my favorite classroom that I have had. It was a lot of group work, a lot of interacting with each other. And then she would get up there and teach us and then walk around and help us out. (Sally, Int. 1, 0:31:50)

Sally as an afterthought included the teacher moves her 4th grade teacher enacted. Sally emphasized what the teacher did to make her feel good as a student or have a positive disposition about school. She did not provide any specifics about her vision but only described the environment she desired to create. She was then asked to describe her role as a teacher in her vision.

I mean obviously I would be the teacher. So just kind of standing up there and talking about whatever the lesson for the day is and then doing the activity, and then walking around, helping the kids out. And then, plan centers and stuff. (Sally, Int. 1, 0:33:01)

Sally did not provide much evidence of having any imagery of her future self as a teacher. This could be explained by her long-term goal of being an administrator. "That's the grand plan... go teach for three years... and then get my Ph.D. in educational administration and then work my way up" (Sally, Int. 1, 0:17:51). To Sally, teaching was a stepping-stone to her actual career. Therefore, being a teacher was temporary and there was no need to develop a substantial vision as a teacher-of-mathematics.

Sally sought to be seen as one-with-status during the interviews. She provided evidence of her academic successes and her ability to be above average. Her competitive upbringing stressed the importance of being the "winner." Her competitive nature influenced Sally to

continue seeking high status. Throughout her experience at Amos Moses Sally strove to be seen as the one-with-status and valued to those who matched her imagery of teaching.

Sally at Amos Moses Elementary Part I: Ms. Krinkle as a Cultural Broker

Sally was partnered with another student of her cohort for her practicum experience at Amos Moses elementary, although she rarely mentioned her partner. Sally was assigned to Ms. Krinkle who taught 5th grade mathematics, but Sally rotated with an assigned group of kids because the 5th grade teachers at Amos Moses each taught one content (mathematics, science, reading, language arts, and social studies). So Sally interacted with five different teachers throughout the day, but Ms. Krinkle made the strongest impression on Sally because of Ms. Krinkle's perceived status.

She is an awesome teacher and the kids love her. She commands so much respect over her classroom. And she is probably their favorite teacher. It is a math teacher and you do not usually see that in elementary school. So that is just really cool. And all the other teachers respect her. She is kind of the lead teacher. I mean even the 3rd grade teachers across the hall always come over and ask her questions. And it is not even that she has been there forever. She did not even graduate with an education degree. She just happen[ed] upon education. And so it is really really interesting to learn from her and how she has become where she is. And then, I mean she will tell us like, oh yeah I am so surprised that that worked. I just made that up 20 minutes ago. (Sally, Int. 2, 0:02:34)

Sally praised Ms. Krinkle's "command" of the classroom and the love she received from students. Ms. Krinkle being the students' favorite teacher was also valuable to Sally, especially because Ms. Krinkle was a mathematics teacher. Sally positioned Ms. Krinkle as having high status, not only with students, but also with other teachers in the school. The fact Ms. Krinkle did not have a degree in education, yet had such high status, further promoted the status Sally attributed to Ms. Krinkle. Furthermore, Sally was impressed with Ms. Krinkle's ability to develop engaging strategies on the spot. Ms. Krinkle was the image of the teacher Sally wanted to become.

Although Sally found interesting the mathematical strategies and techniques Ms. Krinkle was using to teach students how to do mathematics, Sally still felt showing students more efficient ways of doing mathematics was important. She acknowledged students were learning mathematics differently than when she was a student, but she still showed them her ways of doing mathematics.

I am in a 5th grade math class and the way they teach those concepts is completely different from anything that I have learned. So it is kind of interesting to walk around have the kids be doing the math. And I am kind of like, okay this is how you are supposed to be doing it, but here is an easier way. They are like ahh (pleasant surprise sound) cause I mean once they learn it and they know how to do it the right way. Then I will be like, okay well this is another way you can do it. We try to do it the way that the teacher is doing it cause that is what the standards say. But it is fun I mean I like it. And then I love, love some kids face when they go like, oh (surprise sounds) well that is really cool. (Sally, Int. 1, 0:25:40)

To Sally, students learning mathematics conceptually was not a major concern. On the other hand, the students attaining correct answers in an efficient manner was important to her. She provided no evidence of paying attention to the goals of the curriculum or standards. Instead her attention was more on getting the students to get to the correct answers as quickly as possible. Once the students had shown enough expertise with the strategies needing to be taught, Sally would teach them the tricks and techniques she thought was best for them. I believe this is a consequence of Sally's high regard to her training at the mathematics-tutoring center, as well as, her competitive nature. Sally believed to be competitive one needed to get the current answers before the others. This is why she stressed efficient strategies leading students to the correct answer regardless of the students developing conceptual understanding of the mathematics.

This shows how Sally felt Ms. Krinkle provided her with a space in the classroom to be able to use her voice (Belenky et al., 1985) with the students. She did not feel she was positioned in a gray space like Anastasia and Elsa were in Ms. Blaileen's classroom. With the 5th grade

reading teacher, however, Sally did admit to feeling she worked within a gray space. "I feel that way a lot in reading because I just do not know how to do it really. And she has never told me how she wants [it] to be done. So I do my best" (Sally, Int. 2, 0:27:29). Sally provided evidence of how the reading teacher was not the cultural broker (Aikenhead, 1997; Jegede & Aikenhead, 1999) she needed in order to recognize her position in the classroom. Sally did not feel supported by the reading instructor.

We walked in the first day, and we were like, hi. And she was just like, hey and then went to the kids. And we were like, okay so I guess we are not going to actually talk about what we should do. So we just sat in the back until she changed. And now that we are doing close reading, she pulls out a group of kids. And she's like go in the hall. And then she looks at us. She's like, someone go in the hall, someone stay in here. Then I was like, okay what am I suppose to do. I asked the kids cause she did not tell us. She started working with her group. I was like, okay I have a sheet of paper in front of me guys. How do you usually do this? So they had to teach me how to do a close reading.... So then I mean, we went in—asked our lead teacher [Ms. Krinkle] at the end of the day. We were like, hey she handed this to us what do you think it means? And we went over it and figured it out. (Sally, Int. 2, 0:08:44)

The instructor of the reading course did not aid Sally in determining her role in the classroom. To Sally, Ms. Krinkle was a much more successful cultural broker. As such Sally, when lost about her role and use of her voice (or positioned in the gray space), sought out Ms. Krinkle's assistance to help her in shifting out of the gray space in the reading class. Sally did not mention seeking assistance from her professors, only the teachers at Amos Moses.

Sally's emphasis on students getting correct answers was consistent throughout her interviews, small group meetings, and writing prompts. When students were able to learn from her how to get the correct answers, Sally responded with a positive affective reaction. At times she would take credit for impacting the students lives.

We have got a parapro and the teacher [Ms. Krinkle] and the two of us and we all just go around and help them [students] when they were learning GCF's and LCM's. It was brand new to them. And they were—a lot of them were really confused. And it was cool since there are four of us, we can just sit down individually and help each of them. It is so cool

to see their eyes light up and all of a sudden they are like, oh I actually understand this. And then they did a poster project where they wrote the definition and the differences and gave examples. And I would kind of explain to them, sit down with them until they understood it. And then I would walk away and then I could go back and see that they had done it all correctly. That was cool cause it happened with more than one student. So it was just a day that we all had a really big impact and it was fun. (Sally, SG2, 0:17:02)

We did a fraction-based activity in groups a few weeks ago; the teacher gave the students word problems and then we helped the groups come up with different ways to solve the problems. I used a variety of strategies to help them understand addition, subtraction, multiplication, and division, and the one that resonated the best with all of the students was the idea of simplifying fractions before starting the problem; this makes it easier to multiply and/or find common denominators, so the students loved it! My mentor teacher was happy that I was helping the students and that they were understanding fractions better, and the students as a whole were much less frustrated after this activity. I was really happy because I know that I definitely helped them. (Sally, WP3, Lines 6–16)

Sally wanted to be the one-with-status not only with the teachers but with the students as well.

Having a status with students meant being liked, preferably the students' favorite teacher. This is potentially why she emphasized having fun in mathematics. If the students were having fun, then they would like her more as a teacher. Also, Sally saw her role as a teacher to be the one who tells students the multiple strategies to solve mathematics problems. She developed the belief the teacher is supposed to tell the students multiple strategies and they will select the best one that works for them. This may have come from a combination of her working at the mathematics-tutoring center, her competitive nature, and low value she had for her teacher education program.

Sally did not see herself learning much from her mathematics education courses. She already saw herself as having a strong mathematics content and pedagogical background because of her work at the mathematics-tutoring center. Sally described how she saw her mathematics education courses as different than the training she received at the mathematics-tutoring center she worked previously.

I mean, I do not know, the math class that we are doing now—I do not know. I feel it needs, it is something that we kind of have to learn more in the field. And it is tough because we are each going to be teaching different grades. There is some people that

want to teach pre-k and there is some people that want to teach 5th grade. So there is no way that you can cover all, what seven grades in-between? Like you cannot cover all that. What we are learning is good for those classes that teach that but you are not going to be covering that if you are in a 5th grade classroom or if you are in a pre-k classroom.... We are learning and we are learning kind of the basics, but at the same time, it is not going to meet all of the standards for all of the different grades. And that is an unrealistic expectation. So just kind of learning more about math and the different ways that you teach math. So I mean in that sense it is similar to [mathematics-tutoring center] because I was always trained [for] more of the 2nd, 3rd, and 4th. So I knew the 2nd, 3rd, and 4th [grade] standards. And that is what I would work toward. (Sally, Int. 1, 0:37:47)

Although Sally had spent some time at Amos Moses, she still did not see her teacher education program as aiding her in developing her narrative identity as a teacher. Her previous training at the mathematics-tutoring center had made Sally resistive to the interventions in her mathematics education coursework. It is possible Sally did not see the teacher education program as providing her with the status she desired and her competitive nature was pushing her to seek out the high status she desired at Amos Moses.

Sally at Amos Moses Elementary Part II: Gaining Real Teaching Experience

After a number of weeks at Amos Moses, Sally continued to use her voice in Ms. Krinkle's classroom. She was able to construct a space to use her voice without the need to compromise with the authority of the classroom. Instead Sally thought of Ms. Krinkle's class as providing her with agency and the opportunity to work with students on her own. This allowed Sally to teach mathematics in the way she envisioned without any pressure to conform to the curriculum. She continued to show the students multiple strategies until one clicked with the child. Additionally, she maintained her emphasis on the solution by showing students "tricks" to getting the solution more efficiently.

Our math class in particular because that is the class that we work with the students the most. And we get the most freedom because that is the one where we actually lead small groups. They are given problems and I will sit down with them and be like, okay how can we solve it? And they will show me one way, and I am like, oh well what about this. And they will be like, wait we can actually do that. And I will teach them these shortcuts and

different things that I have learned over the years. That their teacher just does not teach the entire the class, but she cannot teach 30 kids 20 different ways. But I can sit down with them and be like, okay well there is this way, this way, and this way. And one of them clicks. They are like, oh well the middle way that is perfect for me. And someone else is like, wait what about that last way, can you show me how you did that again. And then all of a sudden these kids understand it that much more. So that is a lot of fun.
(Sally, Int. 2, 0:13:19)

Sally insisted on showing the students *her* mathematics and showed no evidence of attempting to build off of the students' mathematics. Teaching was more of an individual endeavor to find the technique or strategy making the most sense to the student. She praised her position of going child-to-child finding the strategy that worked for them and at times showing them the tricks to do mathematics better.

The students in Ms. Krinkle's classroom legitimized Sally's voice as a teacher-of-mathematics. The students being successful in getting correct solutions justified Sally's beliefs about teaching mathematics. By focusing on the students' ability to get the correct answer, Sally continued to see her job as finding the strategy that works for each individual student. Sally re-emphasized this belief when asked what someone who does not like mathematics, believes about mathematics.

The fact that it is hard because they have not had someone sit down with them that actually works with them and found a way that clicks. Cause there is a way that clicks it is just a matter of someone being patient enough to sit down and help that student find that. (Sally, Int. 2, 0:20:57)

Sally also stated the same belief when asked if mathematics requires a unique way of thinking in comparison to other contents. "I think that everybody can understand math as long as it is presented the right way" (Sally, Int. 2, 0:20:07). Though Sally's mathematics education coursework had intended to have prospective teachers focus on students' mathematical thinking, Sally was able to resist this image of teaching mathematics. Ms. Krinkle did not challenge Sally's beliefs about learning and teaching of mathematics. I believe Ms. Krinkle's teacher moves and

classroom was similar to Sally's vision of teaching. Because Sally was able to fit what she was seeing in Ms. Krinkle's classroom into her vision, she was more comfortable using her voice without worrying about the voice of the authority. Due to this, Sally was able to justify her actions in the classroom and continue resisting her teacher education training.

Sally's beliefs about teaching and learning mathematics led her to see teaching mathematics as being very individualized. This made it challenging for her to envision teaching multiple students with a variety of abilities and mathematical backgrounds. This is evident by the ways Sally highlighted Ms. Krinkle's ability to differentiate for her students. Sally witnessing a "real" teacher differentiating for each class throughout the day was a powerful turning point. She described this turning point experience when asked about how Ms. Krinkle stands out as a teacher at Amos Moses.

She does a phenomenal job of differentiating, which we got to see when we were in her classroom for three different math periods. We saw gifted, the EIP, and then ours the Math EIP.... The same lesson three different ways of teaching it, three different problems given. And that was one of the days where people were observing. So she was showing off. She was like, oh yeah look at all the differentiation that I used. I have it all written down. So she had planned extra hard for that lesson but still just being able to see how, okay this is how you differentiate lessons because that is not necessarily something that we are taught....Even if we are taught how are we suppose to know what to differentiate for. Our lesson plans that I am doing right now say to differentiate. It is a theoretical lesson plan, what am I suppose to differentiate for? There [are] so many different possibilities. So just getting to see that in actions is cool. (Sally, Int. 2, 0:04:58)

Sally claimed to have learned more from having seen Ms. Krinkle differentiate throughout the day than she has in her coursework. Again, Sally's beliefs about mathematics teaching and learning were blinding her to the value of coursework assignments. She did not see the point of creating "theoretical lesson plans" because the possible avenues to differentiate are too great.

Sally's perspective of her teacher education program, specifically mathematics education, had continued to decline as she worked at Amos Moses Elementary. Sally strongly believed

learning to be a teacher required doing the work of a teacher. So, if her coursework was not explicitly connected to her practicum experiences, then it was difficult for Sally to find the purpose of the activity, assignment, or class in general. She stressed in the second interview how experience was necessary to learn how to teach.

I mean you cannot learn how to be a teacher [in] these classrooms [coursework]. You have to actually go out and work with kids and see what works and what does not work. Because you can think that you have a brilliant classroom management class set up but then you go in to three different classrooms and realize that all three are completely different. And that is what is fun about our [practicum placement] is that we are working three different classrooms and there [are] three different kinds of kids, three different kinds of teachers, everything. So you get to experience the different styles and kind of learn from each of them to develop your own but knowing that when I go into a classroom two years from now I am going to have a completely different group of kids then any that I see right now. So you learn how to adapt really. And I mean then it helps us learn in our classes because like in our [mathematics methods] class last semester it was kind of really stupid because we were like, okay we are learning this but we are not practicing it. And in this class we are learning things and then we go in the field and then if we have questions we can go back and be like, so this happened. What should we do here? And it is a lot easier to learn when we actually have classroom experiences. (Sally, Int. 2, 0:00:39)

For Sally, learning to teach was also an individual endeavor. It was up to the individual prospective teacher to construct a teaching style to be adapted to work with different students.

Sally's focus on differentiation was influential to her desire to be able to adapt to different classes of students. Sally's understanding of differentiation seemed to remain focused on groups of students (classes) and not on individual students within a class. Ms. Krinkle may have unintentionally perpetuated this, as that was how Sally claimed Ms. Krinkle differentiated for her students.

Sally also mentioned the lack of opportunities to practice what she had learned in her previous mathematics education course. She previously failed to see the connections between what she was learning and the experiences with students being provided. Her current mathematics education course was better because she was able to discuss her experiences with

others and ask for help from authoritative figures. However, Sally still held on to her belief in order to become her ideal teacher she needed more experiences as a teacher (not as a student in a teachers classroom). When asked what obstacles she saw in becoming her ideal mathematics teacher, Sally stated:

Experience. I mean the fact of the matter is we are not going to be good teachers until we have been teaching for a couple of years. And it is a bummer for whatever students have me that 1st year because I know I will be a much better teacher the next year and the year after that. Yeah just time, experience, training when you are actually a teacher. Professional development; learning from your co-workers. (Sally, Int. 2, 0:18:45)

Although Sally believed experience was needed to learn how to teach, she did see her teacher program as supporting her in becoming her ideal image of a teacher. The program was still there, however, as an authoritative voice to tell Sally what the appropriate actions are in a given situation. So, to Sally, the teacher education program was there to answer questions when they arise in the field.

If we have questions about things we can always come back and ask. And that is why we have so many different field experiences. We have questions now but we will have a million more questions next semester. And then our student teaching, there is going to be a lot of questions. But there [are] still people that we can ask and talk to. And be like, okay well this happened. What do you think I—how could I have handled this better? (Sally, Int. 2, 0:19:55)

Even though Sally was resistive to the programs teachings, she desired to have the authority available to answer her questions.

Sally did see some aspects of the mathematics education courses as being productive to her as a teacher-of-mathematics. She desired to keep students engaged in the mathematics by making learning fun in the classroom. Her mathematics education course was providing her with activities to have fun while learning mathematics. Her coursework was not providing her with new mathematical content knowledge.

Lots of different activities that we can use, that is the biggest thing because her [mathematics education methods] class is not so much about learning concepts, which I mean we did kind of learn concepts and everything but mainly it is different activities that we can use. And that learning the math needs to be made fun. (Sally, Int. 2, 0:00:02)

So all sorts of different fun games. Kind of what we are learning in [mathematics methods] class. Just to keep them engaged and to keep them focus. So it's really helping. (Sally, Int. 2, 0:02:34)

In terms of Sally's narrative of self-as-teacher, she was receiving what she needed and desired from her coursework. She was getting practical activities and tasks that make learning mathematics fun and engaging to students. These activities fit into Sally's vision of good teaching and so she was more receptive to them. She also used the fact the authority was providing these activities as justification of her beliefs about teaching and learning mathematics. This was mostly what Sally was looking for her program to do for her because she believed her mathematics background was adequate from her previous experience at the mathematics-tutoring center.

What Sally's time at the mathematics-tutoring center did not provide for her was experience as an administrator. Sally had a strong desire to be an administrator, as stated earlier, she planned to teach for three years and then proceed to get her Ph.D. in administration. As such she focused more on the social dynamics occurring around her at Amos Moses rather than her learning to be a teacher. Sally was intrigued by the relationship the teachers had with one another. She found the relations between the teachers to be a way her time at Amos Moses was a preview of her own future teaching.

You are going to get all sorts of different people that you work with. That is one big thing that we are learning. And it is funny to see how different the teacher relationships—like no one really talks to the reading teacher because she is very odd, keeps to herself, does not really talk. She's just very odd. So she does her own thing and then three of the teachers are really good friends. And then our lead teacher is kind of the one that runs the group and helps everyone else out. And everyone comes to her with the problems. So you know there is going to be that teacher there. There is going to be the one that you go and

sit in her room at lunch and you are friends with. And there is the one that you kind of avoid. So that is really really interesting; the teacher dynamics. (Sally, Int. 2, 0:10:07)

Sally points out the high social standing of her mentor teacher. She recognized teachers with varying status are present at every school. She did not explicitly state, but I believe Sally desired to be the teacher with high status, the one to be sought out when unsure of what to do. This also aligned with Sally's competitive nature to be seen as the "best." In other words, Sally wanted to be an authority, not only for students but also for teachers she envisioned working with as well. She wanted her voice as an authority to be heard.

Sally's lens as an administrator also influenced how she looked at the students in her classes. She positioned herself more as a prospective administrator than a future teacher. So she not only focused on the social dynamics of the teachers but also on the social habits of the students. Her desire to be an administrator led Sally to focus on aspects of the school other participants did not. It also provided her a space to see larger social issues, specifically SES, as influencing her students' learning in Ms. Krinkle's classroom.

Then the student dynamics, you are going to get all sorts of kids. And we were work[ing] with different classes at different times too. And you really have so many different things. And [Amos Moses], the school that we are in is very very low income. And the family situations for a lot of the kids it is pretty pretty bad. And sometimes they will talk to us about it. Other times we just kind of assume that things are going on. And, I mean, all of the things that we see we just report to the teacher. Cause I mean we are mandatory reporters.... Bullying is very very prevalent.... We see the bullying start in our pre-k class. And it goes all the way up to 5th grade and then throw in some hormones and then goodness. They were just not having a good week. And it was like that all week. It was just a mess. Our teacher was like, I do not know how to handle this. I have never seen anything like it. And all the teachers kind of got together and it was just our one class. The other classes were fine. It was just this one class. Everyone was bullying each other. ... So I mean we are getting a nice preview of the things that we could possibly be dealing with. (Sally, Int. 2, 0:10:07)

Overall, the greatest preview of future-self Sally received from her field experience at Amos Moses was the opportunity to see the social dynamics between individuals at a school. This was

important to Sally as a future administrator to experience how individuals work together at a school. This also fit into her focus on status.

Sally did describe what it meant to be a mathematics teacher. Her meaning of a mathematics teacher, however, was vague and ill defined like her vision of self as teacher. She did have a more developed vision of a teacher in general and focused more on that. But many of the aspects-of-self previously described emerged in her responses including her administrative lens, her beliefs about teaching and learning mathematics, and her desire to engage students in fun mathematical experiences to develop or maintain a productive disposition.

A person that stands up and teaches math. Then they also have to be able to be a teacher which means thinking on their feet and giving out a bunch of different strategies and helping the students and not just being like, okay this is multiplication, do a million problems. No, you actually have to walk them through it and give individual feedback. And assess the students as a whole, instead of just the individual. And give them different options to learn. Which is why I like the fact that 5th grade is compartmentalized because I think it is such an important grade and they are getting the best teacher for each subject. Like some of those teachers, I cannot imagine them having a math class. That reading teacher, that just scares me the fact that she could teach people math. Reading like it is a super important subject. I love reading but they get—they are exposed to reading in all the other classes. So it is not awful that they are not having the best experience in that class. But if they were having that kind of experience in a math class that would turn them off from math for a long long time. And then you get to middle school and it is that much harder and the teachers care a little bit less. I do not know if that is recoverable.... But math is one of those subjects that once you decide you do not like it. It is really really hard to like again. (Sally, Int. 2, 0:16:41)

Sally's background working at the mathematics-tutoring center was a strong force in her beliefs about teaching and learning mathematics. Sally developed her meaning of what it meant to be a teacher at the center and she carried many of those ideas to Amos Moses. Her desired administrative position also emerged as a lens Sally used to make sense of the social dynamics and structure of Amos Moses.

Additionally, to Sally, being a teacher-of-mathematics was not much different than being a teacher. She did not seem to see a necessary split or fragmentation of her identity as being

necessary to fulfill her desire to be a teacher. This may be because of her strong administration desire. Because teaching was a stepping stone to being an administrator, it was not worth the time for Sally to develop her identity as a teacher as much as some of the other participants. Sally saw little need to develop her identity as a teacher-of-mathematics. She already had what was for her a strong identity as a teacher-of-mathematics. Her vision can be described as narrow, but in Sally's thinking it was very solid.

Sally at Amos Moses Elementary Part III: The Reflections of Amos Moses

Once Sally had completed her practicum experience at Amos Moses, she was asked to reflect on her time there and how she had progressed. She was also asked to write about a powerful event she participated in or witnessed. Sally wrote the following:

I've learned a lot this semester about teaching mathematics, namely in terms of how to make math fun for students. I know a lot about the skills involved in elementary mathematics, and I know a fair amount about working one on one with students, but teaching to a large group and finding a way to make sure everybody knows what to do is particularly difficult for me. I had an incredible mentor teacher this semester, and I learned a lot simply by watching her teach. She had an incredible way of reaching all students, and of letting them work together to learn from each other. I think that this biggest example of this was when they were working on decimals; they did a whole group lesson, then they worked on problems in groups, and the teacher/parapro/us walked around and helped the students as needed. This allowed them time to learn from each other and that really influenced my future mathematics teaching; I also feel much more confident after having the practice. The best experience I had was when students remembered me after just one or two experiences, because I had made an impact in their mathematics education. (Sally, WP4, Lines 11–24)

Sally described what she had hoped she would have gotten from her experience at Amos Moses. She had hoped to learn more about teaching larger groups of students in situations that were not one-on-one, which was a concern of hers previously. She also hoped to learn how to make the learning of mathematics fun for students. She praised Ms. Krinkle for the ways she taught because Ms. Krinkle's teaching was perceived as similar to what Sally envisioned for herself. Finally, the practicum experience had given Sally more confidence in her vision of self-as-

teacher because she interpreted making a positive impact on Ms. Krinkle's students. Thereby, justifying what she desired to do as a teacher.

Even though Sally was getting the "real" experience she claimed was necessary to learn to be a teacher, she confessed her perspective on students' learning of mathematics had not changed during her time at Amos Moses.

Interviewer: First of all do you feel like last semester's experience changed how you view the teaching and learning of mathematics?

Sally: Mmm I do not really think so. I mean the kids, the way they learn is the teacher would go up give them examples like walk them through it. The kids would have their white boards. Go through the problems and we would help them. Like it is pretty standard to me.

Interviewer: And that is the way that you envision your own class going?

Sally: Yeah. I do not really know a better way to be doing things. Like work with manipulatives and everything. Do the games that we learned in [mathematics methods] class when they are applicable. But when you are learning concepts I think that is the way to do it. (Int. 3, 0:15:07–0:15:47)

Sally had not been pushed to question her apprenticeship of observation (Lortie, 1975/2002). Her previous experience at the mathematics-tutoring center and her own success as a student empowered her enough to be able to resist the interventions of her teacher education program. She did include the use of some of the activities she had learned in her mathematics education course but only because they fit into her desired teacher moves and actions (the activities made learning fun for the students). Regardless, Sally still believed there is only one way to teach mathematics.

Though Sally's beliefs about teaching and learning did not change, she held on to her desire to develop students' productive disposition toward mathematics. From Sally's perspective students needed to be motivated to do mathematics, and it is one purpose of the teacher to keep students engaged in the mathematics. Her self-conceptualized strong content knowledge aided Sally in being able to come up with applications of the mathematics students were learning.

These applications were important to keep students engaged in the mathematics in ways that are fun for students.

I know the content, very well. And I know a variety of ways to get students to think about it. And I am very good at real world applications. Like, okay if we are learning about this, well let us think about it in a word problem. And then we would look at the word problem and they are like, wait those kind of things happen everyday. So different things—like it makes students understand why it's important. (Sally, Int. 3, 0:24:33)

Getting students to listen and respect me. That's one thing that I can - I get. Like when I talk they're like, oh okay. Like we want to listen to you. Not just ugh (in disgust) another teacher, but like, oh (joyous) it's Ms. H (Sally) talking. Like I don't know how but I can get them excited for it. And I mean I - I know the content very well, and I'm enthusiastic about it, which I think is one reason why they get so excited. (Sally, Int. 3, 0:25:00)

Sally believed the collective (students) would take up her positive emotional display of enthusiasm for mathematics and they would feel the same. She desired to develop students' productive disposition and by projecting these emotional responses to mathematics she would achieve her goal.

Sally not only saw success in her ways of teaching when students showed positive affective responses to mathematics, but also when they saw her in a favorable light. When students positioned Sally in a positive way it was equivalent to increasing her status. Sally wanted students to like her. She demonstrated great pride when students provided evidence of her impact on them in positive ways. She did not provide evidence of seeking out students' conceptual understandings of the mathematics, but was satisfied by students' affect.

I am very interested in who the students are and their backgrounds and what they like and different things like that. Because I feel the more you know your students the better your classroom will run, when everyone feels comfortable. ...But they just like knowing that somebody cares. And I am very very caring, which is why I went into the field of education because I care about all of my students. So I am an evil queen who cares. (Sally, Int. 3, 0:17:08)

By being the "evil queen who cares," Sally emphasized her desired power position as the authority in the classroom, but also her desire to be seen as a caring and loving individual. Additionally, implicit in her metaphor, was her desire to be seen as the one-with-status.

Sally attaining the favorable position with the students was seen as a great success as a teacher. When asked to share an event having a powerful impact on her thinking about teaching and learning of mathematics. Her narrative focused on her success in making mathematics fun and how the students in Ms. Krinkle's class raised her status.

I would sit down and kind of talk to them and then there would be an example. And I would be like, okay well think of it this way. And we would go through that. And then some of the kids would be like, oh my gosh like this was the best math class ever. You just made it so fun. And I worked with them one time and they always came up to me in the hallway and give me hugs and they were so happy. They are like, oh yeah you are a fun math teacher, from a 10 minute mini thing that I did with them. So that—I mean it stuck to them and it is something that they remember. I mean on the last day they were like, oh my gosh we are going to miss you so much. I literally taught them for 10 minutes. So that was just something that really stood out to me. Like okay, I can make a difference and I can teach them something that is going to stick out to them. (Sally, SG4, 0:09:54)

Sally succeeded in making mathematics fun for the students. She showed them various strategies until the one that "clicked" was found. Then the students legitimized her actions when they hugged her and exclaimed how much she would be missed. Sally did not look for disconfirming evidence of her actions and was not perturbed strong enough by any event in her field experience or her teacher education classes. For example, Sally does not discuss students' failure at benchmark exams or other assessments. Sally did not see formal and informal assessments as evidence counter to her desired ways of teaching.

Though Sally saw her mathematical and pedagogical content knowledge as being strong, she recognized throughout her experience at Amos Moses working with a large number of students was still something she needed to work on, especially when the students have varying

abilities in the classroom. When asked what qualities or skills Sally felt she still needed to develop she responded:

I do not know. There is a lot. Maybe teaching a whole group lesson. When there [are] a lot of students in differing abilities, cause I have never had any experience, obviously I have never had any experience being the only teacher in a classroom. But I have never been even just with two people. I do not know how it works with just two people doing a lesson. I know how to handle—I do not even know how to handle, but I know when there is a lot of adults in the room you can go around and get all the stuff—identify the students that are struggling and everything. But when there are not as many adults in the room, like what do you do when you know a kid is obviously struggling but everyone else is ready to move on. Things like that. (Sally, Int. 3, 0:26:38)

Sally continued not seeing her practicum experience as the experience she needed to learn how to teach. Sally's conceptions of teaching and learning mathematics fell apart when expanded to working with multiple students. She was not able to resolve this concern during her time at Amos Moses. Even her mentor teacher Ms. Krinkle did not aid in this endeavor. Even though altogether Sally did not feel like a teacher during her practicum experience, she did feel the students saw her as a teacher. "The kids I mean they would only have—like they would have two of us and then their teacher. And they would very much identify us as teachers" (Sally, Int. 3, 0:21:46). To Sally, the students identified her as a teacher because they listened to her and saw her as an authority figure.

When it came to Sally's emotion regulation, she confessed to having to do so a lot during the semester. In particular, she emphasized the need to suppress her emotions until she can be affected by it in a safe space. Each of Sally's examples focused on her having to control her expressions for a student telling her how poverty affects their well-being. Sally was unable to provide the student(s) support and confessed to just saying positive statements because her helplessness in the situation.

The first week that I was there, it was the week that it was freezing this semester and one of the kids was like, I just do not want to go home. And I was like why? He was like, it is so cold there because we do not have heat. So things like that just kill me. And it is very hard. I mean just talking to the students, especially talking to them in Spanish and just having them open up like it is hard when you have to be the strong person. Then you go home and you are just like, oh my gosh. I always go home and whether I am walking my dog or whatever I kind of go through and unpack everything that has happened throughout the day. And then I will go home and think about it and be like, wow.... The things that so and so said to me, that is really tough. Wow, okay there are seven kids in their little one bedroom place. They sleep in the living room and they do not have beds. Like, oh my gosh. But then in the moment, you are just like you know, what? You can do it. Like it is going to all be okay. And you just kind of say things—not out of a reflex but... you handle them the way that you have to. *Then you can go home and actually be affected by it. You cannot in the schools. I mean you cannot, you cannot show weakness. Cause if you show weakness they will attack.* They are dogs, kind of, in that regard. (Sally, Int. 3, 0:27:41, emphasis added)

Sally described three feeling rules here. The first was to repress her emotions when in the presence of the student. She goes on to describe how teachers just need to say whatever is necessary to better handle the situation. It was not so much say what will help the student but say what is necessary to help oneself get through the situation. The second feeling rule was to release or "be affect by" the emotions in a safe space outside of school. Within this safe space, her home or while walking the dog, Sally was able to process her emotionality and let go of the emotions attached to the situation.

Finally, Sally explicitly stated her third feeling rule, do not show how one is affected because that is a sign of weakness. Sally's positioning as a teacher was dependent on her being seen as an authority. Therefore, she needed to suppress and hide her affective reactions because being "affected" by a student's home situation, would be a sign of weakness and would lead to an "attack" by students. Sally desired to keep her position and status in the classroom, demonstrating her true emotionality would lead to a change in status.

Sally did feel like she was emotionally prepared to work with low SES students. As a freshman at the university she volunteered at Haven, a non-profit tutoring service in a low SES

area. As part of the orientation for volunteers they discussed how to cope with the situations of the students.

When we [had] the little orientation thing, I do remember them saying like, [students] are going to say things. It is going to be hard, but you just got to kind of go through it. And I mean I think that is something that they always mention in the [elementary methods] classes. I do not honestly, do not remember them saying things but I also know that it is something you just kind of learn and go with. (Sally, Int. 3, 0:29:17)

Sally did not provide specifics about the orientation and could not provide details about the discussions on emotion regulation in her elementary methods course. Her recollection of the orientation and her elementary methods course, however, were enough to justify Sally's constructed feeling rules. From her interpretation, the coping actions she enacted were appropriate and legitimized by the voice of an authority.

Sally described her practicum experience at Amos Moses to be exhausting to her physically, but she also felt overwhelmed by the amount of work teaching required. This was all in addition to her work as a student. Sally found the emotions she went through and the length of time at the schools as overwhelming for her. It was difficult for her to find time to cope with what she goes through, her exhaustion, and the other work she needed to be complete for the teacher education program.

So it is very very exhausting and it does get overwhelming sometimes when there is so many different things going on. And I mean I feel like this semester for some reason isn't as exhausting as last semester... I mean there were times, Thursday was our long day in the field, I would be home and asleep by 5:30. Just like done and do not speak to me. Lights off. Dog we are going to sleep. Bed. And this semester I have not quite felt like that yet, but there have been a couple of times where I would just kind of go home and just sit down and be like, oh my god. What. Oh my god. Oh my god. And then just kind of sit there and just think about everything that has happened and it is a little overwhelming but at the same time you are just like okay, like what can I do? Let's turn on Friends or Parks and Rec or something and just make it through and go through tomorrow and do it all. (Sally, Int. 3, 0:30:02)

Sally restated her constructed feeling rules of suppression and release. Sally described her action of suppressing emotions as needed until she reached her safe space. Once there, she continued to repress the emotions by doing other activities. She even comments on how with these activities she avoids interaction with others. She needed the time by herself to cope with the emotions and move on from them. It is through these acts she represses the negative emotions from being a teacher.

Overall, Sally's emotional regulation involved the suppression of emotions and coping strategies to be enacted outside of work. Her feeling rules also were about keeping her status as an authority figure in check. Sally did not focus her feeling rules specifically to mathematics nor to teaching and learning, but instead on outside social factors and their influence on the work of a teacher. With her beliefs about teaching and learning mathematics, Sally did not run into much conflict. She was able to resist much of the interventions of the program. Therefore, she found legitimization of her identity as a teacher-of-mathematics through the students' success with her enacted teacher moves and the members of the community she wished to join.

Sally's Emotional Geographies

In this section I describe characteristics of Sally's emotional geographies during her time at Amos Moses Elementary. I begin by exploring each of her emotional geographies individually providing commentary on how each of her emotional geographies influenced her decision-making processes. I end this chapter by arguing Sally's perspective was of a student due to her focus on status. I also argue her desire to be an administrator blinded Sally to many of the interventions planned by her teacher education program.

Sally's Moral Geography

Sally's moral geography was characterized by two strong desires. The first was her desire to develop students' productive disposition toward mathematics. Sally viewed mathematics as applicable to everyday life. This belief influenced her determination to have students see mathematics as useful, particularly when it comes to surviving as an individual. Her examples usually dealt with economic factors.

Math is something that is so—it is universal. It is everywhere. Like between time and money and budgeting and I mean anything else you can find a way to incorporate math in almost anything. So getting kids to see the importance of math is something that is very interesting to me. (Sally, Int. 1, 0:25:40)

So we need to find a way to get more people to like it [mathematics]. And I mean it is a reality. I have a budget. I do math everyday when I think, okay well I am really hungry. I have this much money to spend on food this week before I have to go home and say I'm sorry mom and dad but I have nothing else to do. (Sally, Int. 1, 0:41:27)

In Sally's background she focused on economic issues of status. This influenced her to see mathematics as valuable in order to be successful in the real world. This belief was also emphasized by the community she grew up in and by her parents. Sally saw her purpose as a teacher-of-mathematics to make sure students see mathematics as useful to their everyday lives because of the societal value of mathematics. The process or ways of thinking about mathematics were not seen as particularly relevant to this endeavor, however, only the ability to attain the correct solution was important. Hence, Sally looked for opportunities to make mathematics valuable to the students. This usually evolved into students having a positive affective response to her more than an appreciation of the content.

Sally's strong values about the application of mathematics influenced her decision-making processes in Ms. Krinkle's classroom. Sally did not discuss negative emotions except for moments clashing with her views of teaching and learning mathematics. This occurred most

often when discussing mathematical strategies students were being taught in Ms. Krinkle's classroom. Sally focused on the strategies because she did not see them as beneficial to students in attaining the solutions in efficient ways. The strategies also conflicted with the ideology of the mathematics-tutoring center where she had worked. Sally held her experience at the mathematics-tutoring center in such high regard she used those experiences to justify her resistance of the "new" ways of teaching.

For division they [students in Ms. Krinkle's classroom] do weird division things now. If it is 51 goes into 12000... They look and be like, okay so how many times does 51 go into one. None. How many times does 51 go into 12. None. How many times does 51 go into 120? Well it definitely goes in once. So minus 51, do all that, write the one to the side, and check it again. Go through all that. Then add it up and be like one plus one. Okay so it went in twice and then just go from there. *And I think that is really dumb cause that is a lot of steps. And for 5th grade I feel they should be able to do a little bit more than that.* So I was like, well instead of just doing one at a time. Why don't you do it up to 9 times? Why don't we think about it? Hmmm. 50 times—or two groups of 50 is going to be about a 100, so that [is] kind of close to 100. Why don't we try and take away 2 groups of 51? ... *Just showing [the students] kind of an easier way, not necessarily easier, but less steps and more mental math. That is a big thing that... we work[ed] on in [mathematics-tutoring center] is a lot mental math.* (Sally, Int. 1, 0:35:36)

Sally did not attempt to understand the mathematical benefits of teaching students the strategies shown by Ms. Krinkle. Instead, Sally criticized the strategy as "really dumb" because of the number of steps. This went against Sally's narrative of her future mathematics teaching she had developed and justified by the voice of the authority at the mathematics-tutoring center.

Sally's second influential desire, students should get correct answers, was highlighted in the previous statement. Sally emphasized mental operations and doing mathematics in one's head in efficient ways over conceptual understandings. When she discussed her role in Ms. Krinkle's classroom, it involved Sally teaching mathematics in a particular way. Sally tried to be her image of an ideal mathematics teacher.

Someone who cares and goes through and gives different solution or different options until everybody understands. And everybody actually knows what is being—or what is expected of them. And what is being asked of them and how to solve the problems. (Sally, Int. 2, 0:18:15)

This involved showing students multiple strategies until one clicked and the students then understood the mathematics (i.e. got the right answer). This was her role and purpose in the mathematics classroom, and was central to her identity as a teacher-of-mathematics. During her member check, Sally wrote "tricks are good" when reading what was written about her ideas about teaching and learning mathematics, further demonstrating her emphasis on the solution over conceptual understanding.

em kind of an easier way (Int. 1)
tricks are good

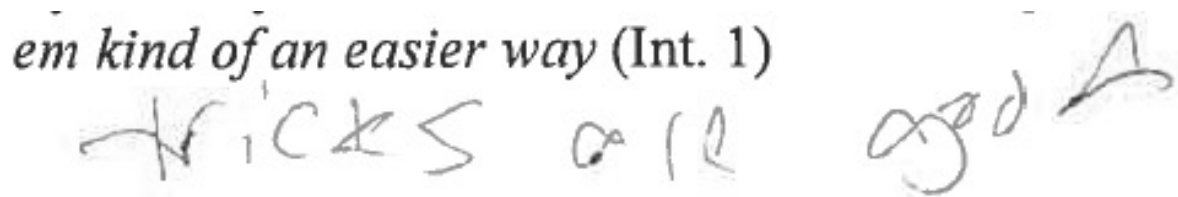
The image shows a close-up of handwritten text on a document. The first line reads "em kind of an easier way (Int. 1)" in a cursive script. Below it, the words "tricks are good" are written in a similar cursive script, followed by a large checkmark.

Figure 4. Sally wrote "tricks are good" on member check document.

Sally's strong perspective on students' learning of mathematics influenced much of her interpretations and actions in Ms. Krinkle's classroom. Her desired ways of teaching and learning of mathematics inspired her decision-making processes when it came to her role and position in the classroom. It also motivated what was valuable mathematically. Her purpose as a teacher-of-mathematics was to get students to have the correct solutions. Getting correct solutions would then provide the students with a more positive disposition toward mathematics. Sally was able to use her voice of a teacher-of-mathematics in Ms. Krinkle's classroom without any push back.

Sally's Professional Geography

Sally's professional geography was characterized by her aspiration to be an administrator and her desire to have strong student-teacher relationships. Both of these aspects tinted her

perspective of the job of a teacher to be about status in the classroom, school, and community. To begin with her long-term goal of becoming an administrator, Sally saw her prospective years of teaching as prerequisite to her real career. Her objective of being an administrator guided her to focus on the social dynamics between teachers. "My end goal is to work in administration and stuff. So it is very interesting to see all the different things. There is so much collaboration" (Sally, Int. 3, 0:02:10). Sally's emphasis on being an administrator had her focusing on different aspects of teaching mathematics than the other participants in this study.

Sally's study of the ways teachers work influenced her relationship with Ms. Krinkle. According to Sally, Ms. Krinkle was held in high regard with the other teachers at Amos Moses. When it came to the students, not only did Ms. Krinkle demand respect from her students, but she was also their favorite teacher, which to Sally was impressive for a mathematics teacher. Sally sought out Ms. Krinkle as an authority of what to do as a teacher even in subjects that were not her specialty. Ms. Krinkle was a voice Sally desired to use as she taught mathematics.

Sally's second influential desire as a teacher-of-mathematics was to be held in high regard by the students. It was important to Sally the students liked her as a person. She wanted to be seen as a caring and loving teacher. She regulated her emotions to be a positive force in the classroom to convince students to be excited about her and the content. For example, Sally was proud of her work with students in Ms. Krinkle's class. As previously described, one turning point occurred when she taught a 10-minute lesson and she felt beloved by the students. She professed great satisfaction with her teaching ability for the positive affective reactions students had to her teaching. The students' affective reactions were enough evidence to legitimize Sally's voice and identity as a teacher-of-mathematics. Her desired ways of teaching and therefore her

decision-making processes were solidified by the students and not by the teacher education program.

Finally, Sally's professional geography was motivated by her belief teaching is learned from experience. This influenced Sally to devalue her teacher education program. The only exception was when she needed the voice of the authority to tell her what to do in a situation. Sally's field experiences were also not accepted by her as very valuable. They did not provide a strong enough "real" experience for her. For Sally, a more genuine experience was her time at the mathematics-tutoring center. But her dependency on that as a real experience led her to be concerned about teaching to a group of students compared to a one-on-one environment. Differentiation became a major concern of Sally's. And even though the field component at Amos Moses was not a "real" experience, it would be real enough to aid her in developing her notions of differentiation.

Sally's Political Geography

Sally's political geography was dominated by her desire for status. This particular emotional geography was encompassed in many of the other geographies. It seemed Sally's desire to be the one-with-status encompassed many of her decision-making processes. For example, Sally's desire for status led her to highly valuing Ms. Krinkle's ways of teaching. Additionally, Sally's desire for status overwhelmingly influenced how much value she found in her teacher education program. Though she felt her program supported her in becoming her ideal teacher, the program played a supplementary role in Sally's development. All in all Sally sought out the voice of the expert when her own background experiences did not provide a clear solution to the problems of practice she faced.

Sally's strong desire to be the one-with-status led to conflict in two situations at Amos Moses. Sally's first power struggle was with a substitute teacher and the other with a paraprofessional in Ms. Krinkle's class. In both situations Sally's authority was put into question and in both cases she loses her attempt at a second-order positioning (Harre & Van Langenhove, 1991) or providing evidence to the social other (paraprofessional and substitute in these cases) she was positioned incorrectly. Additionally, in both situations, Sally sought out Ms. Krinkle for her status and authority to see what is the best appropriate action to take.

The sub was in her science class and she had the schedule of where the homeroom class went. So she was like, it is reading class. No this is science class.... We are in science. No, they are in reading. Class get your books out and do independent reading. You are a sub. Who has more authority in this situation, the substitute or the pre-service teachers? Then we went over [and] talked to our lead teacher [Ms. Krinkle] and she was like, well are the kids actually reading? And we were like, yeah. She was like, just do not fight it. Pick your battles and kind of leave that. If they are being quiet and paying attention just let it happen. And that one was probably the most awkward cause we were like who really is in charge right now. (Sally, Int. 2, 0:27:29)

Sally sought out Ms. Krinkle's voice of authority to legitimize the position she was placed in by the substitute. Ms. Krinkle's status as an authority provided Sally the comfort she needed after being positioned as not having any knowledge of the ways the school runs. In other words, Ms. Krinkle was able to provide the status Sally thought she lost with the substitute.

Sally's struggle with the paraprofessional in Ms. Krinkle's class was similar to the substitute. The power struggle between the paraprofessional and Sally put into question Sally's status with the students. Sally justified her actions by claiming to be doing the same as Ms. Krinkle, the voice with a greater authority.

The parapro that we have in our class is very much a sit down, be quiet, do your work, do not speak.... The mentor teacher that we have math is like, oh yeah let us learn math by—learning by playing basketball. Let's be up and running around, and singing and dancing and everything. They do not get along at all. So the teacher will be kind of encouraging them. And me and my partner absolutely love the mentor teacher's philosophy and we are going along with it. And the parapro in the back going, no! Like

stop talking. So like we'll go over and tell our kids to do something and this has happened multiple times. I cannot just think of one example. We will go and tell our kids to do something and be like, yes totally fine. Work in partners. We really want you guys to be talking. And she will come around and be like, seriously do I need to give you a punch [classrooms disciplinary tool]. You cannot be talking right now. And we are like, oops. And then like, kids look at us and they are like, but Ms. [Sally] said. And then I feel horrible because I do not really have—she is an actual teacher. She is a hired person. I am just a teacher intern. So yeah she has more power than I do but I am going off the mentor teacher and then the kids. (Sally, SG2, 0:33:25)

Sally contrasted the positions Ms. Krinkle and the paraprofessional had in the classroom. Sally aligned more with Ms. Krinkle's practice and philosophy. Therefore, Ms. Krinkle had higher status than the paraprofessional. The paraprofessional's actions had the students questioning Sally's status in the classroom. Sally was not able to use Ms. Krinkle's authority to reposition herself to the students, but she did acknowledge the power the paraprofessional had that Sally did not have in the classroom.

Sally was guided by her desire for status in various emotional geographies, but because her vision of self-as-teacher was similar to Ms. Krinkle, Sally's power struggles usually concluded by referring to Ms. Krinkle. Sally's ways of knowing (Belenky et al., 1986) or her voice as a teacher-of-mathematics was dependent on Ms. Krinkle's voice in the classroom. In other words, Sally was empowered by Ms. Krinkle giving her status. Sally sought out to be legitimized by Ms. Krinkle and the students in her class. Sally's decision-making processes were highly influenced by her attempting to keep the power and status she believed she had been given by the authority, Ms. Krinkle.

Sally's Sociocultural Geography

Her sociocultural geography was focused mostly on the issues related to socioeconomic status (SES). This focus on SES was influenced by her concentration on status and her own emphasis on the high SES of her home. A student at Amos Moses informing her of the lack of

heat at his home first brought low SES issues to Sally's attention. From there she was able to share other stories of students' education being affected by their low SES status. She was the first to bring up the influence of low SES in the classroom in the last small group meeting:

One time a student came up to me and was like, I am only—and he had been a problem child all day. He was like, I am only acting like this because I cannot take my medicine. So I mentioned that to the teacher and I was like, yeah he said it is because he cannot take his medicine. And the teacher was like, yeah his mom and I had a meeting about it. Their insurance ran out. So they cannot afford his medication anymore. I mean he knows and he was definitely acting out, but he was like, I cannot help it.... I feel like I cannot control it.... I mean some of the kids came to school smelling like cigarettes and drugs and just you know that they have got horrible family lives. And they—you cannot control that. All they can do is control [the] 8 hours that you have them in the classroom. (Sally, SG4, 0:17:03)

Sally had decided to become a teacher because she wanted to give students the same opportunities to learn she had growing up. But as she continued to work at Amos Moses Sally realized working with low SES students meant the opportunities she was given were harder to provide to them.

Sally's focus on SES did provide for her a way to begin exploring other social issues influencing a teacher's decision-making processes. For example, when she began her next practicum experience, Sally demonstrated a greater awareness of issues of race between the students at the school. Issues of poverty still existed but Sally was more attuned to students' multiple identities based on social aspects (e.g. race, gender, socioeconomic status, sexual orientation, etc.).

They are both very impoverished but in different ways. Like the last school [Amos Moses] was very poor white kids. This school is very poor Black and Mexican. Like as bad as that sounds that is what it is. Like yeah you can say Hispanic but they are just straight in from Mexico. The little girl I am working with came to America for an operation and then [said] good-bye to her parents because—or did not say good-bye to her mom or her brother because they are going to go right back to Mexico. And then her Dad decided to stay. You are like, what do you do when a 7 year old tells you that. (Sally, Int. 3, 0:00:39)

Although Sally was becoming more aware of the influence of other sociocultural aspects of the students other than SES, she was still trying to make sense of issues of race through her beliefs. There was still a strong bias influencing her perspective on students. Students who were illegal seemed to perturb Sally and she sought the voice of the authority to determine how to act toward those students.

Overall, Sally's focus on status also influenced her interaction with students with varying SES. Her desire to care and provide students with opportunities to learn guided her ways of facilitating and interpreting student actions. Sally provided no evidence of being able to direct these aspects to mathematics, but instead discussed them as a generalist. Over the experience of the field component Sally showed increased awareness and her sociocultural geography developed to embrace other social aspects.

Sally's Physical Geography

Sally's physical geography was characterized by her limited presence in Ms. Krinkle's classroom. Her limited presence in Ms. Krinkle's classroom was not problematic to Sally. My conjecture is because Sally and her partner were in Ms. Krinkle's classroom at the same amount of time; Sally's status was not put into question. This was different from her next practicum experience. Sally felt conflicted by the presence of someone with higher status in her next practicum experience.

The fact that last semester my partner and I were on the same level. We were there. Same experiences. Same everything. But this semester, the girl, the student teacher, she is there five days a week. And has been with them many many more days than I have.... I mean she was there from August through December, twice a week last (.) so that's maybe like 30 - 40 times plus. And now she's there 5 days a week everyday. I've been there 4. So she's been there 60 times and I've been there 4... What am I going to do? Be like, oh I know the way this classroom should be run. When she has been there almost everyday.... I was really concerned and I sent out an e-mail and I was like, I do not know how I feel about this. And they [University supervisors] were like, no it will be fine.... I mean it has been a month and a half, but I still don't feel comfortable. I am not really okay with the

fact that they did that. I just do not think that it is good for her or for me? (Sally, Int. 3, 0:22:20)

Sally's competitive nature emerged because she was no longer the one-with-status. Her limited presence no longer allowed her to compete with the student teacher. This was not the case in Ms. Krinkle's classroom, but Sally did not feel her status was in danger in Ms. Krinkle's classroom.

Sally's emotional geographic characteristics show the ways her emotional spaces influenced her ways of thinking about teaching and learning mathematics. Sally sought to be positioned in particular ways in the classrooms she visited. She desired to be seen as the one-with-status by both students and teachers. Her membership in each community was dependent on how others positioned her. She was still not secure in her own ways of knowing, regardless of the confidence working at the mathematics-tutoring center provided her. She sought out the voice of the authority (Ms. Krinkle and teacher education program when needed) as a way to legitimize her own actions in the classroom. When her position or status came into question, she attempted to counter the positioning by seeking out the authority she valued the most.

Sally constructed specific feeling rules to aid her in coping with challenging emotional experiences. Her feeling rules though, were not related to learning and teaching of mathematics but instead focused mostly on issues of poverty in the classroom. She coped by suppressing her emotions until they could be "worked out" in a safe space. She preferred to avoid physical interaction with others to cope. These coping skills were learned from her volunteer experience working in a low SES community. She claimed her teacher education program also guided the constructed feeling rules but could not provide any specifics. Table 14 summarizes the main themes and characteristics within each of Sally's emotional geographies.

Table 14
Characteristics of Sally's Emotional Geographies

Geography	Main Theme(s)
Moral	Develop positive disposition toward mathematics Getting the correct answer (Tricks are good)
Professional	Administrator Strong student-teacher relationships Learning to teach happens in the field
Political	Desire for status
Sociocultural	Interaction with low SES students
Physical	One day a week Lack of presence

Conclusion: Sally's Strong Administration Dream and Her Student Identity

Sally's perspective on becoming a teacher was influenced by her overall objective of being an administrator. To Sally this was the highest status that one could achieve with a career in education. Teaching at the elementary school level was a stepping stone in accomplishing her goal. Her desire led her to see her field component in a different way than the other participants. For example, student achievement was more about success in getting the correct answer than it was on having a conceptual understanding. As a student, Sally did not value conceptual understanding either as evident on her perspective on proof. "I think they [proofs] are really dumb. I do not understand. You come up with your answer. Why do you have to go through and do your 25 different steps to justify it" (Sally, Int. 1, 0:30:35)?

I argue Sally positioned herself more as a student than as a teacher during her time at Amos Moses. Due to her own positioning in the community of students, she found it challenging to recontextualize what she was learning in her teacher education courses because the coursework did not align with what was happening in the "real" world. It was not as difficult for

her to recontextualize her experience from the mathematics-tutoring center because that work aligned with her beliefs about teaching and learning mathematics. Sally had developed her notions of what it meant to teach and learn mathematics from an authoritative voice she had developed as her own. However, when she tried to expand this voice to work with a large number of students, she was unsure of how to do so. At which point, Sally sought out the voice of Ms. Krinkle. Sally was not looking to create her own voice in the classroom, but only continue using a compilation of authoritative voices.

Sally's focus on status contained her as a member in the community of students. She believed the number of degrees and years experience trumped the enactment of teacher moves and actions conducted during her practicum experiences. Her main concern was doing well and being successful in her teacher education program. Even though she did not find much value in the courses themselves, Sally did value the status she would attain when the program was completed. This in turn influenced her short-term goals.

I mean most semesters it is about ideally a 4.0 and all this stuff. But at this point, I have a 122 credit hours. After two years at [University]. I have a 3.7 so there is really no way that that can go super up or super down as long as I am consistent in my A's and A minuses and the occasional B plus but I do not like those....So at this point it is pretty much about just taking—being able to take classes that I need to take to be able to graduate. Cause it is not like my GPA is going to change and I know exactly when—I mean I have a color-coded chart. My advisors hate me, all three of them. You are so ridiculous. Yeah so really just get through the semester. (Sally, Int. 1, 0:22:46)

In all, Sally had little *faith* in her teacher education program. She saw the teacher education program, like her future teaching, to be a stepping stone to greater status. Sally's identity as a teacher-of-mathematics was already legitimized by her experience at the mathematics-tutoring center. Then Ms. Krinkle further justified Sally's identity, but most importantly the students justified her developed identity. The teacher education program did not legitimize or justify Sally's actions but she was still able to take what she desired as needed. She was able to use her

voice in the classroom, sought out legitimization, and (re)construct her identity as a teacher-of-mathematics mostly without her teacher education coursework.

APPENDIX I

CODE BOOK

All Codes

- Emotional Geographies
 - Moral Geographies
DESCRIPTION: The participant describes a closer or further bond from individual, event, or object due to a difference or similarity with purpose behind learning, teaching, etc. This includes the "appropriateness" of an action, object, or event.
 - Physical Geographies
DESCRIPTION: The participant describes a closer or further bond from individual, event, or object due to a difference or similarity with proximity to a person, object, or event.
 - Political Geography
DESCRIPTION: The participant describes a closer or further bond from individual, event, or object due to a difference or similarity with status or power relations.
 - Professional Geographies
DESCRIPTION: The participant describes a closer or further bond from individual, event, or object due to a difference or similarity with the characteristics of a professional (teacher). This includes discussions of their role, expectations, or the process of becoming a professional.
 - Sociocultural Geography
DESCRIPTION: The participant describes a closer or further bond from individual, event, or object due to a difference or similarity with social factors like gender, socioeconomic, race, etc.
- Open Codes
 - Communication
DESCRIPTION: Participant describes ability to communicate with students.
 - Conceptual Understanding
DESCRIPTION: Participant refers to the lack of or gaining of conceptual understanding of students. This includes the students learning why something is true.
 - Differentiation
DESCRIPTION: Participant makes reference to having seen, done, or working toward differentiation of lessons.

- Emotional Labor
DESCRIPTION: Participant describes the emotion work of teaching. This includes the regulation of emotions, how she has learned to regulate, etc.
- Environment
DESCRIPTION: Participant makes reference to how she the environment the current students are in. This also includes participants desired environment they would like to construct in their own classrooms.
- Gender
DESCRIPTION: Participant makes reference to gender norms, or differences in gender expectations. (i.e. girls are not expected to do well in math).
- Goals for Self
DESCRIPTION: Participant explicitly makes a statement demonstrating desire, goal, or objective for self as a teacher. For example statements that have, "in my classroom," "when I'm a teacher," etc.
- Mathematics
DESCRIPTION: Participant makes reference to a belief about the learning or teaching of mathematics.
- Mentor Teacher
DESCRIPTION: Participant makes reference to mentor teacher and mentor teacher relationship.
- Program
DESCRIPTION: Participant makes reference to course or program in general.
- Progress
DESCRIPTION: Participant makes reference to her own progress as a student and/or teacher.
- Recontextualize
DESCRIPTION: Participant makes reference to her ability to recontextualize, bridging coursework to field experience.
- Role
DESCRIPTION: Participant makes reference to her expectations as a teacher in mentor teacher's classroom.
- Social Influence
DESCRIPTION: Participant makes reference to influences from those outside of program and/or education. This also includes ways social factors influence students in school. For example, ways parents influenced disposition, and communicating about becoming a teacher with those outside the field.

- Status
DESCRIPTION: Reference to students or their own status in the classroom.
- Student Image
DESCRIPTION: Participant describes a characteristic or trait of students.
- Student Relationship
DESCRIPTION: Participant makes reference to relationship she has with students, or desires to have with students. Could also be description of relationship between students and mentor teacher.
- Teacher Decision-Making/Image
DESCRIPTION: Participant makes reference to the decisions that teachers need to make on a day to day basis. Also includes general characteristics or traits of teachers.