Designing for Teacher-Student Relationships: an Investigation into the Emotional and Relational Dimensions of Co-Design

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DESIGNING FOR TEACHER-STUDENT RELATIONSHIPS:
AN INVESTIGATION INTO THE EMOTIONAL AND RELATIONAL DIMENSIONS OF
CO-DESIGN

by

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A dissertation submitted to the Faculty of the Graduate School at the University of Colorado Boulder in partial fulfillment of the requirement for the degree of Doctor of Philosophy

School of Education

2018
This dissertation entitled:
Designing for teacher-student relationships: An investigation into the emotional and relational dimensions of co-design

written by
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has been approved by the department of Curriculum & Instruction / Research on Teaching and Teacher Education for the School of Education at the University of Colorado at Boulder

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Date: ______________________________

The final copy of this dissertation has been examined by the signatories, and we find that both the content and form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

IRB Protocol #15-0439
Designing for teacher-student relationships: An investigation into the emotional and relational dimensions of co-design

Dissertation directed by Daniel Liston and William Penuel

Abstract

This dissertation examined the emotional and relational aspects of co-design, and how the co-design process for creating caring classrooms supported teacher learning. I drew on key elements of improvement science, as a type of design-based implementation research, to understand teachers as learners and as experts. I elaborated two layers of theory to guide this study. First, I conceptualized caring in the context of intentional relationship building with students, described characteristics of caring classrooms, and identified dilemmas that arise from caring. Then, I explored expansive learning and deliberative agency as concepts for understanding teacher learning. With a small group of teachers, we planned, implemented, studied, and revised the routine designed for improving relationships with students. We created a student survey to learn about students’ experiences and used data to guide revisions. Through qualitative data collection and analysis, I tested, revised, and refined my high-level conjecture that the co-design process supported teacher learning. The findings suggest teachers had opportunities to demonstrate deliberative agency, learn, and grow professionally. I described the evolution of the design and examined the ways the design team grappled with dilemmas. Teachers engaged in learning as they broke away from old routines to design and implement a new routine in their classrooms. I also examined teachers’ talk when looking at dilemmas and found that in analyzing student data together, talk turned both towards and away from deeper investigations of pedagogical practice and the practical measure. Teachers considered students’ experiences and feelings within their classrooms, which made the data more salient and contributed to the emotional dimensions of design work. In a case study of one teacher, I found that she grappled with dilemmas connected to the co-design process and caring for students, and she used the design team space to reflect on dilemmas and explore emotions related to the dilemmas. Through this study I show how improving teacher-student relationships requires risk-taking, creating classrooms can be complex, and the design team space can become a site of care.

Key Words: teacher-student relationships, caring classrooms, improvement science, design-based implementation research, teacher learning, deliberative agency, data use, professional development, teacher emotions
Dedication

For Tom, my forever partner,

and

for Mom & Pops, my first teachers.
Acknowledgements

I am deeply indebted to my advisors and mentors, Dan Liston and Bill Penuel, for their support and encouragement throughout this project and for their invaluable feedback along the way. Several years ago, Dan, through his powerful teaching of the spirituality literature, invited me to join in “the human conversation,” which has forever touched me. Around the same time, Bill inspired my curiosity for research by sharing with me the world of design-based implementation research, and was the first person to help me see myself as a researcher. Their combined influence is evident throughout this dissertation.

I am also grateful to Alison Boardman, who not only served as a committee member on this dissertation, but also mentored and guided me in working with and supporting teachers through several research studies, including Compose Our World. I feel lucky to have spent the last five years apprenticing with her.

Thank you to Antero Garcia, for his consistent support of this study and for his model of caring. I have benefited from Antero’s guidance on this study and in Compose Our World. I also want to thank Tammy Sumner for her time, effort, and insights on this project. The care and detail she put into her feedback proved extremely valuable during data collection.

I am grateful for the opportunity to conduct my dissertation within the larger Compose Our World study. Thank you to the rest of the Compose Our World research team, including Joe Polman, Bridget Dalton, Bud Hunt, and Karla Scornavacco, for their continued support throughout the dissertation process. I also want to acknowledge Lucas Education Research, which funded the Compose Our World study, and allowed for my study to be conducted.

I am so appreciative of the teachers in this study, for their time, commitment, and energy to their students and to this project. Likewise, I am also appreciative of the students who participated in this study, for their willingness to “dig deep.”

Thank you to my dear friend and writing buddy, Becca Kaplan. I am so thankful for the gift of her friendship and support throughout the entire PhD journey.

I must also mention the first class of students whom I ever cared for at St. Michael School. They showed me the true magic of teaching and learning, and I think of them often.

I am grateful to Br. Patrick Carey for showing me how to teach with love and joy in my heart, and who in my early days of teaching first suggested I pursue a doctorate.

My family deserves many, many thanks for their constant and unwavering love and support. Mary, my mother, embodies the word “care” and models what it means to be a strong and loving woman. Fred, my father, first inspired my imagination through his storytelling and encouraged my early research endeavors in middle school. Thank you to James, Walter, and Stephanie, for loving me for who I am and for reminding me to laugh and have a little fun once in awhile. Thank you also to Eileen, Roy, Lizzie, Erin, and Rodney for their positive encouragement along the way.

Finally, this would not be possible without the unfailing support of my partner, Tom. He cheered, chanted, encouraged, hugged, loved, laughed, danced, walked, read, and revised with me every step of the way. His unconditional love, never-ending goodness, and fierce determination make me a better person. Thanks for caring for me and for Magic throughout this process.
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CHAPTER ONE: INTRODUCTION

Centrality of Teacher-Student Relationships

Teacher-student relationships are the heart of teaching and learning. Research indicates, and practical experience tells us, that teacher-student relationships are important for students. Scholars from various perspectives and traditions have written about and studied relationships in teaching (e.g., critical pedagogy, hooks, 1994; care, Noddings, 2013; culturally responsive pedagogy, DeMeulenaere, 2012; developmental psychology, Selman, 2003; spirituality, Intrator, 2004; social and emotional learning, Jennings & Greenberg, 2009). While these scholars approach teaching from different perspectives, they all agree upon the centrality of relationships in teaching and learning.

Research demonstrates that positive teacher-student relationships benefit both teachers and students, regardless of content-area focus or grade level (Pianta, Hamre, & Allen, 2012; Wubbels & Brekelmans, 2005). Positive interactions between teachers and students increase student engagement in school; this includes when students feel a teacher cares about their success (Moje, 1996) and when students experience a teacher’s emotional support (Patrick, Ryan, & Kaplan, 2007). Positive teacher-student relationships have also been associated with higher academic achievement (Crosnoe, Johnson, & Elder, 2004), and impact students’ sense of belonging in the classroom (Goodenow, 1993). When students believe teachers care about them, students “perceive that teachers understand them both as people and learners” (Cooper & Miness, 2014). Strong teacher-student relationships are important for the emotional and behavioral well-being of students (Reddy, Rhodes, & Mulhall, 2003). In a study on student engagement, Nguyen, Cannata, and Miller (2018) found that “interactions with the teacher
increase the odds of [students] being engaged” (p. 170). Students were more likely to be engaged when working with peers and the teacher, suggesting that “how a teacher is involved during group work matters a great deal” and that the teacher’s role is central in fostering student engagement (Nguyen, Cannata, & Miller, 2018, p. 172).

While it is widely agreed that strong teacher-student relationships hold many benefits for students, teachers also benefit from these relationships. Studies have shown that positive relationships with students impact teachers’ job satisfaction, decreases teacher burnout, minimizes classroom management issues, and have been linked to teacher well-being (Claessens, et al., 2016; Gu & Day, 2007; Hargreaves, 2000; Veldman, Tartwijk, Brekelmans & Wubbels, 2013). Likewise, relationships with students can be a motivating factor for teachers to care for students and to persist in teaching (O’Connor, 2008). Indeed, teachers in this dissertation study reported their relationships with students as their favorite part of teaching (Elaine_Int_02.08.17, Rachel_Int_02.08.17, Jane_Int_02.08.17).

Developing Teacher-Student Relationships Requires Intentionality

Noddings (2006) writes, “If we are serious about promoting social, emotional, and ethical development, we must spend time nurturing relationships” (p. 241). Despite widespread agreement on the centrality of relationships in teaching and learning, teachers rarely engage in formal planning to nurture relationships with students or participate in professional development experiences focused on teacher-student relationships. Throughout the course of a week, teachers do a lot of planning; they write lesson plans, they develop unit plans, they write objectives, and they plan for assessments. This leaves little time for creating parallel “relational” plans to intentionally and consistently work toward cultivating relationships with their students so as to care for them as people and to invite them into the “lure of learning” (Liston, 2004, p. 460). In an
era where academic standards are emphasized and the discourse focuses on accountability and testing (Darling-Hammond, Wei, & Johnson, 2009; Levine, 2006; Ravitch, 2010), little time remains for focused attention on relationships and often relationships are assumed to happen naturally or spontaneously through delivery of content (Kim & Schallert, 2011).

Given the centrality of teacher-student relationships in teaching and learning, more attention needs to be focused on intentionally developing relationships in the classroom. The National Center on Scaling Up Effective Schools conducted a line of research to address the intentional cultivation of teacher-student relationships. The center’s goals include identifying high-performing schools, determining key procedures and practices in these schools, and then adapting the practices alongside practitioners for other schools in the same district. As part of the center’s work, Rutledge, Brown, and Petrova (2017) conducted a study in Florida, and identified social and emotional routines as a core feature of one high school’s effective practices. They found that adults in the school engaged deliberately in personalizing social and emotional learning (SEL) for students. The team worked with practitioners to turn the personalized social and emotional learning practices into an innovation, which they scaled up to five other high schools in the district. Their findings showed that while the adults in the schools embraced the goal of intentionally providing SEL supports to all students, they implemented them inconsistently over time and found it difficult to align the personalized SEL supports to existing school policies (Rutledge, Brown, & Petrova, 2017). Rutledge, Brown, and Petrova’s research represents a promising and hopeful step toward working with practitioners to intentionally design for social and emotional supports for students, and one that this dissertation builds upon.
Emotional Dimensions of Teaching

Teaching is an intellectual and emotional profession (Liston, 2000) and developing relationships with students is emotional work for teachers. Hargreaves (1998) explains, “Teaching cannot be reduced to technical competence or clinical standards. It involves significant emotional understanding and emotional labor as well. It is an emotional practice” (p. 850). There is a small but growing body of literature that explores teacher social and emotional learning (e.g., Jennings, 2011; Jennings & Greenberg, 2009; Jones & Bouffard, 2012). The majority of research on social and emotional learning focuses on students’ well-being rather than teachers’ well-being. The limited research that does address teacher’s SEL tends to focus on teachers’ development of their own social and emotional competencies; the premise of this line of research in teacher SEL is that in order to teach social and emotional learning to students, teachers need social and emotional competencies themselves (Jennings & Greenberg, 2009). This approach advocates for supporting teachers to develop self-awareness and social awareness so that they can more effectively teach SEL competencies to their students, model “appropriate behavior,” and manage stress “so that [teachers] can maintain composure” (Jennings & Frank, 2016, p. 433).

Within the teacher SEL literature there are a few discussions about how to support teachers socially and emotionally. Some scholars have called for SEL training for preservice teachers in order to support the social and emotional needs of their students and as a way to decrease potential for teacher burnout (Schonert-Reichl, Hanson-Peterson, & Hymel, 2015). In addition, scholars have studied professional development programs focused on mindfulness in order to address teacher stress (e.g., Flook, Goldberg, Pinger, Bonus, & Davidson, 2013; Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013). Scholars in other arenas, such as in the
spirituality in education tradition, have argued for the importance of attending to teachers’ social and emotional well-being (e.g., Huebner, 2012; Kessler, 2002; Liston, 2000; 2004). Huebner (2012), for instance, argues, “if teaching is to be improved we must attend to the teacher – not the teacher’s income or benefits or other resources available for teaching” (p. 379). Parker Palmer (2007) developed a series of retreats, The Courage to Teach, for educators with the purpose of addressing the “inner landscape of a teacher’s life” (p.191), providing one model for supporting the well-being of teachers.

Supporting the social and emotional lives of teachers benefits both teachers’ and students’ well-being. Writing in 1955, Jersild argued that in order for teachers to understand their students and develop relationships with their students, they must first know themselves. Jersild writes, “To have insight into the child’s strivings and the problems he faces, the teacher must strive to face the same problems within his own life. These problems are largely emotional in nature” (p. 82). Knowing oneself, for Jersild, entails facing and exploring one’s emotions. Understanding oneself is particularly important because “everything in the relation between a teacher and a student has or might have a significant effect on what a child thinks and feels about himself” (Jersild, 1955, p. 82). Though penned over sixty years ago, Jersild offers an important and relevant lens for supporting teachers’ social and emotional well-being, one that connects teachers’ well-being to their students’ well-being, and further underscores the centrality of the teacher-student relationship in schools.

Reforms Rely on Teacher-Student Relationships

The widespread agreement on the centrality of teacher-student relationships extends into the realm of school-based reforms, as “school-based efforts converge on the teacher simply because within the complex system of schooling, the teacher-student relationship is fundamental
to student learning and that relationship is forged in the classroom” (Cuban, 2013a, p. 180).

While reformers may rely on teachers to enact changes because of the centrality of teacher-student relationships in the classroom, the attention to relationships ends there as reforms take on a more narrow focus on improving student outcomes. Likewise, efforts to promote teachers to enact reforms often overlook teacher-student relationships and approach teacher professional growth and development in limited ways.

Many educational reforms influence the preparation, education, and development of teachers and emphasize teacher quality as a way to improve student achievement (Desimone, 2009; Fishman, Davis, & Chan, 2014; Penuel, Fishman, Yamaguchi, & Gallagher, 2007; Villegas-Reimers, 2003). Often educational reforms link teacher quality with accountability through a system where teachers must prove their effectiveness (Hargreaves, 2014). With the inception of policies such as No Child Left Behind and high-stakes testing, efforts to improve teaching took on the narrow focus of compliance, which included training by “prescribed methods and content, backed up by the high-stakes force of standardized testing and its often punitive consequences” (Hargreaves, 2014, p. x).

A focus on teacher quality as defined by student outcomes poses several challenges for professional development and learning. Cuban (2013b) argues that such policies attend to teacher quality rather than teaching quality, focusing on personal traits rather than pedagogy. Defining teacher quality solely on student outcomes reduces the job of teaching and diminishes the complex relationships between teacher and students by narrowly construing students as test scores. This narrow construal misses opportunities to intentionally cultivate the teacher-student relationship and address the well-being of both teachers and students in the classroom. In addition, reforms that focus solely on teacher quality often ignore the fact that teachers work in
schools that are both complex and dynamic systems (Cuban, 2013b). By overlooking these complex and dynamic systems there is a tendency to reduce teaching to an effort of imparting knowledge to students. Such an approach fails to acknowledge the emotional work of teaching and learning for both teachers and students.

Many reforms in education focus on “fixing” teachers or require teachers to implement particular reforms in the classroom with the goal of improving instruction and thus improving student achievement (Lieberman & Miller, 2014). However, reforms do not always include ways to support teachers’ professional growth and they rarely address the emotional aspects of teaching. Despite reformers’ reliance on teachers for instituting reforms in schools, there has been very little change in teacher pedagogy in the last hundred years, as simply instituting a reform does not translate to a change in pedagogy (Bryk, Gomez, Grunow, & LeMahieu, 2015; Cuban 2013a; Wilson & Berne, 1999). Likewise, such reforms take for granted teacher-student relationships as a mechanism for implementing reforms and fail to address the cultivation of teacher-student relationships.

Because teachers are seen as vital for student success, teachers are often expected to implement or enact national, state, or local curricular and pedagogical reforms. Teachers may or may not be given preparation to implement the reforms and are rarely consulted in the creation of the reforms (Cuban, 2013a). Bryk and colleagues (2015) explain, “Teachers have far less input than other professionals into the factors that affect their work. Far too many efforts at improvement are designs delivered to educators rather than developed with them” (p. 34). So while teachers may be expected to implement reforms and do so effectively, how teachers are supported in new initiatives remains inconsistent and all too often professionally belittling. In
addition, enacting required reforms impacts teachers “emotional goals and relationships” (Hargreaves, 1998, p. 850).

In response to the narrowed focus on professional development, researchers have argued that teacher decision-making is an integral component to professional development and teacher learning (Desimone & Stuckey, 2014). Bryk and colleagues (2015) contend that reform efforts “aimed at improving the quality of teaching means engaging teachers and focusing on the factors that shape how their work is carried out” (p. 28). Including teachers in decision-making processes is important for providing opportunities for teachers to demonstrate agency and draw on their expertise. It also helps to ensure that reforms can be practically enacted and that teachers believe in the reforms. When teachers are involved in decision-making processes, they may be more likely to engage in instructional changes and help create initiatives that better fit the context of their schools. Additionally, reform and change efforts should address the emotional dimensions of teaching and learning “for without attention to the emotions, educational reform efforts may ignore and even damage some of the most fundamental aspects of what teachers do” (Hargreaves, 1998, p. 850).

**Examining Emotional Dimensions of Teaching Through Co-design**

In this dissertation study I am examining the emotional dimensions of teaching and the intentionality of cultivating teacher-student relationships through co-design. Co-design is a shared journey, one that offers possibility of professional renewal and mutual support. Co-design provides opportunities for teacher ownership and agency over reform processes, but also provides a structure for teachers to learn together. In this way, co-design represents a shift from traditional professional learning models, which often rely on delivering content and reforms to
Co-design holds enormous potential for supporting teachers learning together, as it includes many of the features of effective professional development identified in the research literature, including: active learning, coherence, duration, collective participation, context-specific, opportunities for reflection, and materials to mediate learning (Ball & Cohen, 1996; Bransford, Brown, & Cocking, 1999; Desimone, 2009; Fishman & Davis, 2006; Kazemi & Franke, 2004; Penuel, Roschelle, & Shechtman, 2007). There have been a few recent studies that theorize co-design as a form of professional development (e.g., Couso, 2016; Voogt et al., 2015; Voogt, Pieters, & Handelzalts, 2016). The co-design process is appealing because it has the potential to simultaneously support teachers in their professional learning and value their expertise and experiences in ways that differ from the frequently enacted training model of professional development. Co-design also requires attention to the specific contexts in which teachers work and is predicated upon the notion that teachers are integral, active, and respected members of the design work. Co-design is conducted with teachers, rather than delivered to teachers. As a collaborative process, co-design focuses on the collective learning of the group rather than focusing solely on individual outcomes. And co-design depends upon the contributions of each member of the team, creating a professional development experience that is built from the ground-up, rather than through top-down directives.

Hargreaves (1998) argues that “educational reform must acknowledge and even honor the centrality of the emotions to the processes and outcomes of teaching, learning and caring in our schools” (p. 850). Using co-design as a model for designing intentionally for teacher-student relationships, and for promoting teacher learning together, responds to Hargreaves’ call for
addressing emotions and caring in schools and classrooms. Teachers in my dissertation study noted that developing relationships with their students was difficult, citing a lack of time and the large numbers of students they taught as barriers (Elaine_Int_05.25.17, Rachel_Int_05.23.17). Drawing on their practical wisdom and experience, the teachers in this study believed that building relationships with students would invite students into the curriculum in new ways. The co-design work was based upon the premise that teachers can work to cultivate relationships with students as a form of care, that strong teacher-student connections benefits both teachers and students, and that teachers in this study had room to improve their relationships with students. This study underscores the importance of attending to students and illustrates what it can look like when teachers plan for developing relationships with students in their classrooms.

**Significance**

In this dissertation study I draw inspiration from the important efforts being made to address teachers’ well-being in the SEL literature and the spirituality literature. I explore how co-design can support teachers’ well-being, and at the same time consider how the co-design process may evoke emotional responses from teachers. Teaching is emotional and intellectual work, and this includes participating in professional development and research endeavors, such as co-design. This dissertation study is situated within a small, but growing body of work that uses improvement science cycles for social and emotional learning related goals (e.g., Gould et al., 2014; Rutledge, Brown, & Petrova, 2017; Tichnor-Wagner, Wachen, Cannata, & Cohen-Vogel, 2017; West, Buckley, Krachman, & Bookman, 2017). This dissertation study seeks to address a gap in the literature on using co-design for creating caring classrooms. In addition this study aims to understand the emotional dimensions of co-design work, of which there is little research (P. LeMahieu personal communication, October 26, 2017).
This study also seeks to add to the research base on co-design as a form of professional development by exploring the ways in which teacher learning is supported through teachers’ participation in co-design. A small body of research exists in this arena (e.g., Penuel, Roschelle, & Shechtman, 2007; Simmie, 2007; Voogt et al., 2011; Voogt et al., 2016), but the research in this arena is limited (Voogt et al., 2015). This study also explores how the co-design process can simultaneously support teachers in drawing on their experience and expertise while improving their relationships with students. Through a participatory design process, teachers designed a routine for improving their relationships with students, collected and interpreted classroom data, reflected on their implementation, and iterated on the routine. Therefore, this study also adds to the literature on participatory design work (Couso, 2016).

**Study Overview**

This dissertation study is situated within a larger research project, Compose Our World (COW). The Compose Our World project is a design-based implementation research (DBIR) project with the aim of co-designing 9th grade English language arts curriculum with teachers to be taken to scale and open-sourced online for teachers around the country to access and use. The curriculum integrates core elements of social and emotional learning as well as Universal Design for Learning. My study was an improvement science study in which I worked with a small group of Compose Our World teachers to co-design a routine for improving teacher-student relationships in the classroom. Guided by the improvement science inquiry cycle, I worked collaboratively with teachers to plan, implement, study, and revise the routine we designed. In addition, we also created a student survey to learn about students’ experiences with the routine designed and we used this data to guide revisions. I studied the design process using qualitative methods to learn more about teachers’ participation within the process and to determine how co-
design supports teacher learning. I drew on key elements of improvement science, as a type of DBIR, to understand teachers both as learners and as experts with valuable experience and ideas to contribute.

I aimed to adhere to the advice offered by Webster-Wright (2009), who invited researchers to

listen to their [teachers’] experience and work to support, not hinder, their learning.

Rather than deny, seek to control, or standardize the complexity and diversity of professional learning experiences, let us accept, celebrate, and develop insights from these experiences to support professionals as they continue to learn. (p. 728)

An initial goal of the study was to support teachers as professionals in their learning and to understand the ways in which the co-design process can support teacher learning as a form of professional development. Rather than construing professional development as a one-directional experience, this study was designed to allow for teachers to demonstrate agency and work collaboratively toward their professional growth, in ways that allowed teachers to use their experiences and expertise while working to improve instructional practices. As I engaged in data collection and data analysis, my goal for the study expanded to also include a depiction of how teachers participated in the co-design process, and this included how teachers talked about the student survey data as well as teachers’ emotional experiences throughout the co-design process.

As I began to identify the major findings and stories from my dissertation through data analysis, I revised many aspects of my study. Developing and refining my conceptual framework for this study was an iterative process, as I tacked back and forth between data analysis and revision of the framework. Ultimately, I elaborated two layers of theory; the first focused on conceptualizing caring classrooms to understand the design work, and the second focused on
expansive learning and deliberative agency to study teacher learning in the co-design process. The conceptual framework is described in detail in Chapter Two. Chapter Three details the methods for this study, including the design of the improvement science work, how I studied the co-design process, and how the research questions and data analysis evolved. In the fourth, fifth, and sixth chapters I present my findings. Chapter Four tells the story of our co-design process, including how our design evolved over time, the design decisions made by the group, the ways in which teachers demonstrated agency throughout the process, and how teachers grappled with dilemmas that arose in the design work. In Chapter Five, I examine the nature of teachers’ talk when looking at student survey data, and how teachers’ talk about the data afforded or constrained opportunities for teachers to investigate their teaching practice. In Chapter Six, I present a case study of one teacher and explore the emotional experience of participation, including what the teacher’s caring for students revealed about the emotional dimensions of participation in improvement science. Finally, in the seventh chapter, I consider the key takeaways from my analysis and these bring me back to the notions of co-design for teacher learning, teachers’ social and emotional well-being, and planning for teacher-student relationships presented within this introductory chapter. I conclude with implications and directions for future research.
CHAPTER TWO: CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

Introduction

This study examines the emotional and relational aspects of co-design, and whether and how the co-design process affects teacher learning. In this study teachers designed a routine for improving relationships with students and creating caring classrooms within a project-based learning curriculum. I facilitated a co-design process for creating caring classrooms, and examined the co-design process for teacher learning. It is therefore necessary to elaborate two layers of theory that guide the study (see Figure 2.1). The object of the co-design work is creating caring relationships through improving teacher-student relationships, so I first conceptualize caring and describe the characteristics of caring classrooms. Creating caring classrooms can be challenging, and dilemmas may arise from caring for students. Drawing upon the literature I identify potential caring dilemmas. In order to support teachers in developing relationships with students, and the caring dilemmas they face, I use co-design as a structure to promote teacher learning. Co-design is a potentially powerful tool for teacher learning because, when executed well, it integrates many features of effective professional development. However, as a field we do not actually know much about using co-design as a structure for creating caring classrooms, and the emotional and other dilemmas that might arise from doing so. Therefore, my second layer of theory is the meta-layer of studying the co-design process for creating caring classrooms to learn how it can support teacher learning. In this chapter, I expand upon each layer of theory, including key conceptual tools and relevant research literature. Then I identify the gaps in the literature related to engaging in co-design with teachers for creating caring classrooms. I articulate my high-level conjecture for how co-design can promote teacher learning, and conclude with my research questions.
Creating Caring Classrooms as Objects of Design

The initial framework I articulated to guide the design work was based on responsive teaching. However, the focus shifted slightly through negotiating the problem of practice with teachers, to include improving relationships with students and in turn creating caring classroom communities. Creating caring classrooms is one aspect of responsive teaching (Gay, 2002). Although a caring framework did not initially guide the co-design efforts, it did so implicitly.

While the design team did not use the notion of care to guide the co-design work, many of our goals and much of our work mapped onto central ideas in the ethic of care (e.g., Noddings, 1988, 1995, 2006, 2010, 2012, 2013). For example, Noddings (2012) explained that for teachers to be equipped to respond to the expressed needs of their students and to take these needs seriously, teachers “must continually build our own store of knowledge in order to respond intelligently to their needs and interests” (p. 776). The design team developed a routine for teachers to “build their store of knowledge” about their students, including their needs and
interests, through posing prompts and listening to students by joining groups during discussions. Teachers modeled caring by asking students about themselves, and joined groups to listen to their responses and to engage in dialogue. The routine aimed to engage teachers and students in dialogue, so that students had the opportunity to share about themselves and teachers could learn about their students. During the routine, students were encouraged to share their thoughts and ideas with one another, and in doing so build relationships with one another through talking and listening, thus practicing caring.

In the sections that follow, I conceptualize care by drawing on the work of Noddings (1988, 1995, 2006, 2010, 2012, 2013) and delineate the components of caring. Caring for students can be challenging and raises dilemmas for teachers. Next, I identify potential caring dilemmas and emotions that may be experienced in facing and navigating these dilemmas.

**Conceptualizing Caring**

Caring is an important component of teaching and an essential element in building teacher-student relationships. Caring centers on a sense of responsibility for another person, and a concern for their well-being. It is an orientation to teaching that is relational, and it is a way of being in the world. Caring involves listening to another person and attending to their needs. The caring relationship in the classroom occurs between the teacher and student and also among students. For the purpose of this study, my focus is on the caring relationship between teacher and students.

The notion of caring is complex; scholars have illuminated various features and types of caring present in schools (e.g., Alder, 2002; Isenbarger & Zembylas, 2006; Kim & Schallert, 2011; Noddings, 2013; and O’Connor, 2008). My understanding of caring is informed by the “ethic of care” put forward and expanded upon by Noddings (1988, 1995, 2006, 2010, 2012,
Noddings (2012) argues that creating a climate of care in the classroom is not “on top of” but rather “underneath all we do as teachers. When that climate is established and maintained everything else goes better” (p. 777). Within the ethic of care framework, Noddings distinguishes between the “caring-one” and the “cared-for.” In this study, the teacher, is the “caring-one” and her students, the “cared-for.” A key feature of the ethic of care is that the caring-one is attentive through “receptive listening.” The caring-one listens to the expressed needs of the cared-for, rather than assuming to know what the cared-for needs. The caring-one’s responsibility is to reflect on the expressed needs and “understand what the cared-for is experiencing” (Noddings, 2012, p. 772). As the caring-one is concerned with the overall well-being and growth of the cared-for, she must determine how best to respond. This requires some reflection and at times the recognition that it is not always possible for the teacher to address her students’ expressed needs, but “she must still respond in a way that maintains the caring relation” (Noddings, 2012, p. 772). Noddings (2013) sees caring as connected to empathy, as attention and receptive listening can lead one to ask, “What are you going through?” (p. 204). As I understand it, this means that while a teacher may not be able to act on or address a student’s needs, she acknowledges the expressed needs and may enter into dialogue with the student about it. In doing so, the caring teacher communicates her attention and recognition of the dignity of the student.

It is worth noting that within the ethic of care, the teacher-student caring relation is not an equal one; the student does not care for the teacher in the same way that the teacher cares for the student. However, both the teacher and students “contribute to the establishment and maintenance of caring” (Noddings 2012, 772). In order to complete the caring relation, a response is required from the student to “show somehow that the caring has been received” (Noddings 2012, p. 772). The notion of completing the caring relation is important to
understanding students’ responses to the teacher’s caring presented in Chapter Six. While I recognize that students in the classroom also act as “caring-ones” at times for one another, an investigation of students’ caring is beyond the scope of this study.

**Components of teaching from an ethic of care.** Noddings (1998, 2010) articulated four components of teaching from an ethic of care perspective, three of which are relevant to the design work and to the case study in Chapter Six: modeling, dialogue, and practice. Applying an understanding of the ethic of care to my study is useful for two reasons. First, the ethic of care provides another lens for which to understand the object of our co-design work and second, it allows me to understand teachers’ commitments to their students and to their pedagogical approaches.

Through **modeling**, teachers demonstrate to their students what it means to care through caring. They care for students and thus set an example for how to care for others. To engage in **dialogue** means that teachers engage in open-ended conversations with students; this is when teachers can learn about their students needs and listen to their students. Noddings (2010) defines the purpose of dialogue as “to learn what the cared-for is going through, or what the [caring-one] is aiming for, and then to work cooperatively on meeting the needs” (p. 147). Through dialogue, the teacher attempts to understand what the student is going through, in order to meet the student’s needs. Through providing opportunities for **practice**, the teacher ensures that students have opportunities to work on and practice caring for others. Practice also entails the teacher acknowledging moments in the classroom when students are caring for others. The goal of

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1 The fourth component, confirmation, “points a person toward a better self, and it is a beautiful moral act” (Noddings, 2010, p. 148). To confirm a student means that a teacher “attribute[s] the best possible motive consonant with reality to the cared-for” (Noddings, 2013, p. 193). Confirmation involves encouraging the best in a child, through pointing out and praising positive actions, as well as engaging a student in dialogue when they have done something that contradicts caring (Noddings, 2010).
modeling, dialogue, and practice is to “develop a caring community” (Noddings, 1998, p. 223). Caring for students, can at times, be challenging. The next section identifies dilemmas that can develop from embracing an ethic of care.

Caring Dilemmas

Throughout her work on caring, Noddings (2012; 2013) identified several conflicts, or dilemmas, that arise from caring which are relevant to this study. The first of Noddings’ (2013) caring conflicts focuses on the students’ competing expressed needs. The teacher, in caring for a classroom full of students, may find her attention divided and find it impossible to attend to the competing demands of her students. Likewise, she may find addressing the needs of multiple students requires “incompatible decisions” (Noddings, 2013, p. 18) from teachers. Another caring conflict identified by Noddings arises when the teacher as the caring-one is focused on the expressed interests of her students, and the needs of her students may be in contradiction to what the school or curriculum assumes to be their needs. Noddings (2012) illuminates the conflict through posing the question, “When should teachers put aside the assumed need to learn a specific aspect of subject matter and address the expressed need of the student for emotional support, moral direction, or shared human interest?” (p. 772). A third caring conflict identified by Noddings (2013) is that the caring teacher may come to feel “overburdened” and her “caring turns into ‘cares and burdens’” (p. 18). The caring dilemmas inform my understanding of some of the dilemmas teachers raise throughout our design work together.

Emotions in navigating caring dilemmas. Maintaining an ethic of care and navigating these dilemmas requires attention, which may evoke a range of emotions from the caring-one. As a teacher cares for her students, “her motive energy will begin to flow toward the needs and objectives of the cared-for” (Noddings, 2012, p. 772). That is, in a caring relationship, the
teacher’s energy and efforts are directed towards the well-being of her students. To be the caring-one often means putting students’ well-being and needs ahead of your own, or in other words, caring often means “a displacement of interest from my own reality to the reality of the other” (Noddings, 2013, p. 14). For many teachers this can be rewarding, as they take satisfaction in caring for their students and seeing their students’ personal growth and well-being. Sometimes, though, this care can be exhausting. Caring for others often poses dilemmas, and navigating dilemmas can lead to a range of feelings (Noddings, 2013). A teacher, for instance, may feel satisfaction, joy, or warmth from caring for her students. At other times, a teacher may feel frustration, guilt, or exhaustion. I draw on Noddings’ conceptualization of care to understand the ways teachers expressed care for their students, and to understand the challenges of caring and the emotions expressed in caring dilemmas.

**Co-design as a Support for Teacher Learning**

In this dissertation study I set out to understand the meta-layer of studying the co-design process as a mechanism for promoting teacher learning. I define co-design and conceptualize it as a learning process and as a type of professional development. I also describe how participatory approaches to design inform co-design and this study. Then, I describe the conceptual tools I used to understand teacher learning in co-design, including expansive learning, deliberative agency, and emotions as part of the deliberative nature of co-design.

**What is Co-design?**

Penuel, Roschelle, & Shechtman (2007) define co-design as “a highly facilitated, team-based process in which teachers, researchers and developers work together in defined roles to design an educational innovation, realize the design in one or more prototypes, and evaluate each prototype’s significance for addressing a concrete educational need” (p. 53). In educational
research, this typically means that teachers work alongside researchers to design, test, and refine the innovation. Co-design derives from the participatory design tradition (e.g., Björgvinsson, Ehn, & Hillgren, 2010; Hillgren, Seravelli, & Emilson, 2011) and shares resemblances with teacher action research, in which teachers are involved in the implementation and research processes. Co-design is a feature of design-based implementation research (DBIR), as well as some design based research (DBR) and social design experiments.

**Co-design as a Learning Process**

Co-design has recently been theorized to support teacher learning (Couso, 2016; Voogt et al., 2015; Voogt et al., 2016). Learning occurs within co-design due to a well-facilitated and scaffolded process; co-design is organized to encourage teachers’ participation, reflection, and engagement in new activity in their classrooms (Severance et al., 2016). Voogt and colleagues (2015) identify several key features of co-design that support teacher learning. First, within co-design there is a shared process of collaboration with others that supports learning through facilitated reflection on current practice. Teachers engage in collaborative work that is directly meaningful to their practice. Second, multiple teachers’ expertise is elicited and shared so that teachers are exposed to different perspectives on the same problem. New dilemmas are encountered and multiple interpretations are considered as teachers jointly engage in problem solving, which leads to learning as new practices are conceptualized and enacted. Finally, co-design promotes active engagement of teachers, which facilitates individual and collective responsibility for change.

**Co-design as Professional Development**

There is a growing consensus in the research literature that there are critical features of professional development that can support teachers in acquiring knowledge and changing their
practice (Desimone, 2009). Co-design as a learning strategy maps onto the key features of effective professional development, which include: active learning, coherence, duration, collective participation, context-specific, reflection opportunities, and materials to mediate learning (Ball & Cohen, 1996; Bransford, Brown, & Cocking, 1999; Fishman & Davis, 2006; Kazemi & Franke, 2004; Penuel, Roschelle, & Shechtman, 2007). When teachers are involved in the co-design process to design curriculum or develop strategies, there is enormous potential for learning and professional growth. Co-design depends upon teachers actively engaging in the creation of new practices and possibilities together and over time. Stakeholders (such as groups of teachers, students, administrators, policymakers, researchers, and other community members) work together to address real problems of practice. Problems of practice are addressed and discussed in the context of practitioners’ experiences and the relevant research in the field. Teachers benefit from sharing ideas with other teachers, reflecting on their practice, and understanding the relevant research. Co-design engages teachers as professionals and begins with the recognition that teachers bring experience and expertise with them to the process. Co-design work sees teachers as valuable and necessary team members, thus viewing teachers in asset-based ways. As teachers draw on their expertise, experience, and the research in the facilitated and collaborative process, they develop novel solutions to problems of practice and thus create new forms of activity together. It could be argued that the co-design process is professional development done with teachers, rather than to teachers.

Participation in the co-design process has been regarded as a process that supports teacher learning within the design literature and there is a small, but growing body of research to support this claim (Ormel, Roblin, McKenney, Voogt, & Pieters, 2012; Voogt et al., 2015). This includes a few studies focused on co-design as professional development to enhance curriculum
development and innovation (e.g., Penuel, Roschelle, & Shechtman, 2007; Simmie, 2007; Voogt et al., 2011). In this section, I briefly describe two studies that examined co-design as a form of professional development and explain how these studies inform my work.

Voogt and colleagues (2015) theorize co-design as teacher professional development and apply three features (situatedness, agency, and the cyclical nature of learning and change) to describe three co-design cases. Through their examination of each of the three cases, they explored the relationship of individuals, teams, and systems. They found that each of the three features was manifest in different ways. Particularly useful to my study is the first case study they present of participatory professional development for personalized learning. In this study, the researchers worked with eight teachers in the English language arts department from a small online high school run by a local university. Using a DBIR framework, they set out to investigate if the small co-design model allowed for agency and collaboration among the teachers and researchers. The study occurred over six weeks through a summer workshop. During this time, teachers were able to think about dilemmas and new practices for engaging their students as they worked together. They found that teachers demonstrated agency through collective negotiation of designing participatory routines for their classes. For example, over time teachers asked one another advice and “assumed more and more the responsibility for determining how the participatory learning and assessment activities could be enacted in these particular classes (Voogt et al., 2015, p. 268). I build upon the ideas of Voogt and colleagues to understand co-design as a type of professional development, to look for dilemmas in the design process, and to examine the agency of teachers through the iterative design cycles.

Also useful to my work is that Voogt and colleagues (2015) noted how their participation changed as the co-design work evolved. The researchers began as guides in the co-design
process, but as the community formed, the researchers stepped back so that teachers could reflect together and emerge as leaders. Thus, they positioned teachers as integral members of the design team. The researchers noted that using the DBIR framework allowed for collaborative inquiry and their observations and interviews with teachers confirmed that teachers experienced both individual and collective agency. Across all three case studies, the researchers found that teachers’ sense of ownership in the process was an important factor in exercising agency. This has implications for my study, as I aim to structure the co-design process so that teachers feel that the process is their own.

Penuel, Roschelle, and Shechtman (2007) studied the process of co-designing formative assessment software with 4th through 9th grade teachers. They found that participation in co-design can contribute to teacher learning as the process “offered teachers a chance to develop and refine their own ideas about teaching in the framework of explore how new software works in their classrooms” (p. 70). Penuel, Roschelle and Shechtman also describe several tensions that arose in the co-design process and how these were resolved over time, suggesting that tensions can be fruitful catalysts for moving the work forward and developing novel solutions. These tensions included teachers not having enough time, a difference in workplace norms between teachers and researchers, and the development of a common language to organize the work. And through the process of resolving the tensions, researchers discovered that teachers developed a sense of ownership and agency. This suggests that surfacing such tensions and resolving them together may promote teacher learning. Because Penuel and colleagues found that grappling with dilemmas encouraged teachers to demonstrate agency, attending to dilemmas is one way that I examine teacher learning in this study. Grappling with dilemmas provides opportunities for teachers to exercise agency, engage in public reflection, and problem-solve together.
Participatory Approaches Inform Co-design

In a chapter in *Iterative Design of Teaching-Learning Sequences*, Couso (2016) considers design frameworks for including teachers in more participatory ways through their integration of community frameworks. Couso argues for more participatory approaches to design work to improve the quality of teaching and learning materials created, as well as increase the potential for sustainability and improve the research results. Couso sees the integration of a teaching community framework (such as a professional learning community, communities of practice, teacher communities) as practically informing the design process:

practical ideas such as how the active participation of teachers in the design team can be supported, how the necessary teacher learning and development can be achieved, how teacher ownership and leadership can be promoted along the process and how the process should be set up so that it can continue after the initial input is finished. (p. 48)

Couso argues that a participatory orientation to research is what will bring about educational change and promote teacher learning. While Couso situates her argument within the context of science education, many of her points can be applied to all content areas, including language arts.

This work informs my study, which involves teachers in the co-design process in a participatory way. One challenge in co-design, Couso (2016) notes, is that while design-based research may involve teachers to varying degrees, the literature in this realm does not specify how to “motivate, support, and empower teachers in these participatory contexts” (p. 53-54) and the research does not clarify how collaboration occurs. In this study, I attend to this challenge by specifying the ways in which teachers are supported through the design process and empowered to make decisions and exercise agency. Additionally, Couso used the community framework, to shed light on key elements to consider when designing and engaging in work with teachers. One
Examining Teacher Learning in Co-design

To study and understand teacher learning within the co-design process, I employ the concepts of expansive learning and deliberative agency as an outcome of teacher learning. I also consider emotions as part of the deliberative nature of co-design.

**Expansive learning.** In order to examine teacher learning within our co-design process, I use expansive learning as a theoretical base. Expansive learning theory was developed as part of the cultural-historical activity theory (CHAT) framework and is defined as “learning in which the learners are involved in constructing and implementing a radically new, wider and more complex object and concept for the activity” (Engeström & Sannino, 2010, p. 2). Features of expansive learning theory include individuals working together individually and as a collective,
the creation of culture, the development of theoretical concepts, and new forms of agency (Engeström & Sannino, 2010).

Expansive learning is contrasted with traditional school learning, in which students learn a defined content or skill, determined by teachers in advance of the lesson. By contrast, in expansive learning, the content or skill is not determined and defined in advance. Rather, people learn through collaboratively developing a solution to a problem, and no one knows what that solution will be ahead of time. In the co-design process, this means that team members learn together through doing and creating, as members bring expertise to the experience that gets transformed in the process of designing something new. Through the facilitated process of co-design, new activity is created when teachers negotiate and solve problems together and new possibilities emerge. Dilemmas can play an integral role in expansive learning, as they can motivate change by challenging the group to change or push beyond the current mode of activity. Surfacing dilemmas and making them visible may be generative for determining ways to iterate and improve the design, developing conditions that lead to “satisfying and productive co-design experiences” (Penuel, Roschelle, & Shechtman, 2007, p. 53), and deepening teacher learning.

Introducing artifacts as well as jointly developing artifacts into the co-design work is an important catalyst for change efforts. Expansive learning theorists underscore the importance of artifacts as mediating tools for learning. Likewise, within co-design, design team members interact with artifacts to define a problem and negotiate solutions. Individuals within the team “can collaboratively develop and use a shared artifact to enable them to redefine their situation and to master their joint actions in transforming the context of their daily work” (Virkkunen, 2006, p. 49). The design team can use the artifacts to generate creative solutions and novel possibilities in response to dilemmas.
**Deliberative agency as a focal outcome of teacher learning.** I use deliberative agency as a focal outcome to identify the ways in which teachers learned in the co-design process and to understand how teachers contributed to the design process.

In the past decade, scholars have explicated and expanded upon conceptualizations of agency (e.g., Biesta & Tedder, 2007; Edwards, 2011; Eteläpelto, Vähäsantanen, Hökkä, & Paloniemi, 2013; Konopasky & Sheridan, 2016; Priestly, Edwards, & Priestly, 2012; and Virkkunen, 2006). Emirbayer and Mische (1998) penned one of the more oft-cited pieces in the past couple of decades on agency, *What is Agency?*, in which they advanced the conversation on agency by parsing out the components of agency so that it might be used as an analytic tool. Emirbayer and Mische built upon Mead’s (1932) *The Philosophy of the Present* to define agency as the “imaginative flexibility of actors’ deliberations about the future” (p. 988). For Emirbayer and Mische deliberation is evident when

… actors respond to changing environments, they must continually reconstruct their view of the past in an attempt to understand the causal conditioning of the emergent present, while using this understanding to control and shape their responses in the arising future.

(p. 968)

In other words, people reconstruct and interpret their understanding of the past in order to understand the present, and “control and shape” their future responses. People demonstrate agency through the deliberative process of interpreting the past to anticipate the future and shape their responses. In this study, I draw on Emirbayer and Mische’s work to define agency as a person’s ability to imagine the future through making sense of the past and present circumstances through deliberation.
In this conceptualization of agency, time is an important component; time is “constituted through emergent events” which are “nested and overlapping” (Emirbayer and Mische, 1998, p. 968-969). Emirbayer and Mische, like Mead (1932), understand action as oriented toward the past, future, and present, describing agency as a “temporally embedded process of social engagement, informed by the past, but also oriented to the future and toward the present” (p. 963). They counter previous notions of agency that treated it as solely individualistic, arguing that people engage in deliberation together within particular situations and contexts. The “nested and overlapping” nature of time and context means that people are often embedded in multiple situations and systems at the same time.

I use Emirbayer and Mische’s notion of agency as temporal, focusing on the way the past becomes a resource for design in the context of teacher deliberation. Teachers’ classrooms, as well as our group meetings, served as unique contextual configurations. The past trajectory of the classroom, teachers’ past relationships with particular students in the class, and the past interactions of our design group all become resources for teachers to draw upon in designing and re-designing future interactions for the classroom. In this way, teachers use the past to act in the future, so agency is manifest when teachers draw upon past resources for design to engage in deliberation.

As people engage in deliberation, they engage in reflection, developing a “reflective consciousness” (Emirbayer and Mische, 1998, p. 969). In connecting to the notion that events are “nested and overlapping,” Emirbayer and Mische contend that “actors develop their deliberative capacities as they confront emergent situations that impact upon each other and pose increasingly complex problems, which must be taken up as challenges by the responsive (and communicative) intelligence” (p. 969). In other words, as people confront challenging situations they must
determine how to respond and act. Challenging situations can be presented as dilemmas, so that as teachers confront dilemmas there is the possibility to engage in deliberative moves as expressions of agency.

**Deliberative agency and expansive learning.** Scholars of expansive learning have also embraced the notion that agency has a temporal component in that agency evolves over time. In expansive learning theory, scholars refer to transformative agency, which involves a breaking away from the given frame of action and taking the initiative to transform it. The new concepts and practices generated in and expansive learning process carry future-oriented visions loaded with initiative and commitment by the learners. (Sannino, Engeström, & Lemos, 2016, p. 603)

In order to study agency, Engeström and colleagues identified six types of participants’ agency in their research in the Change Laboratory (Engeström, 2011; Engeström, Sannino, & Virkkunen, 2014; Haapasaari, Engeström, & Kerosuo, 2016; Sannino, 2008; Sannino, 2010), which include: 1) resisting, 2) criticizing, 3) explicating, 4) envisioning, 5) committing to actions, and 6) taking actions. Because in this study I conceptualize agency as a process of deliberation of drawing on past resources to imagine, plan for, and create designs for the future, I interpret Engeström’s delineation of agentic categories as categories of **deliberative moves** that indicate imaginative flexibility. I conceptualize the six forms of deliberative moves as expressions of agency, and they are each described in the section that follows. Expansive learning, by this definition, could be said to emerge whenever deliberation resulted in a new form of activity, such as when a new aspect of the activity was created or when there was a shift in the routine in some way. I focus primarily on the agency of teachers as exhibited through
deliberative moves, within our group meetings, to understand how teachers broke away from old teaching routines by changing and transforming them.

**Six forms of deliberative moves as expressions of agency.** The six forms of deliberative moves as expressions of agency, which I borrow from Engeström and colleagues, are: 1) resisting, 2) criticizing, 3) explicating, 4) envisioning, 5) committing to actions, and 6) taking actions, which I refer to as reporting on actions. **Resisting** involves people resisting new suggestions or the change. **Criticizing** is when people critique the activity and/or organizations and includes people “identifying problems in current ways of working” (Haapasaari, Engeström, & Kerosuo, 2016, p. 242). **Explicating** is when people describe new possibilities in the activity, and often relates to “past positive experiences or former well-tried practices” (Haapasaari, Engeström, & Kerosuo, 2016, p. 242). **Envisioning** involves future-oriented suggestions that involve people “envisioning new patterns or models in the activity” (Haapasaari, Engeström, & Kerosuo, 2016, p. 242). **Committing to taking actions** includes statements in which people agree to take concrete steps to change the activity, and these steps are connected to time and place. Finally, **reporting on actions** involves people reporting on or describing the consequential actions they have taken. According to Haapasaari, Engeström, and Kerosuo (2016), the six forms of deliberation can and often appear together in combinations and typically “evolve over time, moving from rudimentary expressions of resistance toward envisioning, committing and taking consequential change actions” (p. 236). In addition, they note that agency often begins with an “individual initiative” to introduce one of the six forms of deliberation. Deliberative moves are often initiated by an individual and may or may not be taken up by a group, but are always embedded in temporal and relational contexts. Agency is manifest when teachers draw upon past resources to imagine a new future.
Emotions as part of the deliberative process. Emotions are an important element of teaching (Hargreaves, 1998; Liston, 2000, 2004; Zembylas, 2002) and the design process. Emotion in teaching is a central component of teaching and one that should not be pitted against the notion of reason but rather understood as intertwined and equally valuable (Zembylas, 2010). Liston (2011) argues against the emotion-reason dichotomy and identifies ways “in which emotions can be said to be ‘reasonable’” in that they “enable deliberation” (p. 1). Furthermore, Liston, drawing upon Damasio’s (1994) work in neuroscience and de Sousa’s (1987) work in philosophy, writes that emotions can help us “focus our attention, help us to select what is important and unimportant, and enable our deliberations” (p. 6). In summarizing Damasio, Liston explains, “we learn, re-learn, and build upon past scenarios and emotional reactions” (p. 5). According to this frame, teachers build upon their past experiences and emotions to interpret present and future situations. This is relevant not only to teaching, but also to participation in co-design work. Emotions can draw one’s attention to what is important and therefore, play an essential role in the way teachers see and understand circumstances and make decisions. Emotion and reason are integrated. This study takes the perspective that emotion and reason are intertwined and essential aspects of teaching and the deliberative process of co-design.

Contribution: Filling Gaps about How Co-design Can Create Caring Classrooms

There is a paucity of research on the emotional experience of team members within co-design work or improvement science focused on educational aims (P. LeMahieu personal communication, October 26, 2017). However, there is a body of research outside of education, human-centered design (HCD), which focuses on the humanization of the design process in order to develop designs that result in human-centered tools. Often utilizing participatory action research to develop products, HCD considers people’s emotional responses to the products
designed, including the impact of a product. For example, in the book, *Emotional Design: Why We Love or Hate Everyday Things*, Norman (2004) approaches design with an understanding that cognition and emotion are “thoroughly intertwined” (p. 8). Norman argues that the “emotional side of design may be more critical to a product’s success than its practical elements” (p. 5).

While I recognize that some work is being done to explore design and emotion, Norman’s work is situated within a very different context from this study, as his focus is largely on using emotion to sell products. The notion of the interrelatedness of cognition and emotion is useful to my study, but I take a departure from his approach as I focus on the experience of the designers, in this case the teachers, and how emotion was intertwined within the design work. This study seeks to address a gap in the literature by describing the emotional experience of teachers within the co-design process.

In addition, this study seeks to add to the research base on co-design as a form of professional development by exploring the ways in which teacher learning is supported through their participation in co-design. In their 2015 article, Voogt and colleagues note while “teacher involvement in collaborative design of curriculum is viewed as a form of professional development … the research base for this stance is limited” (p. 259). Furthermore, Couso (2016) argues for more research that focuses on “teachers’ development and community formation with the design research scenarios” (p. 67). This dissertation study includes teachers through a participatory approach to design. Through the use of inquiry cycles, teachers defined and explicated the problem of practice, developed a routine for improving teacher-student relationships, designed a student survey, collected data, reflected on the data, and iterated on the design. This study adds to the research literature by tracing the ways in which the design team forms and evolves throughout the study. Finally, in a review of dissertation studies on teacher
collaboration in design teams, Voogt and colleagues (2016) recognize that “not much attention
has been paid to the quality of the designed curriculum materials” which they argue should “not
only be a concern of research but also of the teams” (p. 137). Through engaging in the inquiry
cycles, the design team collected implementation data and used the data to inform the next
iteration of the design of a routine for improving teacher-student relationships. This process
supported the team in attending to the quality of the design, both to benefit teachers’ instructional
practices and the research.

**Initial Conjecture Map**

In order to further specify the conceptual framework and draw on the research literature, I
articulated my high-level conjecture and include a conjecture map. A high-level conjecture is a
sort of theoretically principled idea about how to support some desired form of learning,
articulated in general terms and at too high a level to determine design. Such conjectures,
or meta-principles are usually the result of some initial problem analysis. (Sandoval,
2014, p. 22)

Because a research design does not lead directly to a desired outcome, I include a conjecture map
in order to specify “theoretically salient features of a learning environment design and [map] out
how they are predicted to work together to produce desired outcomes” (Sandoval, 2014, p. 19).
A conjecture map is not only useful for guiding the research design, but also for articulating
theory. A conjecture is embodied, or reified, through discursive practices, participant structures,
task structures, and tools and materials.

The conjecture map illustrates my conjecture prior to data collection and analysis, and in
it I specify the core mechanisms in the co-design process, which I theorized lead to teacher
learning (see Figure 2.2). The high-level conjecture guiding the research plan was that the co-
design process for responsive teaching practices supports’ teachers collective learning. My initial study design included designing responsive teaching practices with teachers. However, as we negotiated the problem of practice together, we ended up focusing on a slightly different, but connected, goal of improving relationships with students (the shift in focus is described in Chapter Three). This conjecture map represents my initial study design and goals, so that it does in fact represent my early conjectures rather than the results of what actually occurred in this study. A revised conjecture map based upon the findings of my study is presented in Chapter Seven.
Figure 2.2. Initial conjecture map

[Diagram showing a map of initial conjectures related to embodiment, mediating processes, and outcomes.]

- **Embodiment**: Design team engages in conversations around dilemmas of practice.
  - **Discursive Practices**: Teachers and researcher develop norms for working together.
  - **Participant Structures**: Teachers and researcher work as co-designers.
  - **Task Structures**: Biweekly co-design team meetings, plan, study, do, act cycles.
  - **Tools & Materials**: Fishbone diagram, research literature, driver diagram, practical measures.

- **Mediating Processes**: Team agrees on problem, shared design, and navigates dilemmas through using tools and negotiating multiple perspectives.
  - **Observable Interactions**: Team uses research literature and their experiences design.
  - **Outcomes**: Teachers implement change and collect data using practical measures.
  - **Outcomes**: Teachers reflect on practice by analyzing data and developing new insights.
  - **Outcomes**: Teachers iterate on strategy based on insights.
  - **Outcomes**: Teachers demonstrate agency by influencing both the process of design and what is being designed.
  - **Outcomes**: Teachers enact new teaching practices.
  - **Outcomes**: Teachers engage in new forms of collaboration with each other.
  - **Outcomes**: Teachers feel that they are improving their responsive teaching practices.
The embodiment represents the way that I anticipated the co-design process would be facilitated and scaffolded to support teacher learning. The discursive practices included the conversations that the team would engage in around dilemmas of practice as we planned, designed, and iterated on the designs. I planned for the conversations to be structured so as to position teachers as partners in the design process. Within these conversations I anticipated that we would also develop a working definition and understanding of responsive teaching, which would involve negotiating multiple perspectives and the research literature in order to come to shared agreement on the problem of practice we would address.

The group’s conversations would be structured and facilitated through the participant and task structures, as studies have shown the importance of scaffolding conversations for teacher learning (Horn, 2007; Horn & Kane, 2015; Horn & Little, 2010; Kazemi & Franke, 2004). The participant structures I anticipated included the design team working together as co-designers and co-creating norms for how we would work together so that teachers felt that they were partners in their professional growth and in the design work. Such participant structures were important to include because establishing norms, encouraging collective responsibility for the norms, and teachers’ willingness to take responsibility for one another’s learning have been identified as key components for community formation leading to community trust in order to support teacher learning (Borko, 2004; Grossman, Wineburg, & Woolworth, 2001).

I planned for the design team to meet biweekly and engage in plan-do-study-act (PDSA) cycles, in which teachers would implement the new design every two weeks. Briefly, a PDSA cycle is a structure for inquiry that involves planning and introducing a change, and then studying the change, refining it, and implementing the revised change strategy (see Chapter Three for more details on the PDSA cycle). Engaging in PDSA cycles would not only ensure
joint work but would also scaffold conversations within the group as we progressed through the various phases of the cycle. This process would also require transparency from teachers about their classroom practice and opening up one’s teaching practice to colleagues for discussion and critique, which has been shown to be an important practice to support teacher learning (Levine & Marcus, 2010; Little, 2002).

A number of tools and materials would be used or developed within the meetings, such as a Fishbone Diagram and Driver Diagram. Research has shown that teacher learning is supported when teachers engage in collective inquiry to represent and reflect on their practice through artifacts (Kazemi & Franke, 2004). I believed that the tools and materials would guide the group and bring to the surface dilemmas to confront.

I conjectured that engaging in the activities and practices of the co-design process would generate several mediating processes. The mediating processes were grouped together due to the complex nature of the learning environments, as it was difficult to separate the mediating processes into distinct parts (Sandoval, 2014). Rather, the “specific designs lead to new patterns of change” (Sandoval, 2014, p. 26). Throughout the co-design process, teachers would draw on their experiences and expertise as well as the research literature to negotiate the problem of practice and to generate responsive teaching practices (Ball, 1995). Developing and using the tools would help to surface dilemmas and the team would come to a shared agreement on the problem to investigate as well as a shared design by grappling with dilemmas (Björgvinsson, Ehn, Hillgren, 2010). This would require that the team reconcile and synthesize the multiple perspectives present. The dilemmas would help motivate change and support teachers’ active engagement in the design process. I planned that the teachers would test the shared design by implementing the responsive teaching strategy in their classrooms and collect data using the
student surveys developed by the team. They would bring this data to the biweekly meetings for group analysis and reflection on the shared design.

Professional development efforts focused on student learning, pedagogy, and reflection have been shown to support teacher learning (Darling-Hammond & Richardson, 2009). Reflection has been theorized as a mechanism for supporting teacher learning, as teachers who have the opportunity to reflect can deepen their knowledge and expertise (Cochran-Smith & Lytle, 1999). I anticipated that teachers in this study would collectively reflect on their practice by analyzing the student survey data and develop new insights. The team would then iterate on the strategies designed based on these reflections and shared insights. Throughout the entire process, teachers would demonstrate agency by influencing the group process of design and what was being designed. The PDSA structure would support teacher learning by focusing teachers’ efforts on problems of practice embedded in their classroom context and focusing on student learning through responsive teaching practices.

I conjectured that if the mediating processes described above occurred, they would lead to teacher learning by teachers demonstrating agency, engaging in new forms of collaboration with each other, enacting new teaching practices, and feeling that they were improving their responsive teaching practices. It has been theorized that teachers learn by challenging their own assumptions, identifying salient issues of practice; posing problems; studying their own students, classrooms, and schools; constructing and reconstructing curriculum; and taking on roles of leadership and activism in efforts to transform classrooms, schools, and societies. (Cochran-Smith & Lytle, 1999, p. 278)

The facilitated collaboration of the design process and structure of the PDSA cycles would allow for teachers to challenge their assumptions, work together to solve problems of practice, improve
their own practices, and inform the work of Compose Our World. The conjecture map illustrates that all mediating processes would work together to support teachers’ learning. When I created the conjecture map, prior to data collection and data analysis, it represented a theory for how teacher learning would be supported. My revised understanding, based upon the results of my study, is presented as a final conjecture map in Chapter Seven.

**Research Questions**

Drawing on my conceptual framework and the research literature, the following research questions guided me in the process of examining teacher learning and teacher participation in the co-design process. The list below represents the revised research questions, which used the updated conceptual framework described in this chapter. Chapter Three describes the evolution of the research questions, along with the updated methods for data analysis to address these research questions.

- How and why did the design evolve over time?
- Did teachers demonstrate agency within the co-design process? If so, how?
- How did teachers grapple with dilemmas within the co-design process?
- What was the nature of teachers’ talk when looking at practical measure data?
  - How did teachers’ talk when looking at students’ survey data afford or constrain opportunities to engage in investigations of pedagogical practice?
- What was the emotional experience of participation within an improvement science study?
- What did one teacher’s caring for students reveal about the emotional dimensions of participation in improvement science?
CHAPTER THREE: RESEARCH DESIGN

Overview

The purpose of this qualitative study was to explore teacher learning through the co-design process. As indicated by my research questions, I examined how and why the design evolved over time, if and how teachers demonstrated deliberative agency, how teachers grappled with dilemmas, the nature of teachers’ talk about their students’ survey data, and the emotional experience of participation in an improvement science study. Through qualitative data collection and analysis, I tested, revised, and refined my high-level conjecture that the co-design process supported teacher learning (see Figure 2.2 in Chapter Two). In this chapter I describe the approach to research and development, the context of the study, the study design, data collection and data analysis, and issues of validity. In this study, I investigated the following research questions:

- How and why did the design evolve over time?
- Did teachers demonstrate agency within the co-design process? If so, how?
- How did teachers grapple with dilemmas within the co-design process?
- What was the nature of teachers’ talk when looking at practical measure data?
  - How did teachers’ talk when looking at students’ survey data afford or constrain opportunities to engage in investigations of pedagogical practice?
- What was the emotional experience of participation within an improvement science study?
  - What did one teacher’s caring for students reveal about the emotional dimensions of participation in improvement science?
These research questions evolved, along with the conceptual framework and methods, as I engaged in data analysis and determined the stories that emerged from the data. The first three questions, *How and why did the design evolve over time?*, *Did teachers demonstrate agency within the co-design process? If so, how?*, and *How did teachers grapple with dilemmas within the co-design process?*, were original questions that I posed before I collected data. While the research questions did not change, I did refine my conceptualization of agency to include a more explicit focus on deliberative agency. I examine these questions in Chapter Four. After an initial coding of the data (which is described later in this chapter), I realized that a portion of our talk in meetings focused on the student survey data and I became interested in understanding more about these discussions and whether or not they allowed for teachers to examine their teaching practice. As a result, I asked: *What was the nature of teachers’ talk when looking at practical measure data?* and *How did teachers’ talk when looking at students’ survey data afford or constrain opportunities to engage in investigations of pedagogical practice?* I investigate these questions in Chapter Five. In reflecting on the data, and on my experience with the teachers over the semester of the design work, I became interested in the ways in which one teacher, Jane, engaged in the design work. She brought dilemmas to our group for consideration and often shared her emotions with the group and with me. This led me to ask the final set of questions, which I explore in Chapter Six: *What was the emotional experience of participation within an improvement science study?* and *What did one teacher’s caring for students reveal about the emotional dimensions of participation in improvement science?*

**Approach to Research and Development: DBIR**

This study draws on improvement science as a type of design-based implementation research (DBIR) as its approach or way of organizing the research and development effort.
Design-based implementation research and improvement science are appealing approaches to research because they are deeply rooted in the experiences of educators and students in schools. There are four key elements that characterize DBIR studies: 1) “a focus on persistent problems of practice from multiple stakeholders’ perspectives, 2) a commitment to iterative, collaborative design, 3) a concern with developing theory related to both classroom learning and implementation through systemic inquiry, and 4) a concern with developing capacity for sustaining change in systems” (Penuel, Fishman, Cheng, & Sabelli, 2011, p. 332). Improvement science, as a type of DBIR, uses methods to analyze problems, define aims, develop and test strategies, and measure improvements (Bryk et al., 2015). The problems of practice are negotiated between teachers and researchers, and should be real problems that practitioners face. Improvement science seeks to address these problems through collaboration with practitioners in ways that are meaningful, lasting, and practical and that are concerned with sustaining change within larger systems. A distinctive characteristic of improvement science as a form of DBIR is its focus on developing practical theory in order to make a change and determine if this change is an improvement (Bryk et al., 2015). Improvement science utilizes theories of change to test and refine interventions. Within the improvement science tradition, the plan-do-study-act (PDSA) cycle is a specific model for engaging with multiple stakeholders in iterative design around problems of practices and one that is used in my study (Bryk et al., 2015).

Collaboration and definition of problems of practice across stakeholders is an important tenet in both DBIR and improvement science and this study sought to involve participants as partners and co-designers by working with teachers in a variety of activities including defining problems of practice, developing interventions, collecting and analyzing data, and iterating on the interventions. This study therefore has two layers. First, the small group worked to improve a
problem of practice, focused on engaging students in the curriculum. We studied the problem and decided to focus on building relationships with students, we developed a strategy for building relationships, tested the strategy, collected and analyzed student survey data, and iterated on the strategy. The second layer of this project was the meta-layer of studying the co-design process in order to understand how it could support teacher learning.

**Positioning the Study within DBIR and Improvement Science**

This study represents the beginning stage of a DBIR and improvement science study. One of the key features of DBIR studies is a concern for sustainability, while a main objective of improvement science is to make change at scale. It was beyond the scope of this dissertation study to bring the design to scale or to ensure its sustainability. In improvement science studies change is brought to scale through “small, rapid tests of change and then expanding the initiative out as the improvement team learns” (Bryk et al., 2015, p. 120). First, the change is tested through the plan-do-study-act (PDSA) cycle, and often it takes multiple PDSA cycles to test a change and gather information about whether or not the change is an improvement. Initially a small group, or even just one teacher, pilots the change. The group studies the change and revises it through the PDSA cycles. Once the change is determined an improvement, the scope expands and the change is tested in varied contexts and under multiple conditions. This process continues as the change is gradually scaled up, expanding the scope of the testing and learning along the way, until the group determines to integrate the change into the system (Bryk et al., 2015). This study is positioned at the beginning stage of the improvement science process for determining reliable change. Due to the time constraints of data collection for this dissertation, our small group engaged in three PDSA cycles to test the change to teachers’ opening class routine.
Context

This study was situated within a larger research project, Compose Our World (COW). In the following sections, I give a brief overview of Compose Our World and explain how my study fit into the larger project. Then, I provide a description of the teachers who participated in the study, as well as a description of their focal classes. I describe the schools and districts in which the teachers worked.

Compose Our World

The Compose Our World project is a DBIR project with the goal of designing 9th grade language arts curriculum that integrates core principles of project-based learning (PBL), social and emotional learning (SEL), and Universal Design for Learning (UDL) (see Appendix A for a visual representation of the core principles). The research team included university professors, consultants, graduate students, and teachers. Fourteen teachers from six schools and two school districts participated as co-designers as part of the larger COW research project.

In the first year of Compose Our World, 2015-2016, the group was organized into four teams each tasked with designing one project of the course. Teachers in each of the four small design teams implemented the project they helped design so that the research team could test, refine, and iterate on the designs.

This dissertation study took place during the second year of Compose Our World, 2016-2017. In the second year, the entire research team focused on refining the projects designed in the first year. Teachers chose to teach at least one of the projects in this year so that the team could further study, refine, and iterate on the project designs based on implementation data, including observations, video recordings, teachers’ reflections, and adaptations to curriculum documents.
One of the goals of Compose Our World was to design a curriculum that could scale. Through my involvement as a graduate assistant on the COW research project and in speaking with teachers, it came to my attention that there was a tension in designing curriculum to scale while simultaneously attending to the unique needs of students in teachers’ classrooms. Several teachers remarked that components of the curriculum we co-designed could be improved to better match the particular experiences, backgrounds, and interests of their students. Teachers were encouraged to adapt the designs to their classroom contexts and all teachers adapted the curriculum. While we captured the ways in which teachers adapted curriculum through our fieldnotes and artifact collection, we did not always systematically capture why teachers adapted the curriculum. Furthermore, we did not systematically facilitate conversations with teachers about how to teach the curriculum to be responsive to all students in the classroom. What was missing for some teachers were conversations and considerations of specific students in the classroom, particularly students who did not appear as engaged in, interested in, or connected to the curriculum as teachers had hoped. This project aimed to address this tension by focusing on responsive teaching practices for specific students in teachers’ classrooms in order to help teachers improve upon their responsive teaching practices and suggest ways that other teachers implementing the COW curriculum could engage in responsive teaching practices.

Participants

In this section I explain the process for assembling the design team as well as describe the teachers who agreed to participate. In order to provide more detailed information about each teacher, I used data from a teacher survey collected as part of the COW research project. I use pseudonyms for all teachers, schools, and cities referred to in this dissertation.
Process for assembling the design team. Four teachers from the Compose Our World research project self-selected to participate in my study. I invited teachers to participate during a Saturday research design team meeting on November 5, 2016 by addressing the entire team and distributing a brief overview of the proposed study. Several teachers did not attend this Saturday session, so I followed up by email, re-issuing the invitation to the entire team of teachers (see Appendix B for the invitation distributed to teachers). Two teachers immediately responded to me through email indicating their interest in participating in the study. The third teacher agreed to participate several weeks later through an email exchange and the fourth teacher emailed me two months later and offered to join the study. The four teachers in the study all knew each other from their participation on the research project. They did not previously collaborate as a team, however. Three teachers worked in the same school so they had a previous working relationship.²

An important element of the design process is assembling a design team “that includes relevant forms of expertise” (Edelson, 2002, p. 108). I invited teachers from the Compose Our World research team to join my dissertation study as the teachers on our study were all experts in teaching 9th grade English language arts and were experienced co-designers. Teachers had varying degrees of experience with responsive teaching, but because this study focused on the collective learning of teachers it was desirable to have a range of expertise in responsive teaching. In addition to forming a team with expertise, it was also important that teachers opted into this study. My research study was an additional time commitment for teachers and I wanted to be sure that teachers could in fact devote the time to meeting together. Second, this project depended upon teachers’ willingness to implement the strategies we designed as well as collect

² Two of the teachers were friends and had the same planning period so they sometimes planned together and shared resources prior to this study. The third teacher at the school did not consistently plan or share resources with the other two teachers prior to this study.
data on the strategies, so I wanted teachers who could commit to trying out the teaching strategies in their classrooms. Because my study was premised on multiple iterations, I needed teachers who planned to implement the COW curriculum for the entire Spring 2017 semester.  

Prior to the start of the year, researchers worked with teachers to select one of their classes to be part of the Compose Our World research study. Researchers intentionally oversampled sections with students with diverse learning and language backgrounds across the study. Classes were also selected based on availability of the research team to support the class on the particular day and time it met. Students in the selected classes were informed of the study and received parent and student consent forms. Ongoing data collection for the COW project occurred in each of the teacher’s designated classes. In my study, we focused on the teachers’ designated COW classes so that additional consent forms did not need to be collected from students and so that my data collection could also be used for the larger research project.

Below, I describe the backgrounds of each of the teachers in my study. All names are pseudonyms.

**Jane.** Jane was one of the initial teachers to respond to my inquiry. She had been part of the Compose Our World project since the beginning of the project in August 2015. Jane identified as white female and held a Master of Arts degree in English and a Secondary English Language Arts teaching license. At the time of her participation in my dissertation she had been teaching for ten years. Jane taught three sections of 9th grade language arts and three sections of a 12th grade College Composition course. Jane’s COW class was a 9th grade language arts general education class of 30 students.

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3 Teachers on the Compose Our World research team had flexibility in determining how many projects they planned to implement. Therefore, not every teacher on the larger research team used the COW curriculum for the entire Spring 2017 semester.
Jane was an enthusiastic member of the COW team and spoke about her participation in the research project as “reinvigorating [her] practice” (COW Teacher Survey_08.02.16). When asked what she hoped to accomplish in the second year of COW she explained, “I want to see kids doing work that energizes them and honors their talents, concerns, and interests while challenging them to rethink their limitations” (COW Teacher Survey_08.02.16). Jane appreciated the co-design process because “I think we produce great stuff because of the diversity of views and positions and, importantly, the welcoming environment we’ve established. It feels safe to contribute, and I feel my contributions are valued” (COW Teacher Survey_08.02.16).

While I met Jane in the summer of 2015 and had brief interactions with her during all team design meetings during the 2015-2016 academic year, I did not know her well and had not observed her teaching. Researchers on her small design team spoke highly of her participation in the project and willingness to attempt new practices to support her students in the classroom. When asked to describe three of her strengths as a teacher, she listed, “flexibility, reflection, and empathy” (COW Teacher Survey_08.02.16). In the fall of 2016, I was assigned as her lead contact person and developed a positive working relationship with her. I observed her teaching five lessons and had a number of brief meetings with her, typically following these observations. In addition, we interviewed two of her students together to understand their experiences in one of the projects. She gradually assumed more leadership roles in the project, including leading a session on authentic audiences for PBL during an all-team design meeting. In a conversation in fall 2016, she shared with me that she wanted to think about how to be more responsive to her special education students. Jane worked closely with Sally, a special education teacher, who co-taught the class and actively worked to assist students during class. Jane also initiated several
conversations with me regarding how to engage students who feel disconnected or disinterested in the PBL curriculum.

Elaine. Elaine joined the Compose Our World project in August 2015. Elaine identified as white and she held a secondary English language arts teaching license and a Master of Arts in Curriculum focused on using the creative arts. At the time of this dissertation study, Elaine had been teaching for 18 years. Elaine taught three sections of 9th grade English language arts, two sections of 10th grade English language arts, and a mythology course. Her Compose Our World course was a 9th grade English language arts inclusion class of 22 students. She worked with a special education teacher who was present during one of her sections, but did not assist in planning or teaching.

Elaine joined the COW project because she wanted to be able to share ideas with other teachers, explaining, “two (or more) heads are better than one. When teachers get together to share ideas, they build great curriculum” (COW Teacher Survey, 08.02.16). She described herself as a teacher who is “hard work[ing], caring, and willing to try new things” (COW Teacher Survey_08.02.16).

While I met Elaine in the summer of 2015 and had brief interactions with her during all team design meetings during the 2015-2016 academic year, I did not know her well and had not observed her teaching. During the August 2016 institute, I had several positive interactions with her, including assisting her with planning for the first few days of school in a small group setting. During this time, she shared with me that she would prefer to have one member of the team assigned to visit her room consistently, rather than a different researcher visit each time. She also shared with me that she was hoping that a member of the research team could help her with planning. I first entered her classroom to observe her teach on August 24, 2016 and when I
arrived she greeted me and said, “I’m so glad it’s you!” This was my first indication that she felt comfortable with me and wanted to work with me. I became Elaine’s lead contact person in fall 2016. I observed her teaching four times during that semester and often met with her following each observation, sometimes for as long as an hour. During these meetings, she often asked for advice specifically in navigating her working relationship with her special education teacher or in planning. During my observations, I noticed that Elaine tried to get to know her students and to develop a sense of community within her classroom. For instance, when students began their literature circle meetings, Elaine asked students to share with their group members a personal response from prompt on a “meet and greet” card, such as “What accomplishment are you most proud of and why?” (Teacher Summary_01.12.17)4. Such community building practices were new to Elaine’s teaching repertoire and she did not yet incorporate students’ specific interests, backgrounds, or experiences into her lesson planning beyond asking students to share. There were particular students in the class whom she struggled to engage and she often brought them up in our conversations. When I was present in her classroom for observations, I tried to work with these students. I often shared with her what I learned about students and she was often surprised to learn new information about them. She joined my project through an email exchange in which she asked if we could continue to work together next semester. I invited her to join the study so that we could do just that.

Rachel. Rachel, a member of Compose Our World since August 2015, was the final teacher to join the study. She identified as white female and had a Master’s in Education and a secondary English language arts teaching license. At the time of the dissertation study, she had

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4 Graduate students wrote teacher summaries on the COW research project for each teacher after implementation of each COW project. They were constructed using all available data including teaching documents, teacher interviews, student surveys, and field notes from classroom observations. The purpose of the teacher summaries was to understand enactment of the curriculum, inform revisions, and support teachers in the future.
been teaching for 12 years. She taught three periods of 9th grade language arts, two periods of advanced 10th language arts, and a media studies course. Her COW class was a 9th grade language arts general education class of 26 students.

Rachel joined the Compose Our World research because, as she put it, “I love to learn.” She spoke positively about her participation on the project and particularly valued the collaboration. She explained, “I love collaborating and knowing you are not doing this all on your own. I appreciate learning from others and everyone sharing their knowledge and experience to make us better educators!!” (COW Teacher Survey_08.02.16).

Rachel lived in the same community in which she worked and her daughter attended the school, so she knew many of her students and their families well. Her goal for her students was for them “to love these projects which will translate into greater participation and success for all” (COW Teacher Survey_08.02.16). Rachel believed that her strengths as a teacher were that she was “energetic,” set a “goal to make learning fun,” and had a desire to “positively impact ALL of [her] students and help them to be better people” (COW Teacher Survey_08.02.16).

I worked closely with Rachel as part of a smaller design team during the 2015-2016 academic year, meeting with her frequently, observing her nine times, and co-teaching with her once. In fall 2016, I observed her teaching three times. She was open to feedback and sought it out, often asking for feedback on her lesson plans or teaching. During the design team work, Rachel took a collaborative approach to designing curriculum and we frequently sent drafts of activities and lesson ideas back and forth for revision. Rachel assumed more leadership roles within the Compose Our World project, including leading a session with Jane on authentic audiences for PBL during an all-team design meeting.
Daniel. Daniel was a more recent member of the Compose Our World project, having joined the project for the June 2015 institute. Daniel identified as male and a member of more than one race. He was in his 10th year of teaching. He taught one section of 9th grade English language arts, one section of 10th grade English language arts, two sections of a credit recovery course, and a yearbook course. Daniel’s COW class was a 9th grade English language arts class with 20 students.

Daniel saw his strengths as a teacher as rooted in his relationships with his students: “I talk to students as adults and treat them as such. I work individually with every student to help them succeed. I don’t teach things that are not applicable to their lives and useful for them” (COW Teacher Survey_08.02.16). He was a frequent contributor during all design team meetings and often shared practices and ideas from his classroom. He was often the first person in the room to contribute an idea. Daniel’s participation was often focused on his students and how to adapt the COW materials to meet the needs of his diverse population. He explained that he joined the COW research project to “make my classroom more dynamic, embrace different avenues for student learning, and also grow in my own practice” (COW Teacher Survey_08.02.16). When describing the benefits of the co-design process in COW, he wrote, “Sharing ideas, I believe, is core to growing as teachers and to creating the best possible project. We all have good ideas, but it is good to have people push back and offer feedback and input throughout the process” (COW Teacher Survey_08.02.16). Daniel’s goals for his classroom indicated his commitment to responsive teaching:

I want to make my classroom the safest and most comfortable place in the school. I want to create a curriculum that engages students deeply in personal ways, as well as learning
about their community and world. I want to take on more leadership roles in my school community. (COW Teacher Survey_08.02.16)

While I had several positive interactions with Daniel during all team meetings, I did not know him as well as I knew the other three teachers. Daniel’s students had created a museum exhibit in their town’s public library as a culminating event to one of the COW projects. Daniel invited the research team to join his class for the opening of the exhibit. I attended the exhibit and observed many positive interactions between Daniel and his students. Prior to joining the dissertation study, I had not observed Daniel teaching in the classroom and I had not yet worked closely with Daniel on curriculum design.

Daniel’s participation in the dissertation study ended up being minimal. He attended one of our meetings, the second, and did not implement the strategy we designed together with students in his classroom. He cited several reasons for not continuing in the study. As a group we decided to connect through Zoom, a video conferencing platform. Jane, Elaine, and Rachel taught at one school located 45 minutes away from Daniel’s school. We determined it was not feasible for teachers to drive a long distance after school for our meetings, so we settled upon using Zoom. Daniel found meeting through Zoom to be difficult and preferred meeting “face-to-face” (Daniel_Int_05.26.17). Having missed the initial meeting, Daniel found it difficult to participate in the second meeting, as we had started to form a direction for our work (for more on Daniel’s participation see Chapter Seven).

Sites

Jane, Elaine, and Rachel taught at Dover High School in the Dover School District in the Rocky Mountain Region. Design team meetings and data collection, including observations and interviews, took place at Dover. The town of Dover was a rural community of 24,500 people.
Dover was one of two high schools in the district, with the second high school being a charter school that opened in 2015. The community voted to pass a bond in November 2016 to build an additional high school to open in fall 2019 to accommodate increasing enrollment. According to available statistics on the state department of education website, the school had an enrollment of approximately 1,300 students. The majority of students identified as white (80%) followed by students who identified as Latino (15%). Fifteen percent of the student population qualified for free and reduced lunch. Materials on the school website focused on student success, as evidenced by the mission statement: the high school “in the tradition of excellence, empowers, inspires, and challenges the members of our school community to achieve high standards and to pursue success as life-long learners in their persona, academic, and professional lives.” The mission statement also included a “We believe in …” list that identified components such as, “high standards for our learning community, community engagement, a safe, healthy and positive learning environment, the uniqueness of the individual, celebrating accomplishments … [and] learning as a shared responsibility.”

Daniel taught at Mountainview in the Valley School District, located in the city of Lewiston. Lewiston had a population of approximately 90,000 people. There were nine high schools in the district, plus Mountainview which was categorized on the district website as an alternative high school. Mountainview accepted new students and awarded credits every quarter in order to meet the needs of its students, so the enrollment of the school was constantly changing. According to its website, Mountainview had about 120 students enrolled each quarter. According to the available statistics on the state department of education website, the school population was approximately 130 students. About 60% of students identified as Latino and 40% of students identified as white. Roughly half of the student population qualified for free and
reduced lunch. The school website highlighted the importance of building positive relationships “with and among students” through organized school community events such as “bullying prevention, college and career day, fall hike, community volunteer day, ARC fundraiser, and Cinco de Mayo celebration.”

**Study Design**

In this co-design study, our team developed, tested, and refined a teaching strategy for building relationships with students. The co-design work began in early February 2017 and continued through May 2017 (see Table 3.1: Project Timeline). Following the principles of improvement science, we engaged in three cycles of iterative design. We met approximately biweekly throughout the semester at Dover High School.

Table 3.1

*Project Timeline*

<table>
<thead>
<tr>
<th>February 2017</th>
<th>March 2017</th>
<th>April 2017</th>
<th>May 2017</th>
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<tbody>
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**Phases of Design Work**

Edelson (2002) highlights the importance of making informed design decisions as “designers learn in the process of making these decisions and observing their consequences” (p.112). In order to intentionally make design decisions and observe the consequences of these
decisions, the design work was conducted in several phases (see Table 3.2 for an overview of the phases of design work; the phases are described in detail in the sections below). We began with an introduction to the design study and established working relationships. We then negotiated the specific problem of practice to attend to in our design work. Following this step we developed a working theory of practice improvement for our design work. We then engaged in iterative plan-do-study-act cycles to design and refine the teaching strategy. Each phase is described below, while the details of our design meetings and design decisions are presented in Chapter Four.
Table 3.2

**Phases of Design Work**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
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<tbody>
<tr>
<td>Introduction to the design study</td>
<td>- Provide overview of project and goals</td>
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<tr>
<td></td>
<td>- Set norms for working together</td>
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<td>Negotiating the problem of practice</td>
<td>- Complete personas</td>
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<td></td>
<td>- Examine relevant research literature</td>
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<td></td>
<td>- Complete Fishbone Diagram</td>
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<tr>
<td>Develop a working theory of practice improvement</td>
<td>- Agree upon a shared problem statement</td>
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<tr>
<td></td>
<td>- Identify primary and secondary drivers</td>
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<tr>
<td></td>
<td>- Examine relevant research literature</td>
</tr>
<tr>
<td>Plan *</td>
<td>- Examine relevant research literature</td>
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<td></td>
<td>- Design teaching strategy</td>
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<td></td>
<td>- Develop a practical measure to collect data on the strategy</td>
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<td></td>
<td>- Hypothesize about what might happen as a result of implementation</td>
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<tr>
<td>Do*</td>
<td>- Implement the strategy</td>
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<td></td>
<td>- Collect data using practical measure</td>
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<tr>
<td>Study*</td>
<td>- Share and reflect on experiences of implementation</td>
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<td></td>
<td>- Analyze data from practical measure</td>
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<td></td>
<td>- Compare data to hypotheses</td>
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<tr>
<td>Act*</td>
<td>- Determine next steps for teaching strategy</td>
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<tr>
<td></td>
<td>- Plan for next iteration</td>
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<tr>
<td></td>
<td>- Refine practical measure as needed</td>
</tr>
<tr>
<td></td>
<td>- Refine working theory of practice improvement as needed</td>
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</table>

* Indicates phases that are repeated

**Introduction to the design study.** At the initial design meeting with teachers, I presented an overview of my dissertation study as well as a description of the co-design project and goals. I allowed for time to answer any questions teachers had about the study or the design project. We set initial norms for working together, including when and where we would meet throughout the semester, and how we would work together – including sharing documents in a Google folder, and adding to our meeting notes.

**Negotiating problems of practice.** The second phase of the design work was the negotiation of problems of practice. The design work was guided by three questions, posed by
Bryk and colleagues (2015): “What is the specific problem I am now trying to solve? What change might I introduce and why? And, how will I know whether the change is actually an improvement?” (p. 9). In order to begin to respond to the first question, teachers completed a persona template to think about specific individuals in their classrooms who they were struggling to engage in some way (see Appendix C for the persona template). Often used in design, personas are concrete representations of fictional people based on qualitative and quantitative data gathered about users of a product. Designers and product developers use personas to “help keep the assumptions [about the target audience] and decision-making criteria explicit” (Grudin & Pruitt, 2002, p. 149). The personas teachers completed differed from the way personas are featured in the design literature in that teachers created personas about actual students in their classrooms to generate empathy for them. Teachers then shared their personas with the group. Having a shared understanding of whom teachers envisioned as they talked about teaching and its challenges helped guide our work together; developing and sharing personas helped teachers begin to understand each other’s students and classroom and school contexts. Sharing the personas also led us to begin to establish joint goals for the work and to help ensure that were addressing at least some of teachers’ goals. Personas are described in more detail in Chapter Four.

My initial study design focused on designing responsive teaching strategies with teachers. Following the persona discussion, the group reviewed a two-page summary of a research article in order to build from teachers’ experiences to expand beliefs and introduce new ideas and strategies using research literature. We read a summary of Tzou and Bell’s (2010) article, Micros and Me, a research article about connecting students’ interests and experiences to learning activities, as an example of responsive teaching practice. I asked teachers, “What do we know
about the role of connecting to students’ interests and experience in learning? What are some of the ideas presented in the research summary?” and facilitated a discussion about the article.

The persona discussion combined with the discussion of the research article led us to focus on the problem of persistent student disengagement. We conducted a causal system analysis using a tool called a Fishbone Diagram to get at the root cause and surface multiple perspectives (see Appendix D for the Fishbone Diagram). The Fishbone Diagram was a way to organize our discussion and allow for continued analysis. The completed diagram represented our hypotheses about all of the causes of the problem we could identify and allowed us to better analyze the problem. An additional benefit of the diagram was that it illustrated that “no single person, process, or resource is to blame” (Bryk et al., 2015, p. 68) for the problem. We brainstormed major factors leading to the problem, which included categories such as students’ self-perceptions, students’ preparation to engage in grade-level work, student participation experiences, quality of relationships with students, factors related to home, factors related to school, and the curriculum.

**Developing a working theory of practice improvement.** The third phase of the design work focuses on developing a working theory of practice improvement. We used the categories in the Fishbone Diagram to brainstorm potential causes of the problem as they related to each of the factors identified. From this list, teachers identified the factors they felt they could influence as primary drivers. The primary drivers identified included: improving the quality of relationships with students, helping students shift self-perceptions, and shifting the culture of school and the classroom (see Appendix E for the Driver Diagram). The group then brainstormed a list of ideas or strategies for addressing these primary drivers with their persona students in mind, and these became our secondary drivers and change ideas. At the start of our second
meeting, we returned to this list to determine which driver we would pursue in the design work. In reviewing the list, I suggested to the group that many of the ideas we discussed were connected to the driver of improving relationships with students. The group agreed and we moved forward with the hypothesis that we could improve student engagement through teachers working on their quality of interactions with students. Through the negotiation of the problem of practice and our Fishbone Diagram discussion, the focus shifted from my initial goal of designing responsive teaching strategies to a connected, but slightly different goal surfaced by teachers – improving their interactions with students.

We returned to the secondary drivers and list of strategies, or change ideas, that teachers brainstormed in the previous meeting, and the group highlighted the strategies that focused on their relationships with students. The secondary drivers connected to “improving the quality of relationships with students” were 1) make time to get to know students, and 2) determine the right time to find out more about students. In order to get more specific about when and how teachers would focus on relationships with students in the classroom, I asked teachers,

When during class are the moments that we think are the best times to connect with kids? It should be something that we do everyday, on a regular basis. I think deciding this will help us figure out where to go next so that we can get even more specific.

(Facilitator guide_03.15.17)

Teachers determined that they wanted to focus on the beginning of class and part of our change idea became focusing on the beginning of class in order to improve the quality of relationships with students. In advance of our meeting, I had prepared two different research articles to share with teachers, depending upon the direction the group had chosen. I provided an overview of both research summaries, and teachers opted to read Cultural Probes by Gaver, Dunne, and
Pacenti (1999). In the article, the authors describe their method of engaging in design work in a responsive way through the use of cultural probes designed to “provoke inspirational responses from … people in diverse communities” (Gaver et al., 1999, p. 22). The discussion generated from this article launched us into the first design cycle.

**PDSA cycles.** Following the initial three phrases, the design team engaged in the inquiry process of plan-do-study-act (PDSA) cycles to test, refine, and iterate on the change idea (see Figure 3.1: PDSA cycle). The group carried out the four steps repeatedly in order to improve upon teachers’ relationships with their students. It was expected that in this process, failure would occur and new questions or dilemmas would be raised. The idea was to learn from the failures and consider new questions and dilemmas along the way to target and refine the innovation. Our design team completed three PDSA cycles (see Table 3.1 above for the project timeline). A general overview of the PDSA cycles is provided in the following sections. More specific details of what occurred during each of the three cycles are presented in Chapter Four.
Plan. During the plan phase, we used the Cultural Probes article, practical experience, and the information shared about students during our personas discussion to develop a strategy for building relationships with students. We decided to focus on redesigning teachers’ beginning of class routine. The routine built upon the notion of cultural probes, and we eventually referred to it as Dig Deep. The strategy involved teachers, and in some cases students, posing prompts. Students had time to reflect on and respond to the prompts, then share their responses in small groups and with the whole class. As students shared their responses, teachers sat with one targeted group of students to get to know them better. As part of the strategy, teachers also
shared their responses to the prompt with students (a description of the evolution of the strategy is provided in Chapter Four).

Not only did we determine what the implementation would look like in the classroom, but we also designed practical measures for collecting data about the effectiveness of the implementation. The focus of improvement science is “learning by doing” in the context of daily activities and therefore requires practical measurement (Yeager, Bryk, Muhich, Hausman, & Morales, 2013). Practical measures aim to determine whether the change introduced in the classroom is actually an improvement; the measures are used formatively to inform iterations and next steps (Bryk et al., 2015). Practical measurement differs from traditional research measurement in several ways. First, practical measures must be quick to administer, and often include just a few pointed questions. Second, practical measures should focus on “specific behaviors or outcomes that practitioners are able to see and act on” (Yeager et al., 2013, p. 11). This allows for team members to develop ideas for improvement and to refine the intervention.

In a working paper for the Carnegie Foundation, Yeager and colleagues (2013) identify four key criteria for practical measures. First, practical measures must directly measure the target and second, they should be specific to the work and change ideas implemented. Practical measures should be “framed in a language targeted to the specific units focal for change … and contextualized around experiences common to these individuals” (p. 12). Finally, practical measures must be quick and easy to administer so that they can be embedded in school practice and administered frequently.

While practical measures could take on different forms, we created a student survey so that the teachers could administer the survey in their classrooms easily and so that it could be administered multiple times throughout the semester. In this study, we developed the practical
measure after we developed a working theory of practice improvement. A good place to start when developing practical measures is in reviewing the experimental research that exists in the relevant field, to use the traditional research measures as a base (Bryk et al., 2015). Therefore, guided by our shared problem of practice, and discussions of the primary and second drivers and the change idea, I conducted a review of research to find studies that included relevant measures focused on teacher-student relationships. I applied Yeager and colleagues’ (2013) criteria for practical measures to narrow items found in the research search and brought these items to the group for teachers’ review.

*Creation of the practical measure.* The group collaborated to create the practical measure. During our second meeting, after the group designed the base of Dig Deep, I guided a discussion focused on determining how we would know if the strategy was an improvement. In anticipation of the meeting, I searched for previously tested student surveys about teacher-student relationships. I identified relevant survey items from several sources, including: *Asking Students about Teaching* (MET Project, 2012); *The Development & Validation of the Student Measure of Culturally Responsive Teaching* (Dickson, Chun, & Fernandez, 2016); and *Using the Questionnaire on Teacher Interaction* (Fisher, Fraser, & Cresswell, 1995). Guided by our Driver Diagram, I selected items from these surveys that focused on students’ perceptions of their relationships with their teacher, including items about the teacher getting to know students, and using their knowledge of students to engage students in the curriculum.

I created a chart in a Google document with the items for teachers to manipulate, and included blank rows to invite teachers to write their own items (see Appendix F for the Practical Measures Item Chart completed by teachers). As an initial step, teachers read and evaluated each survey item, marking in the chart the items they cared about and indicating which items they saw
as yielding actionable information for them. Then, teachers considered each item they cared about and responded to the prompt, “If a lot of students rated me low on this I would …”

Following the meeting, I collated the top survey items teachers selected. Based on the goals and design of Dig Deep, I revised some items to match our design. I organized the items by the key constructs that teachers wanted to focus on in the survey, with several items falling under each construct. The key constructs included: 1) teacher cares about students (individual and class), 2) teacher invites and values students’ cultures, backgrounds, and interests, 3) teacher uses knowledge of students in teaching, and 4) teacher encourages students in the class to care about each other. In connecting back to the Driver Diagram, teachers felt that a sign of improving their relationships with students would be that students believe that the teacher cares about them, and that in order to build relationships with students to engage them, teachers should learn about students cultures, backgrounds, and interests and use this knowledge in their teaching.

In between meetings, I shared the list of top survey items with teachers through Google documents, inviting teachers to comment on the items and suggest which items to keep and which items to remove. With the help of Jane and Rachel’s comments, we determined a list of six items to include on the practical measure. I formatted the items in Google Forms and shared the link with teachers so that they could distribute the survey to students. With each meeting, we refined the practical measure based on teachers’ insights and questions raised from using the survey and analyzing the results (see Appendix G for the last version of the practical measure used by teachers).

**Do.** During the *do* phase, the teachers implemented Dig Deep in their classrooms and then collected data using the practical measure we developed. Because teachers wanted Dig Deep to be a routine in their classroom, they implemented it every day. We agreed that teachers
would administer the practical measure survey once every couple of weeks, in between our design team meetings, so that we had data to analyze at each of the last three meetings. Teachers also administered a student survey prior to starting Dig Deep to establish a baseline set of data from their students. This resulted in four sets of data, one baseline set prior to implementation, and three subsequent sets throughout the semester. I attended one class session from each teacher in between our design team meetings to observe implementation and take field notes.

**Study.** In the *study* phase, the group examined the data collected from the practical measures as well as documentation from field notes and teachers’ observations and reflections on implementation. Teachers administered the practical measure to students using Google Forms every other week. In between meetings, I created a document for each teacher that displayed each item and a pie chart representing the number of students who agreed and disagreed with each item. During the fourth meeting, Rachel suggested that the individual documents show teachers’ data over time for comparison purposes and so beginning with the second round of data collection I included each data set for each item.

Prior to data collection, I asked teachers if they would be willing to share their data with one another for joint conversations and collective decision-making. Teachers agreed and so in addition to their individual documents, I created a group document to display the teachers’ pie charts together for each item. Teachers had access through a Google folder to all teachers’ individual data as well as the group data. During our data discussions teachers toggled back and forth between their own data and the group data, examining the pie charts and noticing trends.

I facilitated the data discussions, using a protocol adapted from the Harmony Education Center (Facilitator guide_04.12.17). I encouraged teachers to make low inference observations first in order to surface patterns in the data, before moving to high inferences (see Appendix H
for adapted protocol). However, after the meeting in which we looked at the baseline data, I noted it was difficult to engage teachers in discussion about their data and therefore refined the protocol. I decided, for example, in the next meeting to move the data discussion earlier in the agenda to give us more time to look at and discuss the data. I also asked the group some anticipatory prompts before we looked at data, such as “What would count as a successful pattern of responses in the data?” (Facilitator guide_04.25.17). While I used the protocol to facilitate our data discussions, I did not rigidly adhere to the protocol. Rather, I used it as a guide to pose questions, but often followed teachers’ leads after they noticed patterns in the data.

We analyzed the data to determine how to improve Dig Deep and we compared data results to the baseline results teachers gathered from students prior to implementation. As we looked through the data, we developed insights that we learned about the implementation, the design, and the practical measure to apply to the next improvement cycle. A more detailed account of what occurred when teachers examined and discussed the data can be found in Chapter Five.

Act. In the act phase we determined next steps for building relationships with students based on the key insights gathered. Together we planned for the next iteration by adjusting the instruction, altering the design, or revising the practical measure. The new evidence we gathered helped us to revise the working theory of practice improvement as “one’s understanding of a system continues to deepen through efforts to change it. It is learning by doing” (Bryk et al., 2015, p. 79). For example, by the end of the three PDSA cycles, teachers determined that not only was it important for their relationships with students to improve, but it was also important that students improved their relationships with one another. The completion of the act phase led into the next planning cycle. By the end of the three cycles, we developed a “change package”—
that is, a revised version of the routine intended to be shared more broadly with other Compose Our World teachers—that included the refined Dig Deep routine, along with documents for future implementation such as a teacher guide, student guide, and slides to introduce the routine, and a refined practical measure survey (see Appendix I for the teacher guide of the change package). We also had evidence related to how teachers improved their relationships with students through Dig Deep based on practical measure data (see Chapter Five).

Researcher’s Role

In this study I was both a researcher and a facilitator. I thought carefully about how to position myself as a learner with teachers and how to establish trust as a facilitator. I worked to establish trust by following up on teachers’ ideas, allowing teachers to determine the direction of conversation, offering suggestions and guidance rather than mandates and requirements, including teachers in decision-making processes, inviting teachers to edit, create, and share documents, and avoiding passing judgment on data results or teachers’ observations. In drawing on Couso’s (2016) article on participatory work with teachers, I positioned myself as a learner alongside teachers. I kept ongoing reflections related to these various roles in a researcher’s journal. Prior to each meeting, I planned the agenda and prepared necessary materials. I created facilitator guides to record the agenda, identified my rationale for including each agenda item, and noted facilitation prompts to ask the group. Separate from the facilitator guides, I created a meeting agenda to share with the design team in advance of the meetings. I emailed the agenda to teachers a couple of days before our meeting, and invited teachers to add to the agenda. I facilitated the meetings using our agenda. Often I took notes in our shared agenda, although teachers also added to our notes throughout meetings.
My research role was one of participant observer, in which my goals were “1) to engage in activities appropriate to the situation and 2) to observe the activities, people, and physical aspects of the situation” (Spradley, 1980, p. 54). I participated in the co-design process with teachers, and I aimed to “become explicitly aware” (Spradley, 1980, p. 55) of what was happening during our team meetings. However, even within the role of participant observer, my participation varied according to context. Spradley describes participant observation on a continuum from low to high involvement. When I acted as facilitator and learner with teachers during our design team meetings, according to Spradley’s continuum, my involvement was high. In contrast, when I observed teachers’ implementation of the design in their classrooms, my participation fell on the lower end of Spradley’s spectrum, to be described as moderate participation and low involvement.

**Data Collection**

In order to answer each of my research questions and test my high-level conjecture, I collected a variety of data sources. I collected data that was created or used during our co-design meetings, including design team meeting notes, artifacts, and practical measures. In addition, I collected data independently, including audio recordings of meetings, ethnographic record, fieldnotes from classroom observations, and transcripts from teacher interviews. The independent data collected from this project was kept within the Compose Our World Google restricted-access folder, which only the research team can access. The co-created data for this project was kept in a design team Google folder, which only our small design team could access.

Table 3.3 identifies the data I collected for each of my research questions. I gathered the data throughout the study from February 2017-May 2017. I list and describe each of the data sources I collected.
### Table 3.3

**Research Questions and Data Sources**

| | **Co-created data sources** | | **Independent data sources** |
|---|---|---|---|---|---|---|---|---|
| | Design team meeting notes | Artifacts | Practical measures data | Design team meeting audio transcripts | Design team meeting fieldnotes | Classroom observation fieldnotes | Facilitator guides | Teacher interviews | Student Interviews | COW Data Sources |
| **RQ1**: How and why did the design evolve over time? | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| **RQ2**: Did teachers demonstrate agency within the co-design process? If so, how? | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| **RQ3**: How did teachers grapple with dilemmas within the co-design process? | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| **RQ4a**: What was the nature of teachers’ talk when looking at practical measure data? **RQ4b**: How did teachers’ talk when looking at students’ survey data afford or constrain opportunities to engage in investigations of pedagogical practice? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| **RQ5a**: What was the emotional experience of participation within an improvement science study? **RQ5b**: What did one teacher’s caring for students reveal about the emotional dimensions of participation in improvement science? | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
Design Team Meeting Notes

We met six times as a team, for a minimum of an hour each meeting. During each design team meeting, we took notes in a shared Google document. This allowed us to document and keep track of design decisions, as well as record important ideas from our conversations. All of our meeting notes were added to the same Google document for easy reference. All team members were invited to contribute to the team meeting notes. The shared meeting notes indicated the topics and ideas that were important to the group to track and remember.

Artifacts

The design team created and used artifacts and documents during our meetings. Artifacts were collected and analyzed as data. Artifacts included co-created documents such as the Fishbone Diagram, Practical Measures Item Chart, and list of possible prompts. Teachers also shared artifacts they created individually and/or used when implementing Dig Deep, such as slides or student work.

Practical Measure

As part of the PDSA cycle, the group created a student survey as a practical measure. Surveys were administered to students, so that the data represents students’ experiences. We looked at the data from surveys in four of our meetings. As a group we analyzed the results from the practical measures in order to determine next steps in our design.

Audio Recordings of Meetings and Transcripts

In addition to our design team meeting notes, I audio recorded meetings using the Voice Record Pro application. I transcribed each audio recording. The audio recordings provided a more complete record of what occurred at the meetings and allowed me to facilitate and
participate in the meetings without worrying about capturing every important event or statement through fieldnotes.

**Design Team Meeting Fieldnotes**

Following each design team meeting, I constructed fieldnotes in order to capture key events and interactions, as well as my initial impressions, questions, and ideas for subsequent meetings. In these fieldnotes, I attended to the ways in which the group discussed problems, potential solutions, and dilemmas, as well as to how decisions were made in order to track how the design evolved over time. I also captured observations about teachers’ emotions related to dilemmas they raised or events or experiences that they shared with the team.

**Classroom Observation Fieldnotes**

I conducted observations in each teacher’s classroom to observe the Dig Deep routine. I conducted five observations in Rachel’s classroom, four observations in Jane’s classroom, three observations in Elaine’s classroom, and one observation in Daniel’s classroom for a total of thirteen classroom observations. The observations of Rachel’s, Jane’s, and Elaine’s classes occurred in between design team meetings so that I observed their implementation of Dig Deep. I observed Daniel’s classroom to gain an understanding of his context, but he left the study before implementing Dig Deep. I observed the designated COW class for each teacher, as students received and returned IRB consent forms. During each classroom observation, I completed fieldnotes using the Compose Our World field note template (see Appendix J for the COW field note template). Fieldnotes were shared with the COW research team, as was our practice. I observed teachers’ instruction, focusing particularly on how they implemented the Dig Deep strategy we designed as a team and focusing on how students participated in the routine. Typically, I sat with one group of students as they shared their responses to the Dig Deep prompt.
that day and captured their responses in my fieldnotes. During our meetings, I shared observations about students’ responses to Dig Deep to inform our next steps and iterations of the strategy.

**Facilitator Guides**

I created facilitator guides for each meeting, which included documentation of the agenda, decisions for including each agenda item, and facilitation prompts and questions. Prior to each meeting, I met with Bill Penuel to reflect on the previous meeting and he advised me on the agenda for the next meeting. We used my observations and themes that arose in the previous meeting to inform the direction of the next meeting and craft the agenda. The facilitator guides proved valuable in reconstructing the purpose for meeting activities, along with what occurred at each meeting.

**Teacher Interviews**

I conducted a pre-interview and a post-interview with each teacher. Interviews lasted between 30-45 minutes each. I conducted a pre-project interview prior to our initial design team meeting in early February. The purpose of the interview was to understand each teacher’s familiarity and experience with responsive teaching, their overall experiences with the COW curriculum, and their perspectives on and experiences of professional development. I conducted a post-project interview in May after our final design team meeting. The purpose of this interview was to surface teachers’ perceptions about their participation in the co-design project, to learn about how teachers’ ideas about their relationships with students changed, and to understand what teachers believed they learned from working with the group. In order to conduct both interviews, I followed an interview protocol (see Appendix K for the interview protocol).
**Student Interviews**

I conducted interviews with three to four students in Rachel’s, Jane’s, and Elaine’s classes, for a total of eleven interviews. I conducted these interviews at the end of the semester, to learn more about students’ perceptions of Dig Deep, their relationships with their teachers, and their feelings about the class. The students I interviewed were case study students for the larger Compose Our World study. Teachers recommended students to the COW team for the case study, and were meant to represent a diverse range of students in each teacher’s class (e.g., students really engaged, students who may have struggled a bit, students not yet used to success in school). As part of the larger study I interviewed students, and with permission from teachers and the COW research team, I asked the students additional questions related my study. I used an interview protocol that was co-created with the teachers, who were interested in learning more about patterns from the students’ surveys (see Appendix L for the interview protocol).

**Compose Our World Data Sources**

Occasionally, I also used Compose Our World data sources, as they were relevant to my study. For instance, as part of the larger project, teachers completed bi-weekly reflections about the implementation of the COW projects and design principles. Certain prompts on the reflections connected directly to the focus of our design work, including “How are you feeling about your classroom community?” and “Are there habits and routines you have been focusing on? Please explain.” On several occasions during the semester, teachers referenced our shared design work in response to these questions, and when applicable I used their responses to better understand my data and teachers’ experiences in their classrooms and with Dig Deep.
Data Analysis

In order to analyze teacher learning, I used my conceptual framework as a guide. I analyzed both the co-created data sources and independent data sources, including data collected from interviews, our design team meetings, classroom observations, and teacher created artifacts. While the design team analyzed data from the practical measures collectively during the study phase of the design cycle, in order to answer my research questions I analyzed the other data sources independently. I began data analysis early, while simultaneously collecting data, so that data analysis was an ongoing and emergent process (Miles & Huberman, 1994). This allowed me to identify early patterns in the data and collect additional data to test hypothesis that emerge from analysis or to fill in any gaps that have been revealed through the analysis (Miles & Huberman, 1994). For example, I became interested in understanding students’ responses on the survey, and wanted to gather qualitative data to better interpret their responses and understand patterns in the data. This aligned with teachers’ emergent interest in learning more about their students’ responses and together we decided that I should interview students. Ongoing analysis also allowed me to adjust the design meetings, including the agendas and participant structures as needed. For example, after reflecting on our fourth meeting in which we examined student survey data, I noticed that teachers’ conversation focused more on their observations and experiences implementing the routine, rather than on their data patterns. I wondered if this was because I structured the meeting agenda to begin with a debrief of teachers’ implementation of the routine, and then we looked at the data results. Due to conclusions I drew from this early analysis, I adjusted the agenda for the next meeting, so that the group analyzed the data first and then debriefed the implementation. My purpose for rearranging the agenda was to privilege group data analysis and to encourage conversation about what teachers saw in the data, so that
they could then draw on their observations of the opening routine. Ongoing data analysis provided opportunities for me to reflect on the design work and to make revisions throughout the semester.

**Process of Data Analysis – First Steps**

My initial data analysis steps occurred prior to the refinement of my conceptual framework and research questions. The first steps of data analysis described in this section were instrumental for determining the focus of the findings chapters, and for refining the framework and research questions. After I describe the initial data steps, I then describe in detail how I approached data analysis for each chapter.

In order to organize the data collection and analysis, I updated a data accounting log in an Excel spreadsheet throughout the semester (see Appendix M for a screenshot of the data accounting log). This allowed me to keep track of the kinds of data I collected, when I collected it, and who created it (Miles, Huberman, & Saldaña, 2014). This was a first step to organizing the data for analysis.

I entered data into Dedoose for coding and initially coded the data using inductive and deductive coding procedures (Miles, Huberman, & Saldaña, 2014). Inductive coding allowed me to remain open to new codes that emerged from the data, while deductive coding allowed me to draw on key aspects of my conceptual framework, the research literature, and my research questions during data analysis. I began deductive coding with a list of codes generated from my initial conceptual framework, research literature, and my research questions (see Appendix N for initial deductive codebook). Throughout the coding process, I developed a codebook that included each code, its definition, and an example from the data. This not only allowed me to keep track of codes, but also assisted me in the process of second-cycle coding. Following the
guidance of Miles, Huberman, and Saldaña (2014), I completed first-cycle coding and then I conducted second-cycle coding by looking for relationships between codes and organizing the codes into categories. In second cycle coding, I looked for categories that emerged and wrote memos to try out some ideas.

Throughout the coding process, I wrote memos as I reflected on the data, noticed patterns, and formulated ideas. This allowed me to continue analysis and capture my thoughts. Memos were also useful for combining pieces of data into a “recognizable cluster” (Miles, Huberman, & Saldaña, 2014, p. 96). I wrote memos on variety of topics, based upon the patterns developing during ongoing data analysis, including teacher learning on building relationships with students, teachers’ dilemmas, emergent ideas for revisions to conjecture map, emergent codes and relationships between codes, key themes from post-project interviews, teacher learning throughout the project, and early responses to research questions.

**Addressing Research Questions and Analyzing Data for Each Findings Chapter**

After I coded the data and wrote memos, I paused to reflect on key themes that emerged and began to formulate topics for my three findings chapters. I used Dedoose to determine critical data segments, such as those segments to which I applied multiple codes. I started brainstorming topics for the chapters, guided by the coding in Dedoose. I talked with colleagues and advisors about the possible topics for chapters and looked back again at the data to confirm that the topics were supported by the data. Emergent ideas for chapters included a chapter to detail the design team’s efforts and decisions, a chapter focused on how teachers made sense of the student survey data, and a case study chapter about Jane’s participation in the design team work. I moved forward with each of the three ideas. I oscillated between reading relevant literature, sharpening my conceptual framework, refining my codes, and re-coding the data. The
research and conceptual frameworks that ended up shaping and informing the next round of data analysis are presented in Chapter Two. Because the topics for each chapter were distinct from one another, I ended up with somewhat distinct conceptual emphases and processes for data analysis. As part of the analysis for each chapter, I created data displays and wrote reconstructions. Because these steps were similar for each chapter, I describe this step below, as it pertains to all three chapters. Then, I describe the specific data analysis I engaged in for each chapter.

**Data displays & reconstructions for all three findings chapters.** In addition to coding and writing memos, I also engaged in analysis through the creation of data displays. I created displays after coding the data and writing several memos. Displaying the data was a useful strategy for analysis, as it challenged me to think about the data in new ways and convey key themes in the data to others. Data displays were also helpful for drawing conclusions, recognizing themes, comparing, and contrasting. After creating data displays, I checked them against my fieldnotes to ensure that what was displayed aligned with what actually occurred and to follow up on results. I also triangulated the data, to ensure that what was displayed represented patterns drawn from multiple kinds of data sources (Miles, Huberman, & Saldaña, 2014).

Creating data displays required tacking back and forth between the display and the data in order to refine the display and continue to develop conclusions. This also helped address issues of validity, as Eisenhart (2006) reminds, “the validity of any research study depends on the trustworthiness of the representations that depict it; thus, worries about representations never go away” (p. 568). It was therefore necessary to carefully attend to the ways in which the data was displayed and represented and continue to check the representations against multiple data points. For example, after coding teachers’ talk about student survey data, I created a display of the talk
episodes, key themes, and number of minutes we talked about the survey data. I checked the
display against audio transcripts to revise and refine the matrix. In doing so, I adjusted some of
the key themes, as well as episode names to make it more descriptive. Rather than include the
time we spent talking about the data, I added the number of talk turns for each episode to provide
a better sense of the salience of the topic for teachers. After I completed this matrix (see Table
5.4, for example, in Chapter Five), I reviewed other data sources, including teachers’ individual
student survey data to get a better sense of the data teachers were looking at during each episode
of talk.

As part of my analytic process, I also wrote reconstructions (Carspecken, 1996) in order
to “articulate components of meaning that one normally understands without explicit awareness”
(p. 11). First, I selected an interesting or compelling segment of data, such as a turning point or
illustrative example. Next, I examined the segment line-by-line and noted the meanings that
various people might infer from each line that could inform the interactions observed. I began
process with data from the transcripts of audio recordings of meetings. This was the most useful
place to start reconstructions because it allowed me to notice and consider interactions from
meetings that I did not notice while facilitating the meeting or that I did not attend to in my notes
written after the meeting. Reconstruction analysis with segments of transcripts from the audio
recordings of meetings provided an opportunity, for instance, for me to analyze dilemmas.
Completing reconstruction analysis with segments of data that represented critical moments
helped me to consider all of the possible meanings embedded within the segment of data and
consider alternative or underlying meanings in the data.
Chapter Four – Design Decisions: Developing the Dig Deep Routine. In Chapter Four, I detail the design decisions (Penuel, Confrey, Maloney, & Rupp, 2014) the team made and describe the basis for iterations of the design. I investigate the following research questions:

- How and why did the design evolve over time?
- Did teachers demonstrate agency within the co-design process? If so, how?
- How did teachers grapple with dilemmas within the co-design process?

**Specifying design decisions.** In order to specify design decisions, I adapted the criteria for design decisions outlined by Penuel, Confrey, and colleagues (2014). By definition, design decisions must impact the work of the group. In order to be coded as a design decision, the decision must result in an addition to or change in the design or a reaffirmation of an element of the design. And, all team members must deliberate about the design decision and the group must reach some settlement, in which people either agreed to take action or moved on in a way that implied the issue related to the decision had been settled. Settling, for example, occurred when the group decided to develop prompts as part of the routine. Rather than reach a formal consensus or vote, one teacher suggested the idea and then group members began to fill in details and brainstorm prompts. I applied the criteria to my coding to specify what constituted a design decision.

**Specifying dilemmas.** I use the concept of dilemmas to identify and explore tensions experienced and discussed by the teachers. Research literature has focused on teaching dilemmas, including: identifying the kinds of dilemmas teachers face (e.g., Pillen, Beijaard, & den Brok, 2013); ethical dilemmas in teaching (e.g., Shapira-Lishchinsky, 2011); dilemmas as related to beliefs and identity (e.g., Enyedy, Goldberg, & Muir, 2006); and positive and negative approaches to teaching uncertainties (e.g., Helsing, 2007). Furthermore, scholars have employed
similar concepts in various literatures to explore challenges and choices that teachers must make (e.g., contradiction in CHAT: Engeström & Sannino, 2010; Sannino, 2010; paradox in spiritual literature: Liston, 2004; Palmer, 1980, and tensions in design research: Penuel, Roschelle, & Shechtman, 2007; Tatar, 2007). I use the term dilemma to signal a situation that often has two or more choices, none of which provides a clear or obvious solution. Teaching dilemmas are “conflicts in which there are multiple, equally viable and often unattractive alternatives” (Enyedy, Goldberg, & Muir, 2006, p. 5).

A strand of the research literature on teaching dilemmas has a tendency to focus on teachers’ “management” of dilemmas, suggesting they are to be solved, resolved, or contained by the teacher and many times done so individually (Cuban, 1992; Geddis & Wood, 1997). However, dilemmas can also be understood as productive catalysts for change and growth. Dilemmas need not be solved to be useful for teacher learning, but rather it is the process of acknowledging, reflecting on, and processing dilemmas that creates potential for growth and opportunities for learning (Cochran-Smith & Lytle, 1999; Roblin & Margalef, 2013). The research also examines the emotions that teachers experience related to their dilemmas (e.g., Aultman, Williams-Johnson, & Schutz, 2009; Helsing, 2007; Shapira-Lishchinsky, 2011). For instance, Helsing (2007) summarizes the different stances toward uncertainties and dilemmas within the research literature. On one hand, Helsing argues, that the literature suggests that teachers may feel negative emotions when they “perceive that they may fall short of their own standards of practice; they are uncertain about how to achieve those standards and uncertain about their abilities to be effective teachers” (p. 1321). On the other hand, teachers may also associate positive emotions with a dilemma when they have considered both sides to “find a
course of action that enables them to welcome and even thrive in the face of conflicting commitments” (Helsing, 2007, p.1324).

During the design process, teachers identified, raised, and discussed challenges or dilemmas. In order to understand how the dilemmas impacted the design work, I analyzed the data looking for dilemmas. During the coding process, two types of dilemmas emerged, individual and shared, and I therefore refined my coding scheme to include these two categories. To distinguish between dilemmas shared by all teachers in the group and teachers’ individual dilemmas, I coded for shared dilemmas and individual dilemmas. For a shared dilemma to be coded as such, at least two teachers must have identified or agreed with the challenge or situation raised, and the group must have discussed more than one choice, even if done so implicitly (e.g., Teachers discussed whether to sit with one group of students during the share time, thus missing out on what the other groups were talking about. The implied alternative was to not sit with one group during this time.). A choice might not have been entirely new, but might have included continuing to follow a particular direction (e.g., Teachers decided to continue to sit with one group of students during sharing time).

I also coded for individual dilemmas to capture challenges or situations raised by a teacher unique to her classroom or teaching experience. At various junctures, teachers raised difficulties related to implementation of the Dig Deep routine or to their teaching practice, a classic dilemma in Engeström’s (2011) framework in which a new intervention often leads to a new dilemma (e.g., “It’s hard to find the time to get to know 30 students in one class”; “I feel ‘stuck’ about how to handle this situation.”). In analyzing the data, individual dilemmas appeared important as the group often discussed someone’s individual dilemma and at times these
individual dilemmas informed design decisions (in Chapter Six, I also identify and analyze Jane’s individual dilemmas).

**Coding for deliberative agency.** I examined the ways our group engaged in deliberative moves towards imaginative flexibility as indicators of agency. I used the six forms of deliberation to understand when and how teachers demonstrated agency through the design process; I looked for evidence that teachers demonstrated agency through the six types of deliberative moves. The six forms of deliberative agency include: 1) resisting, 2) criticizing, 3) explicating, 4) envisioning, 5) committing to actions, and 6) reporting on actions (see Chapter Two for a description of each). The deliberative moves, which were often initiated by an individual, may (or may not) have been taken up by the group, but were always embedded within temporal and relational contexts. Agency therefore was manifest when the teachers drew upon past resources to imagine a new future.

Because my focus in this chapter was on the design decisions made within our meetings, it was beyond the scope of my analysis to examine observational data about how teachers acted within their classrooms. However, teachers made instances of agency within their classrooms visible when they brought these initiatives into the group meetings for discussion. I do not wish to obscure the fact that teachers exercised agency throughout the semester in their enactment of Dig Deep, and I recognize and value such actions. However, agency in this study is only identified within the context of our discussions, and it is construed as and evidenced through deliberative moves.

**What agency is not.** Not every action was coded as agency. In order for an action to be coded as agency, it needed to be future-oriented and a deliberative move. For an instance to count as criticizing as a form of deliberative agency, for example, a teacher must critique the
current activity with an eye toward changing it in the future. This occurred when Elaine critiqued her previous check-in routine with students and oriented toward improving it:

I don’t ever want to force kids to share during that time. I see that same thing, same kids telling us we have a basketball game. To me, one of the beauties of [the check-in] is no one has to share. So where’s that balance of encouraging and gaining lots of voices, but not making a kid necessarily share if they don’t want to. (Meeting transcript_03.15.17)

In this example, Elaine drew on the past resources of her previous check-in routine and her students to criticize it and begin to imagine a new possibility of encouraging more students to share without requiring it. There were also instances where we made small changes, but teachers or the group did not demonstrate one of the six forms of deliberation. In our fifth meeting, for example, I asked teachers if I could interview some of their students about the Dig Deep routine. Teachers embraced this idea and even started to brainstorm interview questions I could ask their students. Teachers took ownership over the student interview questions but did not demonstrate any of the six forms of deliberation. Likewise, writing student interview questions did not represent breaking away from their old ways of doing things; it did not transform an activity.

Conjecture mapping as an analytic tool. Chapter Four draws on the conjecture mapping work by Sandoval (2014) and Wilkerson (2017). Sandoval first proposed using conjecture maps to state design and theoretical conjectures about learning in advance of the design to test and refine the conjectures throughout the design work. According to Sandoval (2014), the conjecture map should “reflect a research team’s commitment to what it sees as the most important design problem to be solved and it’s initial ideas of the important questions to ask and the ‘varying degrees of uncertainty’ about those questions” (p. 21). More recently, Wilkerson (2017) employed conjecture mapping as an analytic technique to study the influence of different
participant groups on the design of a toolkit to support students in computational modeling. Building on the work of Wilkerson (2017), I utilized conjecture mapping as an analytic tool to provide a robust depiction of the iterations of the design and the basis for them. Using conjecture mapping as an analytic tool allowed me to trace design iterations and analyze patterns across iterations. Through presenting a series of conjecture maps, I represented the changes we made to the design and articulate design decisions to explore research question 1: How and why did the design evolve over time?

Creating conjecture maps through data analysis. Creating the conjecture maps to retrospectively represent each phase of the design process involved multiple steps. First, I determined which data sources collected would be relevant to identifying design decisions and the design process. Then, I divided the design work up into phases. I identified boundaries for each phase, using the design meetings as a guide (see Table 3.4). The first phase included data from the first and the second meeting, as well as data gathered between meetings and before the third meeting, such as the Student Survey Items by Construct document and the first draft of the Design Overview document. Data from both meetings were included in Phase 1 because the first meeting laid the foundation for our design work, but we did not start designing until the second meeting. Phase 2 included data from the third meeting, which captured teachers’ descriptions of their early implementation of the Dig Deep routine. Phases 3 and 4 included data from the fourth meeting and fifth meeting, respectively, including teachers’ descriptions of their implementation of the Dig Deep routine, group conversations analyzing the first and second round of practical measure data, and revisions to the routine. Phase 5 included data from our final meeting in which the group analyzed the third round of practical measure data and then made final revisions to the Dig Deep strategy. A conjecture map represents each phase.
Table 3.4

*Data Sources Connected to Conjecture Maps*

<table>
<thead>
<tr>
<th>Map</th>
<th>Data Sources</th>
</tr>
</thead>
</table>
| #1 (Initial) | • Meeting 1 transcript, 02.27.17  
|           | • Meeting 1 fieldnotes, 02.27.17  
|           | • Design team shared meeting 1 notes, 02.27.17  
|           | • Facilitator’s guide for meeting 1, 02.27.17  
|           | • Design team shared meeting 2 notes, 03.15.17  
|           | • Meeting 2 transcript, 03.15.17  
|           | • Meeting 2 fieldnotes, 03.15.17  
|           | • Facilitator’s guide for meeting 2, 03.15.17  
|           | • Artifacts: Practical Measures Item Chart, list of possible prompts,  
|           |   Student Survey Items by Construct, Design Overview document draft 1  |
| #2        | • Meeting 3 transcript, 04.12.17  
|           | • Meeting 3 fieldnotes, 04.12.17  
|           | • Design team shared meeting 3 notes, 04.12.17  
|           | • Facilitator’s guide for meeting 3, 04.12.17  
|           | • Artifacts: menu of modes for sharing, teachers’ slides, practical  
|           |   measure, Design Overview document draft 2  |
| #3        | • Meeting 4 transcript, 04.25.17  
|           | • Meeting 4 fieldnotes, 04.25.17  
|           | • Design team shared meeting 4 notes, 04.25.17  
|           | • Facilitator’s guide for meeting 4, 04.25.17  
|           | • Artifacts: practical measure, practical measure data round 1  |
| #4        | • Meeting 5 transcript, 05.08.17  
|           | • Meeting 5 fieldnotes, 05.08.17  
|           | • Design team shared meeting 5 notes, 05.08.17  
|           | • Facilitator’s guide for meeting 5  
|           | • Artifacts: Practical Measure Revision Chart, practical measure,  
|           |   practical measure data round 2, interview questions for students  |
| #5 (Final)| • Meeting 6 transcript, 05.25.17  
|           | • Meeting 6 fieldnotes, 05.25.17  
|           | • Design team shared meeting 6 notes, 05.25.17  
|           | • Facilitator’s guide for meeting 6, 05.25.17  
|           | • Artifacts: Change Package Revision Chart, practical measure,  
|           |   practical measure data round 3  |

Then, I coded the data in each phase, one phase at a time. I applied codes to identify tools  
used, design decisions made, individual and shared dilemmas raised and discussed, and goals and
outcomes discussed and identified. I also applied codes for the six forms of deliberative moves as expressions of agency: resisting, criticizing, explicating, envisioning, committing to action, and reporting on action. Then I engaged in second-cycle coding to determine how and if these elements fit into the conjecture map. Finally, I created the conjecture map for one phase, and repeated the process until each map was complete. Following the completion of the conjecture maps, I returned to these codes to understand how they fit into the design story. Once the maps representing each design phase were complete, I analyzed the set of maps, identifying key dimensions of the evolution of the design and looking for patterns about what motivated design decisions.

Chapter Five – Teachers’ Talk About the Dig Deep Data. In Chapter Five, I analyze teachers’ talk about the student survey data to understand if and how looking at the data leads teachers to examining their pedagogical practice. I investigate the following research questions:

- What was the nature of teachers’ talk when looking at practical measure data?
- How did teachers’ talk when looking at students’ survey data afford or constrain opportunities to engage in investigations of pedagogical practice?

Teachers’ interpretations of data. Data analysis always involves interpretive processes as “data does not speak for itself” (Coburn & Turner, 2012a, p. 177). In their framework for understanding the phenomenon of data use, Coburn and Turner (2012a) explain, “new information is always understood through the lens of what we already know and believe” (p. 178). Thus as teachers examine and analyze data, they assimilate new data patterns into their pre-existing frameworks and beliefs. Teachers’ beliefs are revealed through their talk about the data. Erickson (1986) argues that interpretive approaches to research on teaching value the “meaning-perspectives of the particular actors in the particular events” and that these meaning-perspectives
are “intrinsic to the educational process” (p. 120). Throughout Chapter Five, I sought to value the perspectives of teachers as they examined their practical measure data and therefore privilege their interpretation of that data.

**Methods of analysis.** To analyze teachers’ talk within our design team discussions about practical measure data, I build on the work of Horn and Little (2010). In order to determine if conversation supported teacher learning, Horn and Little looked for evidence that teachers’ talk provided resources for “defining, elaborating, and reconceptualizing the problems that teachers encountered and for exposing or building principles of practice” (p. 190). In their study, Horn and Little examined patterns of talk, noticing how patterns turned teachers toward or away from the “object of collective attention,” or a “deeper investigation of teaching” (p. 192). In my analysis, I examine talk specifically as it relates to the student survey data to notice how teachers turned towards or away from the object of collective attention. Turning toward teaching is when the group responds to a problem identified by a teacher as a “starting point for detailed discussion of specific classroom instances” (p. 192). Turning away from teaching is when the group changes direction or responds briefly, without engaging in discussions of specific classroom instances or detailed advice.

The majority of research studies on educators’ data use rely heavily on interview and survey data; a paucity of research exists on the topic that draws on observational data (Little 2012). Little (2012) argues that “investigations of what teachers and others actually do under the broad banners of data use, evidence-based decision making, or evidence-based practice remain relatively underdeveloped” (p. 144). However, Little notes that the few studies that do draw on observational data show promise, as they have provided concrete accounts of the role of facilitator, traced the tools and resources used for looking at data, and revealed some norms of
interaction (Little, 2012). In responding to Little’s call for more research that relies on observational data over interview and survey data, I draw primarily on meeting transcripts to analyze teacher talk about practical measure data.

**Talk episodes.** Our group analyzed student survey data during each of our last three meetings. In order to analyze the group’s discussions about the data, I first divided the discussions into episodes. I defined an episode as a sequence of talk that began with someone identifying a pattern in the data, continuing with a discussion of that pattern, and ending with a change of topic, often the identification of a new pattern or pause in conversation, at which point I (as the facilitator) asked a new prompt. Therefore, episode boundaries were “determined by shifts in either topic or activity” (Horn, Kane, & Wilson, 2015, p. 220). Within each episode, a discussion about the data pattern could include teachers giving explanations about why students responded in a particular way, teachers wondering about why students responded in the way that they did, teachers reflecting on an aspect of their instruction or experience with students, and/or teachers talking about future instruction, all connected to the initial data pattern identified at the beginning of the episode.

**Discourse tools.** In extending Horn and Little (2010)’s framework, I analyzed teachers’ talk specifically about their student practical measure data; I also examined teachers’ conversations about student data to understand how teachers “define[ed], elaborate[ed], and reconceptualize[ed]” (p. 190) patterns in the data in ways that supported their learning. I used discourse tools described by Horn and Little including: normalizing, specifying, revising, linking, conjecturing, generalizing, and principled talk. I used these conceptual categories to deductively code the data to identify patterns in teacher talk. Normalizing occurred when

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5 I did not analyze episodes of talk from our conversations about the baseline data, which occurred during our third meeting, as I was interested in analyzing talk about data after teachers had implemented Dig Deep.
someone responded to a data pattern in a way that signaled the pattern or problem was a normal part of teaching, an expected result, or a shared result. Normalizing could take the form of agreement or a reassurance. **Specifying** occurred when someone added additional detail or analysis of the problem or pattern. Specifying occurred as the result of someone asking a clarifying question or someone offering more specific details about their teaching practice or about the pattern in the data. **Revising**, or “rough draft talk” (Horn & Little, 2010, p. 195) occurred when a teacher adjusted the problem or their understanding of the problem. Features of rough draft talk included pauses in talk, unfinished sentences, expression of uncertainty, or obvious revisions (Horn & Little, 2010). **Linking** occurred during a conversation about the data when a teacher connected their experience or data pattern to someone else’s experience. **Conjecturing** occurred when someone hypothesized, predicted behavior, or suggested potential possibilities or explanations for patterns in the data. **Generalizing** occurred when someone made a broad declaration or observation that was not actionable. Finally, when a teacher engaged in **principled talk**, she stated a teaching principle connecting an abstract idea to a concrete instance of practice, thus “generating theories of teaching rooted in vivid representations of teaching” (Horn & Little, 2010, p. 200).

**Coding.** I coded all instances in the three meeting transcripts in which we talked about the practical measure data, using the discourse tools described in the previous section: normalizing, specifying, revising, linking, conjecturing, generalizing, and principled talk. In addition to this list of conceptual tools identified by Horn and Little (2010), I also coded for when teachers identified a pattern in the practical measure data. Identifying a pattern in the data occurred when a teacher noticed a pattern in their data or in the group data. Examples of identifying patterns in data include when Elaine said, “I have a lot of kids who said that they agreed with, ‘Today I
worried about sharing something personal about my culture, background, or interest with other students’” (Meeting transcript_04.25.17) or when Jane noted, “There’s a big jump in people agreeing that the opening class routine made them feel like they mattered” (Meeting transcript_05.25.17).

As part of the improvement science work, we not only designed an instructional strategy to test in the classroom, but we also designed the practical measure we used to collect data about the strategy. In coding the data, I noticed our conversations about the student survey data at times led the group to revise the practical measure, while at other times led the group to reflect on and discuss pedagogical practice. Our conversations about practical measure data often had more than one “object of attention,” the practical measure tool and pedagogical practice. I then engaged in a second cycle of coding to identify instances when teachers turned away from or turned toward talking about their pedagogical practice or the practical measure. I used Horn and Little (2010)’s definition of turning towards teaching as the “staring point for detailed discussion of specific classroom instances” (p. 192). Turning away from teaching was defined as when the group changed direction or responded briefly, without engaging in specific classroom instances or advice. Guided by these definitions, I defined turning toward the practical measure as the starting point for discussion of the practical measure and typically this occurred as talk about the student survey items. Turning away from the practical measure was when the survey was raised for discussion but the group changed direction or responded briefly.

I did not predetermine the number of talk turns required for a discussion to count as turning toward pedagogical practice or the practical measure. As long as there was at least one response to the initial noticing or identification of a data pattern, it had the potential to be coded as turning toward one of the objects of attention. In one instance, for example, an episode was
coded as turning toward pedagogical practice with just two talk turns (listed in Table 5.6: Meeting 5 Episode Overview). In the “Made some progress” episode Rachel identified a pattern by referencing Jane’s statement in a previous episode regarding the item, “Today I can see how sharing something about myself during the opening routine was connected to something we did later in class,” and she made a conjecture about the reason for the pattern. Rachel stated:

Well I feel like what Jane said, if you look at the group data, like sharing something was connected to something that we did later in class, it feels like we definitely made some progress and I think that was something that we were all intentionally maybe trying to do a bit more. (Meeting transcript_05.08.17)

Jane replied by providing more specifics about her pedagogical practice and linked back to Rachel’s conjecture by agreeing with her:

Yeah. I was picking my prompts more carefully to ... like today’s was motivation like what motivates you, and then after share-out I said, we kind of talked about how this time of the school year, they gotta dig deep for that sometimes and how important it is to like try to figure out where the sources of that motivation is, especially when they’re taking on something that might be kind of daunting like what we’re about to do. So I guess I’ve been more intentional about that. (Meeting transcript_05.08.17)

While there were only two turns of talk in this episode, Jane responded to Rachel’s noticing of the data and revealed specific details of her pedagogical practice, therefore it was coded as turning toward pedagogical practice.

My interest in Chapter Five was on understanding the discussions we had about practical measure data, so I focused on whether or not identifying patterns in the data supported teachers in turning toward deeper investigations of their pedagogical practice. Because discussions are a
shared endeavor, I understand talk that turns toward or away from pedagogical practice or the practical measure as the responsibility of the entire group. Therefore, I avoided assigning responsibility for the direction of a conversation to one teacher, but rather aimed to understand how the patterns of our discussions turned teachers’ attention toward or away from the objects of attention. I set out to understand the nature of teachers’ talk when looking at practical measure data and how teachers’ talk when looking at students’ data afford or constrain opportunities to engage in investigations of pedagogical practice.

**Chapter Six – The Emotional Experience of Design Work.** In Chapter Six, I explore the emotional dimensions of design work through a case study of Jane. I chose to focus on a case study of Jane because I was interested in understanding a teacher’s experience within a design team focused on improvement science cycles. As I facilitated our meetings and studied our process, I became curious about the various ways in which teachers participated in the design team.

I investigate the following research questions:

- How did one teacher grapple with dilemmas within the co-design process?
- What was the emotional experience of participation within an improvement science study?
- What did one teacher’s caring for students reveal about the emotional dimensions of participation in improvement science?

**Natural history of inquiry.** At the onset of this study, I did not envision writing a case study. Rather, this chapter evolved through a “natural history of inquiry” (Erickson, 1986, p. 152). As a member of the Compose Our World research team, I began observing Jane’s classroom in August 2016. Jane’s class was one of several at the school I observed regularly that
year. I worked to establish rapport with Jane by frequently, but briefly, stopping into her classroom during planning periods to say “hello.” Over time, we began meeting after her class to navigate the COW curriculum, plan future lessons, and brainstorm ideas. Later that semester, Jane volunteered to be a part of my dissertation study, and as a result we spent more time together in the spring of 2017. Jane is an example of a teacher who cared deeply about her teaching and her classroom community, wanted to improve her practice, and recognized that she had particular teaching challenges with developing her classroom community. Personally, I found myself drawn to Jane. As a former classroom teacher, I could relate to many of the emotions Jane expressed during the semester (e.g., feelings of care, frustration, stress, overwhelm, happiness, worry, and passion). However, it was not until I began to systemically review and code the data that I realized I had become interested in Jane’s journey as a focal point for analysis within the broader arc of my study focused on teachers’ learning and experiences within the co-design process. Often, quotes from Jane seemed to leap from the page as I read and re-read transcripts of meetings and interviews. I continued to analyze the data, attending to Jane’s participation and realized that she relied on the design team for more than its intended purpose of designing, implementing, and studying a teaching strategy. I followed my curiosity and the themes in the data to find out what made her participation different and meaningful. As Chapter Five indicates, Jane brought a different orientation to discussions when looking at the data than did her colleagues; she sought to understand students’ feelings and how her teaching impacted her students, and she understood that improving both her relationships with students and the data was within her purview. And by the end of the semester, Jane demonstrated the most growth on her student data. Intrigued for these reasons, I opted to focus the case study on Jane to more fully understand her experience within the design team and to share her story.
**Case study format.** I employ a case study format in order to present “thick descriptions” (Geertz, 1973) of one teacher and provide a micro-level understanding of her experiences within the design team. Liston (2000) called for more descriptions of teachers’ experiences in order to better understand teaching’s terrain: “Affectively suffused and cognitively rich depictions are needed in order to evoke and understand these facets of teaching. Such depictions will, I hope, lead us to a more general understanding of teaching’s terrain” (p. 83). Through this case study of Jane, I set out to respond to Liston’s call and provide a description that is affectively suffused and cognitively rich.

**Methods of analysis.** I drew on a variety of data sources to develop the case study of Jane, including meeting transcripts, meeting fieldnotes, classroom observation fieldnotes, and interview transcripts. Guided by my research question, “How did teachers grapple with dilemmas within the co-design process?” I first analyzed the data sources looking for instances when Jane identified and described dilemmas. Jane raised three dilemmas specific to her context: developing a positive classroom community while negotiating her co-teacher’s conflicting philosophies of classroom management with her co-teacher, navigating competing approaches to teaching language arts while preparing students for future endeavors, and building relationships with her students while attending to her own well-being. Upon further review of the dilemmas, I noticed that Jane conveyed her emotional experience with each dilemma. I explored the literature on caring, including the components of caring and caring dilemmas described in the Conceptual Framework in Chapter Two, because I realized that Jane’s dilemmas were centered on caring for her students and the emotions she experienced related to this caring. I returned to the data to code the dilemmas again, deductively, this time looking for examples of the components of care Jane engaged in, including *modeling, dialogue, and practice* (as described in Chapter Two; Noddings,
1998, 2010). For example, when Jane talked about setting an example for her students and showed through her actions what it means to care, I coded this as an instance of *modeling*. When Jane described learning about students’ needs from students, either through talking or writing, I coded this as an instance of *dialogue*. When Jane described structuring opportunities for students to care for one another, I coded this as an instance of *practice*. Related to Jane’s caring, I also coded for instances when she described being attentive to students’ needs, such as when she asked students what they needed or when she listened to students’ stories. I used inductive coding to code for instances when Jane articulated or expressed her emotions related to the dilemmas or to her caring, such as when she said “I feel anxious.” I coded this example as *expressed emotion – anxiety*. Other emotions that were inductively coded along with *expressed emotion* included *satisfaction, hope, frustration, worry*, and *stress*.

**Validity**

To address issues of validity, I draw on Maxwell’s (2012) typology of validity categories, including descriptive validity, interpretive validity, and theoretical validity. Descriptive validity refers to the extent to which the accounts of what happened provided in the findings are accurate. Descriptive validity is strengthened through member checks, when participants in the study can agree about what happened and accounts “can be obtained, evaluated, and justified only my means of qualitative data” (Eisenhart, 2005, p. 252). In order to address possible threats to descriptive validity, I collected a variety of qualitative data including interview recordings, meeting notes, and fieldnotes and triangulated the data in an effort to write “good descriptions” fundamental for the validity of claims (Eisenhart, 2005).

Interpretive validity is concerned with “what [the] objects, events, and behaviors mean to the people engaged in and with them” (12, 2005, p. 137). The researcher’s goal is to understand
events from the perspective of the participants, rather than solely from the researcher’s perspective. In order to address interpretive validity, as much as possible I used concepts and terms used by the teachers in the study as well as their own language for describing events. For instance, in Chapter Five, when analyzing teachers’ talk about the data, I privileged their interpretation of the student survey data over my own. Additionally, I conducted member checks with Rachel, Elaine, and Jane through structured interviews (Erickson, 1986). I prepared interview questions to check the validity of key claims from each chapter. I also asked teachers to respond to key claims by sharing relevant data matrices from my analysis. I asked Rachel and Elaine similar questions. I posed a different set of questions to Jane because she was the subject of a case study, and I therefore had slightly different claims to check with her (see Appendix N for the member check protocols for each teacher).

Theoretical validity “refers to an account’s validity as a theory of some phenomenon” (Maxwell, 2012, p. 140). Maxwell (2012) explains that theoretical validity depends upon consensus in the relevant research field. Therefore, to attend to theoretical validity, I compared my analyses with my conceptual framework in order to consider alternative, plausible explanations (Erickson, 1986).

Validity is strengthened when the researcher can show how patterns link together in significant ways (Erickson, 1986). I conducted ongoing data analysis and repeatedly reviewed the data to check claims and assertions and look for disconfirming evidence and counter-examples (Erickson, 1986). For instance, in Chapter Five, I not only looked for instances when teachers turned toward their pedagogical practice, but I also looked for instances when they turned away from their pedagogical practice. This allowed me to better understand the nature of their talk, and to notice that teacher talk, at times, turned towards other objects, such as the
student survey. Rather than dismiss examples of disconfirming evidence, I incorporated it into my findings. To establish and test patterns in the data, I also triangulated the data to establish patterns using multiple data sources rather than rely solely on one data source in an effort to strengthen my claims. Triangulating the data also assisted me in searching for and recognizing disconfirming evidence and alternative explanations (Mathison, 1988).

In order to address a potential threat to validity, it was necessary to consider my role as a researcher in this study as it influenced the ways in which I collected and interpreted data and interacted with the participants (Miles, Huberman & Saldaña, 2014). Maxwell (2012) identifies two key issues to attend to in regards to the researcher’s role: subjectivity and research relationships. By subjectivity, Maxwell (2012) means that researchers must “take account of the actual beliefs, values, and dispositions they bring to the study, which can serve as valuable resources, as well as possible sources of distortion or lack of comprehension” (p. 97). In order to surface these notions, Maxwell (2012) recommends writing a “researcher identity memo” as a form of reflection to “‘bracket’ one’s experiences and perspectives, seeing them more clearly and thus being better able to see past them, and partly to recognize the insights and conceptual resources that these experiences and perspectives provide” (p. 99). Maxwell (2012) suggests returning to the researcher identity memo throughout the data collection and analysis. I thus followed Maxwell’s guidance and drafted a researcher identity memo. I revisited it periodically throughout my study to remain aware of my own perspectives.

Maxwell (2012) also argues for the importance of attending to research relationships, cautioning against narrowing or flattening relationships with participants by talking about relationships in terms of entry, access, or rapport. Rather, Maxwell (2012) argues that relationships between the researcher and participants must be seen as “real, complex process that
have profound, and often unanticipated, consequences for the research” (p. 100) and he likewise argues for attending to the changing nature of relationships over time. This was particularly relevant to this study in which our group focused on improving teacher-student relationships, while simultaneously we developed relationships with one another. The nature of our group’s changing relationships over time was at the forefront of my mind throughout the study and throughout the data analysis, and it informed in particular, ideas in Chapters 5 and 6. I also worked to understand and write about our relationships within the team, and my role, as complex and constantly evolving.

**Roadmap**

The next three chapters include the findings from this study. Chapter Four, *Design decisions: Developing the Dig Deep routine* details the design decisions the team made, along with the evolution of the Dig Deep routine. This chapter also focuses teachers’ deliberations as we designed Dig Deep, as expressions of their agency throughout the process. Chapter Five, *Teachers’ talk about the Dig Deep data*, examines the nature of teachers’ talk about student survey data and how teachers turned towards or away from deeper investigations of their pedagogical practice. Chapter Six, *The emotional experience of design work: “We can both see each other as people,”* presents a case study of Jane and explores her dilemmas of caring for students. The chapter traces Jane’s experience with co-design and makes the case that this work was, at times, emotionally challenging.
Overview of the Design

In our initial design meetings, the team agreed upon a broad, shared problem of practice: engaging all students in the Compose Our World curriculum. Teachers expressed interest in increasing student engagement through their interactions with students, and we decided to focus our efforts on building meaningful relationships with students. As a result of our discussions, the team worked on designing a routine to develop relationships with students as a change strategy, and in doing so worked to create caring classrooms. The routine built upon the notion of cultural probes, “collections of evocative tasks meant to elicit inspirational responses from people” (Wyeth & Diercke, 2006, p.1). We called our strategy “Dig Deep,” and as part of the routine, students responded to a prompt and shared their response with at least one other person. The prompts were intended to encourage play and exploration and evoke inspirational responses (Gaver, Boucher, Pennington, & Walker, 2004). The Dig Deep routine included teachers – and in some cases students – posing prompts. Students had time to reflect on and respond to the prompts, then share their responses in small groups and with the whole class. As students shared their responses, teachers sat with one targeted group of students to get to know them better. As part of the strategy, teachers also shared their responses to the prompt with students. We had a number of goals for the Dig Deep strategy, including to: 1) improve relationships with all students in the class, in particular students who teachers struggled to engage or did not know well, 2) provide an opportunity for all students to share about themselves - their culture, background, interests, home, family, etc., 3) expand on the kinds of topics students shared in class, and 4) connect Dig Deep to the project or lesson for the day.
**Purpose Statement**

Design research depends upon a series of interrelated decisions, which include decisions related to the design process, the problem analysis, and the design solution (Edelson, 2002), and this study was no different. The purpose of this chapter is to detail the design decisions (Penuel, Confrey, et al., 2014) the team made and to describe the basis for iterations of the design, and in doing so I aim to tell our group’s design story. This design case (Edelson, 2002) is constructed from systematic documentation of the work in order to report on the design process through the use of evolving conjecture maps (Sandoval, 2014; Wilkerson, 2017). This study seeks to add to the literature on design decisions in which researchers and practitioners are working together to design innovations, of which there is a small but growing body of work (Ormel, Roblin, McKenney, Voogt, & Pieters, 2012). In addition, this chapter seeks to understand the ways in which teachers demonstrated agency through the co-design process in order to design a teaching strategy to improve their relationships with students and creating caring classrooms.

**Research Questions**

In this chapter I explore the following research questions:

- How and why did the design evolve over time?
- Did teachers demonstrate agency within the co-design process? If so, how?
- How did teachers grapple with dilemmas?

**Design Decisions**

Key themes from the analysis indicated that design decisions were influenced by individual and shared dilemmas, teachers’ goals, and alignment to existing structures, standards, and practices, such as the Compose Our World curriculum, Common Core State Standards in English language arts, school goals and teachers’ instructional practices. In addition, teachers
engaged in all six forms of deliberation as expressions of agency throughout the design process as they worked together to transform their old check-in routines into the new Dig Deep routine, indicating that teachers engaged in expansive learning. Themes are highlighted and discussed within the context of each individual design decision as I elaborate each conjecture map. Additionally, themes are synthesized across conjecture maps within the Discussion section.

In this section I identify key design decisions our group made in developing the Dig Deep strategy. I sought to understand what motivated our group’s decisions and this included instances when the group articulated, surfaced, and confronted dilemmas. Grappling with dilemmas encourages active engagement and multiple perspectives to emerge and can act as a catalyst for teachers’ deliberations as expressions of agency, which in turn can lead to learning through creating a new form of activity. I present the design work chronologically in five phases, with a conjecture map representing each phase (see Table 3.4 for the data sources that contributed to each phase and map). I begin each phase with an overview of the design team meeting in that phase and then present the design decisions, if any, made in that phase. Within each section describing the design decisions, I name the decision, explain how the decision was made, and identify factors that influenced the decision. I conclude the description of each phase by explaining key features of the accompanying conjecture map. Some phases, such as Phases 3 and 4, did not yield major design decisions. In this case, I provide an overview of the design team meeting and describe any updates to the conjecture map for this phase. In presenting the data in this way, I begin to answer the research questions by exploring how the design evolved over time, how teachers demonstrated agency at different points during the process through deliberative moves, and how they grappled with dilemmas.
Overview of the Conjecture Maps

The set of conjecture maps were created retrospectively, as part of the analysis. Each map builds on the previous map. The chapter includes five maps in total and represents the group’s evolving theory as well as the evolving design. The first map represents our initial thoughts and design, as well as the first time the teachers implemented the design in their classroom. The next three maps represent my conjectures at each of the three cycles of the design process, and take into consideration implementation as well as the group’s analysis of the practical measure data. The last map represents the final design of Dig Deep and my final conjectures. While each element on the map represents something that occurred or was used during the design process, some elements faded into the background. For example, we used the Fishbone and Driver Diagrams in our early meetings to negotiate the problem of practice and determine shared aims, but did not refer back to these tools in later meetings. We used the Fishbone Diagram as a way to brainstorm possible causes of student disengagement, and we used the Driver Diagram to identify the factors teachers felt they could influence in regards to student disengagement (see Appendix D for the Fishbone Diagram and Appendix E for the Driver Diagram). Elements of the design work that faded into the background from one phase of the design to the next appear visually faded on the conjecture maps. Elements that were added or revised from one phase of the design to the next appear in bold text on the conjecture maps.

Teacher Learning

By developing and implementing the Dig Deep strategy, teachers collectively committed to breaking away from the way they started class and how they thought about developing relationships with students, demonstrating agency through their deliberation. All teachers had different ways of beginning class with their students; teachers discussed their individual
enactments of Dig Deep and described how it was different from their old routines. Elaine and Jane had been using a daily check-in routine with students by asking them to share about events happening in their lives. Their check-in routine was a whole class exercise in which students typically shared about upcoming events, such as sports or band competitions. Rachel often began class with a greeting and an informal, brief check-in. During this time, she might ask the class how they were doing or she might talk individually with a few students. She would then quickly transition to reviewing the day’s agenda and reading a novel aloud to the class. The Dig Deep strategy we collaboratively designed replaced all three teachers’ previous opening routines. Through working together we transformed teachers existing opening routine into a new activity. In doing so, teachers also came to understand that building relationships with students took effort and intention, and was not something to be left to chance or haphazard attempts (Rachel_Int_05.23.17; Elaine_Int_05.25.17; Jane_Int_05.25.17). Through the process of design, teachers as a group demonstrated learning because they transformed this activity together. Along the way, teachers also demonstrated individual initiative in their enactment of Dig Deep and at times they discussed these initiatives in the meetings, which informed later collective choices and decisions. Within this chapter, I show the steps the group took toward transforming their existing routines into the Dig Deep routine and highlight moments of agency through deliberative moves.

Phase 1

First meeting: groundwork for future design decisions. Our first meeting laid the groundwork for several design decisions in our second meeting. As the facilitator, I brought to the meeting my own conceptual goals of working on responsive teaching as well as my knowledge of and previous experience of working with the teachers throughout the year. From
my classroom observations and meetings with them, I learned that teachers were interested in ensuring all students were engaged in the curriculum. My hope was that our work would converge around a goal of responsive pedagogy – to include all students in the curriculum and value students for who they are in order to ensure equitable instruction for all students and to create a learning environment in which students are seen and cared for. My goals and observations informed the way in which I designed and facilitated the first meeting. I brought to the meeting a suggestion that we think about responsive teaching as well as student engagement. At the beginning of the meeting the teachers completed “personas” (see Chapter Three for more about personas). I introduced the personas through a template that teachers completed in order to ground our conversations in actual, unique and individual students (see Appendix C for the persona template). I deliberately framed the prompts in the persona template to be asset-based and to elicit positive representations of students, with the goal of avoiding deficit language or stereotypes of students.

Next, I shared a summary of a research article I had prepared and the group spent several minutes reading it. I selected the article, which focused on connecting students’ lived experiences and interests to their learning, with the aim of sparking discussion and inspiring ideas about responsive teaching. However, the group’s discussion of the research summary fell flat, and, as a result, I decided to drop this article in the following meeting, and introduced a different article. Teachers did not mention or refer back to this research summary again.

Following the reading in this first meeting, I presented a Fishbone Diagram and we worked on completing it, focusing on persistent disengagement from some students, and in particular the students identified through the persona exercise. The group brainstormed reasons for persistent disengagement observed by teachers, and we kept a list of these ideas (see
Appendix D for the Fishbone Diagram). Following the brainstorming session, each person identified two or three of our ideas as “best bets” to pursue as part of our design work. After the meeting, I analyzed our list to determine that many of the group’s ideas focused on teachers’ interactions with students, including the quality of relationships they have with students (e.g., “Finding ways for the kids to identify their strengths and a way for us to respect all talents and skills and strengths, celebrate those things” Meeting transcript_02.27.17). This aligned with my initial hope of working toward developing a learning environment in which students were seen and cared for.

**Second meeting brought a series of design decisions.** At the beginning of our second meeting, I shared my analysis, noting that many of the ideas we discussed focused on the quality of relationships teachers have with students. The three teachers who attended the first meeting nodded their heads in agreement⁶ (Meeting transcript_03.15.17). The agreement allowed us to move forward in this second meeting to make some design decisions.

**Design decision 1: Focusing on the beginning of class.** One of the first design decisions the group made was to focus on designing a strategy for developing relationships with students in the beginning of class. I had suggested focusing on a specific time during class to work on relationships in response to two ideas that came up in our first meeting. First, Elaine raised an individual dilemma, stating that she did not always have time to get to know students, especially with 30 students in one class. Then Jane drew on the work we had done with the persona students, to identify a related yet different individual dilemma, stating that she wanted to work on “finding the right time to find out more” about Logan, the student she selected for her persona (Meeting transcript_03.15.17). We discussed when during class teachers could focus on

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⁶ Daniel also attended the second design meeting. This was the only meeting he attended. See Chapter Three for more information on Daniel’s participation in this study.
developing relationships and teachers decided on the beginning of class since it aligned with existing school practices, including administrative support for beginning of class routines. For example, Rachel responded, “I do like the beginning of class. I think there are some administrators at our school who are really big on seeing that in the classroom” (Meeting transcript_03.15.17). Rachel, who during this semester mentored a student teacher in her tenth grade class, also explained that she wanted to focus on the beginning of the semester because of challenges she observed in her tenth grade classes as well:

I’d be curious to have some resources to try some different things, and even with my student teacher I have right now. He’s doing it [a student check-in] in my 10th grade classes and then we just see a lot of the same kids always responding. I would like it to be more everybody collaborative in that. Even though I think there’s a pretty good climate and culture in there, it’s like that activity has taken on it’s own [life] – I don’t even feel like I am giving him very good feedback. Just cause I’m seeing that right now in my classroom, that one appeals to me, but I am open to whatever people want to do.  
(Meeting transcript_03.15.17)

In this example, Rachel drew on her past experiences with her check-in routine, as well as her students’ responses and her student teacher’s facilitation to criticize the current check-in routine used in her tenth grade classroom. She identified a problem in their current routine, the same students always responding and little collaboration among students, and voiced that she would like resources for trying something new. Elaine responded to Rachel’s comment by agreeing with her choice to focus on the beginning of class and voicing a similar critique of her current check-in routine with students.
I can totally get on board with that. I don’t ever want to force kids to share during that time. I see that same thing, same kids telling us we have a basketball game. To me, one of the beauties of that thing is no one has to share. So where’s that balance of encouraging and gaining lots of voices, but not making a kid necessarily share if they don’t want to.

(Meeting transcript_03.15.17)

Elaine, like Rachel, noted that the same students shared in her current routine and she would like to find a way to encourage other students to participate so that there were “lots of voices” heard. Elaine, drawing on her past experiences with her check-in routine and her students, criticized the current routine, but also explicated the potential of it when she said, “one of the beauties of that thing is no one has to share” and seemed to suggest that while she would like to encourage more students to participate, she wanted to find a way to do so that did not require students to share. In her response, Elaine introduced an individual dilemma: how to encourage more students to share in the new routine, but respect when students did not want to share. Jane joined the conversation and agreed with Rachel and Elaine that focusing in the beginning of class “sounds pretty appealing” and explained, “It’d be a nice transition time to try out a different routine” (Meeting transcript_03.15.17). Over the course of our design work this individual dilemma became a shared dilemma and it was raised again in our fifth meeting and discussed as a dilemma by Rachel and Jane (Meeting transcript_05.08.17).

Several factors motivated this first design decision to focus our work on the beginning of class. First, Elaine and Jane raised individual dilemmas about finding the time and the “right time” to learn about students. Elaine’s individual dilemma about how to encourage more students to share in the new routine eventually became a shared dilemma. The persona tool supported Jane in thinking about a specific student, Logan, and why it has been difficult for Jane to develop
a relationship with Logan. Teachers also acknowledged that focusing on the beginning of class aligned to existing school practices and would therefore be viewed favorably by their administrators. Finally, Rachel and Elaine criticized their current check-in routines, noting that the same students shared each day and they wanted to change the pattern of student participation.

The three teachers already had a brief check-in routine with students at the start of class. The strategy we designed together ended up replacing their previous routines. Therefore, Dig Deep became a new but not an additional activity, as we worked together to transform their existing routines. Teachers demonstrated deliberative agency as they engaged in a discussion that criticized past activity and came to settle upon focusing on new possibilities for the beginning of their classes.

**Design decision 2: Developing prompts inspired by cultural probes.** Following the decision to focus on the beginning of class, the group read, *Cultural Probes* by Gaver and colleagues (1999), describing their method of engaging in design work in a responsive way, using cultural probes designed to “provoke inspirational responses from … people in diverse communities” (p. 22). The group’s discussion immediately following this article was about the kinds of prompts teachers could give their students to get to know their students better. Daniel opened the conversation of the article commenting,

I like the idea of having the maps and that kind of visual spatial understanding of the issue. And then also the postcards and making it kind of personal. I just think it would be fun and interesting and engaging. (Meeting transcript_03.15.17)

Elaine replied, “I envision this bag full of these things [cultural probes] and at the beginning of each period, you just pull one out and like, ‘Here’s the task for today’” (Meeting transcript_03.15.17). Rachel added to the idea, suggesting, “students could create them”
(Meeting transcript_03.15.17). The group moved from pulling ideas out of the cultural probes article, such as when Daniel mentioned the map or the postcards, to envisioning how they might use these ideas in their own classrooms. Jane offered an idea that students share an image using Padlet⁷, so that students “have the picture, they don't necessarily have to talk about why they did that one to the whole class, but at least everybody would have that collage of input from everybody” (Meeting transcript_03.15.17). I then suggested brainstorming ideas for prompts and after a quiet minute of brainstorming, Elaine reflected and posed a question.

I’m sensing that we want these to be more than just a writing prompt, kind of boring question. Most of these seem like they’ve got another component. Like the map or the picture. Is that fair? I don’t want to be yet another list of writing topics, and I don’t think this is, but I’m trying to articulate what is making this different than just, “Here’s yet another prompt for you to journal about.” (Meeting transcript_03.15.17)

Referencing the article, I replied “one of the things in the article that was interesting was that they were trying to make it feel more fun and engaging and informal” (Meeting transcript_03.15.17). The group agreed with this explanation and continued to brainstorm ideas of prompts.

The group liked the idea presented in the article of providing opportunities to respond to prompts in different modes, in order to make the experience feel exploratory and playful. Inspired by the article, the group began brainstorming prompts and we created a list of prompts to include in the overview document of the strategy. Building on an idea I mentioned in the first meeting, Jane suggested connecting the prompts to the lesson or project and thought in the upcoming project that the potential for the “personal link is really strong there” (Meeting transcript_03.15.17).

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⁷ Padlet is an online application that can be used as a virtual bulletin board, for students to post ideas, images, and videos to share with the class.
transcript_03.15.17). Connecting the prompts to the day’s lesson would help ensure that Dig Deep aligned with the Compose Our World curriculum. Through a process of settling, in which group members added to one another’s ideas about the prompts, we decided to include prompts as part of the new routine. The group committed to the action of posing prompts to students to encourage students to share about themselves. Inspired by the cultural probes article, group members demonstrated agency through deliberation by drawing on the past (our first meeting) and the present (cultural probes article; one another’s ideas) to commit to actions in the future.

**Design decisions 3 and 4: Asking students to share and joining a group of students.**

Teachers wanted to use the prompts to develop their relationships with students and increase engagement. Therefore, it was important to teachers that students participated in responding to the prompts, but also that students shared their responses. However, this presented a shared dilemma. Teachers recognized that some students may be uncomfortable sharing intimate ideas with the entire class and they did not want to force every student to do so. They wanted to avoid the same few students sharing, as it often happened in Jane, Elaine, and Rachel’s classes, and they wanted to create a space where students felt safe to share. By allowing the same few students to share, it created an environment where it felt less safe for the rest of the students to share. Rachel again noted that she observed the same kids sharing all the time in her class and criticized this aspect of her current activity stating,

This isn’t what it’s supposed to be. Now I think it’s even more other kids won’t share because they just know those kids are going to share. It’s like, how do you get it out of that? Then I think it makes it hard for other kids to take risks. (Meeting transcript_02.27.17)
Teachers wanted to encourage more students to share and create a culture and climate where they felt safe to do so. Daniel offered that he required all students to share and built up stamina for this by starting with a question that required a low-risk response. I wondered aloud if it was always necessary to require students to share so publically, especially when their responses included intimate ideas or information. I observed that teachers’ persona students were less likely to share publicly, and wondered if forcing them to share would enhance teachers’ relationships with these specific students.

Rachel acknowledged the dilemma, and offered a solution,

I know Elaine was concerned about not everyone wanting to share, but I still feel like sharing with someone around you is a pretty fair thing to expect. Or if you have those students that don’t, then I usually go and kneel by them and share with them ‘cuz I just know if they have some of that anxiety or whatever. Maybe that’s part of the routine, too, that it goes to a partner first or a small group and then it comes back out to the larger group, and then you can make it, “Well you can share your idea or someone else’s in your group.” (Meeting transcript_03.15.17)

In this example, Rachel drew on her past experience with her students and grouping students to explicate a new possibility for Dig Deep. To address the dilemma, Rachel suggested that students share with a partner or small group first to give all students an opportunity to share, before sharing in the larger group. Students could then share their idea or an idea from the group. All members of the group discussed this dilemma and then agreed to Rachel’s suggestion so it became part of the design.

It was Rachel who, also in response to discussing this dilemma, suggested that teachers intentionally select a student or group of students to join during the time that they shared with
one another to strategically develop relationships with particular students who they had not yet been able to get to know or engage. And again, Rachel explicated a new possibility for Dig Deep based on her previous experiences. Rachel explained,

I actually feel when they share with a partner, that’s a really powerful time for me because I know the kids who are going to say one word and not say anything else. I try to hover near those groups, or maybe it is the student that I’m trying to build a relationship. So that I sit in on their conversation and then I can [respond] and start building on those relationships. Like, “Oh, that’s a great, I hope you share that out with the group when we come back.” I find it less intimidating in those pair parts, that’s where I can be really intentional and trying to go around to target the people that I either want to help establish or help their confidence. (Meeting transcript_03.15.17)

Elaine responded, “I like that idea.” As the facilitator, I observed, “It sounds like we’re starting to come to consensus … students would share in partners with the goal that you would join conversations of students that you feel like you don’t know as well” (Meeting transcript_03.15.17). The group agreed, and we added an element to Dig Deep that teachers would sit with a group of students who they struggled to engage or did not know well. Rather than roam the room during the Dig Deep routine gleaming bits of conversation from each group, teachers decided to be intentional about whom to sit with, so that they had an opportunity to engage in conversations with these students in order to develop relationships with them.

The design decisions of asking students to share their responses and sitting intentionally with students stemmed from the shared dilemma of how and if students should share responses. Teachers criticized their current check-in routine as one in which the same students always shared. Teachers also drew on their knowledge of their persona students to think through how
individual students would feel about and engage in sharing their responses publicly. Rachel *explicated* new possibilities when she suggested that the new strategy include students sharing with a partner first and when she suggested that teachers be intentional about which group of students to join. Rachel drew on her past positive experiences to suggest these elements of the strategy. The group’s shared dilemma and collective critique of their current activity, along with Rachel’s individual initiatives led to these two design decisions and instances of agency through deliberation.

**Initial conjecture map.** The high-level conjecture, at this point, was that providing an opportunity for students to share about their lives can improve the quality of teacher-student relationships (see Figure 4.1). Teachers planned to implement the new routine into their classrooms, encouraging students to respond to a prompt and share about themselves with each other, thus demonstrating deliberative agency by *committing to action*. Teachers planned to select a student or group of students who they wanted to develop a better relationship with and strategically sit and share with them. At this point in the design work, I had guided teachers through a highly facilitated process to design a practical measure to collect student data about Dig Deep⁸. Teachers planned to administer the practical measure to students at the end of the class. To codify our design and to ensure that we were in agreement, I synthesized our decisions into a written overview document (see Appendix P for the initial Design Overview document) and shared this with the team. It was our hope that in implementing Dig Deep, teachers would feel that they were improving their relationships with students and that all students had an opportunity to share about themselves during class.

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⁸ See Chapter Three for more details on the creation of the practical measure.
Phase 2

**Third meeting: Teachers reported on early implementation of Dig Deep.** By our third meeting, teachers had administered the practical measure to students as a pre-survey prior to starting the designed routine. They also all introduced Dig Deep to students and implemented the strategy once or twice (depending upon the teacher). In between meetings, teachers created slides to introduce Dig Deep to students and shared them with each other as a resource. They adapted the slides for each of their classrooms. They had not yet started collecting practical measure data on the strategy due to constraints in the school schedule. In our third meeting, teachers reported back on their implementation and committed to administering the practical measure data in the next couple of weeks, thus drawing on past experiences with Dig Deep as a resource to inform the present and imagine the future through committing to actions and reporting on actions.
Design decision 5: Creating a menu of modes for prompts. At the beginning of the meeting, teachers shared their experiences with the new strategy, including their observations, how they introduced it, examples of student responses, and challenges. Rachel and Elaine used the same first prompt, while Jane used a different prompt. Rachel and Jane tried the strategy twice. Both times Rachel posed a question or series of questions to students to share with a partner first and then share back with the class. She suggested that the team create a menu of modes for how students could represent their responses, so that had the opportunity to express themselves in a variety of ways, not just through talking, as Rachel had asked students to do in the first two rounds of implementation. Expanding on the ways students could express themselves connected to the spirit of “cultural probes” which were intended to be exploratory, playful, and fun. Later in the meeting, after the group analyzed pre-survey responses from students, I brought up Rachel’s suggestion to create a menu of modes to accompany the list of prompts we generated in the previous meeting. The group agreed to this idea and together we created a menu of modes for students’ responses, such as “6-word memoir,” “10-second audio recording,” or “a series of 3 images to tell a story” (Design Overview document draft 2_04.12.17).

Teachers expressed agency through deliberation by committing to change the activity through creating a menu of modes to expand on the ways in which students could express themselves during Dig Deep. This addressed Rachel’s individual dilemma of finding new ways for students to respond beyond talking, and it saved teachers time, so that they did not have to plan this portion of the routine individually for each lesson. The modes for prompts the group generated aligned with the notion of cultural probes presented in the article we read previously; some of the ideas were inspired from the authors’ examples such as “find a map.”
**Conjecture map 2.** An addition to the high-level conjecture was that teachers would also share about their own lives with students in order to improve the quality of the relationships (see Figure 4.2). As the facilitator, I suggested it in the previous meeting, and I included it in the Design Overview document shared with teachers. As teachers shared about how they implemented Dig Deep in class, they revealed that they did sit with students and share about themselves. Rachel then also shared her ideas during the whole class share (Rachel_Ob_04.06.17). During one lesson, Jane shared her response with the whole class prior to students responding, so that it served as a model. During the third meeting, Rachel also encouraged Elaine to share her ideas with the class, when Elaine lamented that some groups did not seem to know how to respond (Meeting transcript_4.12.17). Teachers embraced the step of sharing about themselves with students as part of Dig Deep, although beyond my suggestion and Rachel’s feedback to Elaine, this step was not discussed by the entire group and therefore did not constitute a design decision.
As part of the mediating process, teachers selected prompts that required more vulnerability from students. Again, this did not necessarily constitute a design decision because it was not debated in the group, but rather it emerged as a pattern of activity that teachers embraced in implementation. During this meeting, Jane observed that some of her students shared the same kinds of things each day, therefore privileging certain topics (e.g., wrestling) over others and contributing to a climate where only certain topics were considered acceptable by students to share. In response to this individual dilemma, Jane articulated that she wanted to try to pose prompts to students that required more vulnerability and expressed deliberative agency by committing to actions to change the activity (e.g., Find three images that tell a story about your

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9 While selecting prompts that required vulnerability did not constitute a design decision, the nature of the prompts served as a topic of discussion and later became a dilemma for teachers. This is discussed in more detail in Chapter Five.
life that relates to the topic of your project; Draw on your tabletop a symbol of something that’s
been on your mind lately, something that concerns or worries you, or something you’ve been
putting a lot of effort into lately). Elaine and Rachel also expressed deliberative agency when
they each reported on taking action through posing prompts that required vulnerability on the
part of students (e.g., What is a memory or description of your home or neighborhood? Where
have you witnessed bullying in your life? Do you have a story to share about bullying?). Many of
the prompts Elaine and Rachel gave students connected to the text that they were reading in their
classes\textsuperscript{10}, which explored a variety of social issues and lent itself to students exploring more
vulnerable topics, thus teachers drew upon the past and present resources in the classroom to
imagine future implementation.

Teachers planned to ask or did ask prompts that provided opportunities for vulnerability
because of the goals we articulated for Dig Deep, which included improving relationships with
students in the class, providing an opportunity for students to share about themselves, including
their culture, background, interests, home, and family, and connecting Dig Deep to the project or
lesson for the day. Our collaborative goal-setting led teachers to commit to action or report on
action to achieve these goals through posing prompts that required vulnerability. Teachers
wanted to invite students to share different and new dimensions of themselves and believed that
the questions they posed to students could provide this opportunity. In addition, this revealed an
assumption that teachers held: building relationships with students depends upon students
revealing something new or a different dimension of themselves.

Phase 3

Fourth meeting: Teachers discussed dilemmas and analyzed first round of practical
measure data. In the fourth meeting, we did not make any significant design decisions.

\textsuperscript{10} The students in Elaine’s and Rachel’s classes had been reading \textit{Staying Fat for Sarah Byrnes} by Chris Crutcher.
Teachers again shared about their experiences implementing Dig Deep for developing relationships with students, reporting back on taking consequential actions and thus demonstrating agency through deliberation. In the process, one teacher raised an individual dilemma, and two teachers identified a shared dilemma and the group offered solutions for each dilemma. The solutions offered remained as suggestions during this meeting, but both suggestions eventually led to design decisions in a subsequent meeting. First, Rachel’s individual dilemma was how to encourage students to talk to new people without taking a lot of time to set this up. Students in her class frequently spoke to the person they were sitting near and they became comfortable with one another. Jane suggested that she build in two quick sharing steps: 1) share with someone you are comfortable with, then 2) as a pair, find another pair to share with together. Jane and Elaine both reflected that their shared dilemma was that students did not listen to each other during the whole class share. Elaine shared, “With the whole class share out, I wish my kids would listen to each other better” and Jane agreed. Jane explained,

Well, they think that “listen” means not to talk and I feel like I’ve been having to work on that a lot this semester. They just think listen means, “Oh, I’m supposed to shut up now.”

They’re not invested in what each other are saying, I agree. I see that too. (Meeting transcript_4.25.17)

Through their critique of the Dig Deep routine, Elaine and Jane expressed deliberative agency, as they imagined a future in which students did listen to one another (criticizing). Rachel and I responded to their critique as a request for changing the routine. We suggested supporting students to listen by providing students with talk stems for building on one another’s ideas and making connections. In our last meeting, both suggestions (two-step sharing process and student listening) were adopted as part of the design.
Conjecture map 3. Several additions were made to this conjecture map, including revising the practical measure and teachers setting individual goals (see Figure 4.3). Following the discussion of the dilemmas, the team looked at the first survey data teachers collected. Several items generated conversation, including “Today I worried about sharing something personal about my culture, background, or interests with other students” and led to revisions of the practical measure. In subsequent meetings, our analysis of student data spurred the group to further refine the practical measure (see Chapter Five for more about refining the practical measure).

Figure 4.3: Conjecture map 3

Analyzing student responses from the practical measure also led teachers to set their own individual goals for implementation of the routine and demonstrate individual agency. Rachel decided to be more intentional about linking to students’ cultures, backgrounds, and interests.
Elaine chose to work on connecting Dig Deep to the rest of the lesson. Rachel and Elaine’s goals were connected to our initial goals for the design and were both items on the practical measure. In addition, Jane set a goal that stemmed from her shared dilemma with Elaine, and Rachel set a goal that stemmed from her individual dilemma. Jane decided to be explicit with students about listening to each other during the whole class share-out and encourage students to validate what the last person said by adding on to their response. Rachel chimed in and said that she also wanted to work on encouraging students to listen to one another. Additionally, Rachel planned to be more intentional with her student groupings to encourage students to talk to new people. She reflected, “I’m going to try to connect to be intentional and see if it changes my data at all” (Meeting transcript_04.25.17).

Scholars from the improvement science perspective expect and allow for some variation, and participants in PDSA cycles may work on different aspects of a Driver Diagram that guides a particular improvement effort. Part of the benefit of the Driver Diagram is that “participants can now see where their particular ideas, interests, and expertise fit within the larger mosaic” (Bryk et al., 2015, p. 79). We did not examine the Driver Diagram itself, but we did return to the key elements of the Driver Diagram so that teachers envisioned where their ideas, interests, and expertise fit into the work. So while improvement science researchers seek to reduce variability through developing standard work processes, they acknowledge that a level of variability will always exist. Bryk and colleagues (2015) explain improvement science “acknowledges that variability in performance is a major problem to solve, while also affirming that individual professional judgment will continue to play a central role in practice” (p. 50). In this case, the design of the Dig Deep routine was our group’s attempt to develop a standard work process for developing relationships with students and teachers used their individual professional judgment
to set goals for their enactment of it. Teachers felt that by working on these individual goals, they could improve their individual results, as well as improve the quality of their relationships with students. Our shared goals and collaboration supported teachers in setting individual goal, and teachers expressed agency through deliberation as they committed to taking action.

**Phase 4**

**Fifth meeting: Analyzing data led to revised data collection and refinement of implementation.** In the fifth meeting we again did not make any major design decisions. Our data analysis led teachers to talk more about their implementation and classroom practice as well as data collection, as opposed to revising our strategy. For example, teachers spent time puzzling through how to make the sharing safe for all of their students. One of the goals for our strategy was to connect the prompt to the lesson or project students were working on. Students were working on a Compose Our World project in which they selected issues that impacted them and that were issues they cared about changing. Teachers discussed prompts that would encourage students to connect personally with their topic. For example, Jane suggested asking students,

> Why is this issue important to you, what have you experienced or felt or witnessed that makes you feel passionate about this topic? With the specific focus on their experiences and inviting them to tell a story from their own life with it. (Meeting transcript_5.8.17)

Jane explained that a prompt such as this one would “serve the dual purpose of getting [students] talking about what’s important to them and why their topic is important to them and also, to get them to focus on the human side, the emotional appeal side of their message” (Meeting transcript_5.8.17). However, teachers also noted that several students selected prompts for reasons that were very personal and these students might not feel comfortable sharing their reasons with other people. Rachel voiced concern over asking students this prompt,
I just feel like I have a lot of suicide and drugs and alcohol and I feel like there’s a lot of kids who have connections, whether it’s family members or it’s whatever with a lot of issues, and I know, one girl wrote about a song and then she’s like, “I really don’t want to share.” I read her thing and it talked about how her dad had abandoned them and she didn’t want to get up and talk about that. I think that idea is really awesome, just trying to figure out how to make it safe for everyone. (Meeting transcript 5.8.17)

Rachel expressed agency through deliberation when she resisted Jane’s prompt suggestion, and she was the only teacher to express resistance. She then oriented to making a change when she noted that she is “just trying to figure out how to make it safe for everyone.”

Rachel’s concern demonstrated care for her students and illuminated a shared dilemma our group had circled around several times. Teachers wanted to expand upon the kinds of topics discussed and shared in the classroom, to make it “safe” for students to share about their backgrounds and experiences, but at the same time recognized that to do so may actually make it feel “unsafe” for students. This posed a dilemma – to ask such questions or not, to ask students to share their responses or not. What was also hinted at in this conversation was that teachers wanted to create a classroom environment in which students shared about themselves in deep ways with each other. The shared dilemma was further confounded by the larger goal of Dig Deep, to develop more quality relationships with students. It seems that an un-interrogated assumption that our group operated on was that teachers felt that in order to develop relationships with students through the Dig Deep routine, students needed to share about themselves and share different dimensions of themselves. Furthermore, teachers grappled with how to construct a safe classroom space when asking students to share something vulnerable about themselves. It was implied in our conversations that a safe space was created when the
topics that were shared were expanded upon, but students did not yet feel safe to raise new and vulnerable topics. The group tried to address this in several ways, so that sharing did not need to be as public, including asking students to share in pairs or small groups first and teachers being intentional about which students to sit with and talk with during the routine (this example is further discussed in Chapter Five).

The teachers continued to brainstorm solutions to this shared dilemma, although they did not result in a specific design decision but rather new ideas for implementation. For example, Jane suggested giving students the option to share a sentence or phrase of their response, explaining “it might be kind of cryptic but they get a chance to share part of it in a way that might help them stay safe” (Meeting transcript_5.8.17). Jane’s suggestion offered a way to navigate the dilemma, by still posing an intimate prompt and asking students to share, but also making it safe for students to share. Rachel agreed and thought that when students worked on the project in their groups, they might feel more comfortable sharing or drawing on their responses in their project groups (for Rachel, project groups were not the same as Dig Deep groups). While wrestling with the shared dilemma did not lead to a collective decision, it did represent an example of agency as teachers engaged in deliberation by drawing on their past experiences with students to envision new patterns in the Dig Deep activity, and suggest ideas for future implementation.

Our data analysis also led to further refinement of the practical measure, adding and editing items. For instance, teachers noted that many students agreed with the statement, “Today the opening class routine made me feel like I matter in this classroom.” They were pleased by these results, but wanted to know how it made them feel like they matter. As a result, we added a question for students to explain their response. Teachers were unsure about how to act on the
results from the item that stated, “Today my teacher used examples from my culture, background, or interests when teaching.” In order to better understand student responses and so as not to conflate culture, background, and interests, the group opted to split this into two separate items (Shared meeting notes_05.08.17).

Conjecture map 4. One addition was made to the fourth conjecture map, under mediating processes: Team created interview questions. I had asked teachers if I could interview some students in their classes about Dig Deep (see Figure 4.4). Teachers agreed to this idea, and without prompting, they began to brainstorm questions they wanted me to ask students. Elaine noted that a higher percentage of students disagreed with the statement “My teacher tried to find out what interests me or what is important to me” than the first time they took the survey. Elaine wondered if this was because she only asked a couple of students to share out their ideas in the whole group. This sparked a discussion in the group about when students feel listened to by the teacher during class and the group wanted me to find out more through the student interviews. We created two interview questions: “When do you feel listened to?” and “Did your teacher try to find out what interests you or what is important to you? What did the teacher do to make you feel like that?” (Shared meeting notes_05.08.17). Teachers took ownership of the interview questions, as they picked up an idea I suggested and made it their own by writing interview questions for me.
In the fifth meeting, as in the fourth meeting, we did not make major design decisions, but rather focused on data analysis and collection and refinement of implementation. In this meeting, I intentionally placed data analysis early on our agenda and allotted more time to it in order to privilege data analysis and encourage more conversation about the data (Facilitator guide_05.08.17). The data analysis sparked new questions about student responses, which led to additional or revised questions on the practical measure, as well as student interview questions.

Phase 5

**Sixth meeting: The group made final revisions to the strategy together.** In our sixth and final design team meeting, we analyzed the third round of practical measure data and then made our last revisions of the strategy together. All teachers intended to use the strategy in the
following school year and looked forward to starting Dig Deep with students at the beginning of the year. This meeting took on a different tone from the previous meetings for several reasons: 1) teachers had a set of implementation experiences to reflect upon, 2) the group had a body of student data to consider and analyze, and 3) teachers felt a renewed sense of energy planning for the next school year.

**Design decision 6: Asking students to record and keep track of their responses over time.** During the sixth meeting, Elaine wondered out loud if students should record their responses to Dig Deep prompts and she asked Jane about this. At the start of the project, Jane had made an individual decision to ask her students to record their responses to the daily prompts in a Google document. Each day, students had a few quiet minutes to think about and respond to the prompt in their Google document. Students also used the Google document as another way to communicate with Jane, as they knew that she read their responses (St1_Interview_05.23.17). Elaine was curious about how this practice went in Jane’s class, as Jane piloted a student log for the group. Jane observed that students liked to record their responses, and often put their ideas in the document even when they were not required to do so. She reflected that students “liked accumulating it” (Meeting transcript_05.25.17). Rachel also liked this idea and imagined asking students to extract ideas from their responses at the end of the year to “tell a story.” Jane added that students could turn their logs into something that could be shared with others and serve as an introduction to who they are. Elaine thought it would be a “cool record of a whole year” and Rachel thought it would “show [students’] growth over the year.”

Teachers expressed deliberative agency when Jane described the action she took to record their responses (*reporting on action*) and Rachel and Elaine drew on her experiences to imagine using this strategy in the future. Rachel and Elaine *envisioned* ways the students could use the
responses as a tool for reflection. Jane’s account of her practice and observations of her students informed this decision and the group embraced the idea that students could reflect on their growth over the year. The group made a collective decision for students to keep a record of their responses throughout the year, and thus committed to future action. Through deliberation, teachers used Jane’s experience to envision and commit to action. Adding a component to Dig Deep in which students kept track of their responses aligned with teachers’ shared goals as well as goals within Compose Our World to encourage student reflection over growth.

**Design decision 7: Adding a goal focused on students developing relationships with one another.** Jane suggested adding a goal to our Design Overview document about students developing relationships with one another. Jane’s realization of this goal surfaced another assumption that the group held: we had not just been working on developing teachers’ relationships with their students, but also we had been working on students developing relationships with one another. In reflecting on her practice with Dig Deep over the semester, Jane said, “Part of my goal, I think, with this is to improve relationships among students too. We want them to treat each other better, not just for us to have [relationships with students]” (Meeting transcript_05.25.17). Jane explicated a goal she had for Dig Deep and Elaine agreed and connected students’ relationships with one another to students listening to one another, a shared dilemma teachers raised in the fourth and fifth meetings. This prompted Rachel to suggest revisions to the practical measure to include items about listening. Through connecting the goal of students developing relationships with one another and students listening to one another, Elaine and Rachel envisioned a new possibility for Dig Deep in the future.

The group made the design decision to include students developing relationships with one another as a goal for several reasons. First, teachers recognized that developing relationships
with one another through listening helped students feel like they matter, something that teachers valued. Second, teachers discussed that listening was an important skill for students to develop in language arts, one that a key component of the Common Core State Standards for English language arts, in collaboration, and in project-based learning, thus this new goal aligned to practices considered important in the discipline and within the Compose Our World curriculum. Teachers raised and discussed the shared dilemma of encouraging students to listen to each other in several meetings throughout our work together, and it remained a shared dilemma. Teachers wanted to establish listening as a norm to create a positive classroom environment, to help students feel like they mattered, and to connect to the goals and skills of project-based learning and language arts. Teachers recognized that students were developing relationships with one another through Dig Deep, as Rachel explained, “even though we were sitting intentionally with groups to develop [relationships], kids were developing [relationships] in their other groups at the same time” (Rachel_Member check_1.30.18).

Thus, through the process of discussing a shared dilemma, we decided to add a goal to Dig Deep about students developing relationships with one another, connected to creating caring classrooms. Teachers engaged in deliberation as expressions of agency, when Jane drew on her past experiences with Dig Deep to articulate a new goal and Rachel and Elaine envisioned connecting the goal to students listening to one another in future iterations. The addition of the goal did not significantly transform the activity, but rather highlighted another dimension of Dig Deep.

**Design decision 8: Recommitting to being intentional about sitting with students.** The group re-visited the implementation component of the design, in which teachers sat intentionally with students who they wanted to develop a better relationship with and teachers participated in
sharing their responses with students. After discussing these elements of the design, teachers recommitted to this part of the design and thus engaged in deliberation by drawing on their experiences with part of the implementation and committing to future action. This was a decision that evolved over time as a result of two related shared dilemmas; teachers first raised these two shared dilemmas in our third meeting.

*Teachers raised two shared dilemmas.* During the third meeting, all teachers raised and discussed two connected shared dilemmas, which laid the groundwork for a design decision in the sixth and final meeting. The first dilemma related to teachers sitting with a student or a group of students during the routine. Teachers noticed that their presence in a group corresponded to a drop in student participation. Teachers were unsure about how to handle the situation. Jane recounted that she sat with a group of three students, and only one student wanted to engage in conversation with her. Her response was to “diffuse [the] situation with humor … make [students] not feel weird about feeling weird” (Meeting transcript_4.12.17). After acknowledging that it felt “weird” for students to share while she was in the group, Jane explained that she would then move on to sit with another group. Likewise, Elaine wondered if by joining a group it “squelched the discussion in some ways” (Meeting transcript_4.12.17).

The second shared dilemma also related to teachers sitting with a student or a group of students. By sitting with just one group of students, teachers did not know what the rest of the class was doing or discussing. Rachel felt the new routine went well, explaining “I think in both my classes overall, I was pretty happy with the volume of talk I heard, because when I'm focusing then on one kid, then we all know you’re leaving the rest to do whatever” (Meeting transcript_4.12.17). I had observed the particular lesson Rachel was describing and chimed in, agreeing with her, “I had the same thought when I was in your room, because I sat with another
group and I was like, ‘Shoot, now I don’t know what other groups are saying’” (Meeting transcript_4.12.17). Elaine also articulated a similar challenge,

I joined a group, and I really enjoyed getting to talk to those kids, full attention, but that’s what freaked me out. Just what you said, then I have no idea what’s going on in the rest of my classroom. I feel like if I sit down with those kids, I want to give them my full focus so I don’t know what happened around me, but I know what happened in the group I was with. (Meeting transcript_4.12.17)

Both Elaine and Rachel noted that Dig Deep went well in their classrooms and they enjoyed the opportunity to focus on a few students, but they had mixed feelings because they did not know what the rest of the students were doing.

The implied choices to these two shared dilemma were to a) continue with the routine as designed, and possibly interfere with students’ participation as well as risk missing out on what other students were saying and doing, or b) change this portion of the routine so that teachers roamed around the room to listen to a variety of groups but not participate in a group themselves. The two shared dilemmas did not get resolved immediately, but were introduced and discussed, and further deliberated in our final meeting. Teachers expressed agency through deliberation when they raised the dilemmas, drawing on their past experiences with Dig Deep in their classrooms to critique this aspect of Dig Deep (criticizing).

The group made a decision. Rachel had been reflecting on the shared dilemmas and in this final meeting concluded that “in some ways with [our routine], that’s okay, because today, I bonded with these three kids and that was important.” Teachers suggested that that one pathway through this shared dilemma was providing “consistency” (Jane Meeting Transcript_05.25.17) so that “kids get used to the routine” (Rachel Meeting Transcript_05.25.17). Rachel stated the
importance of this component of the strategy, “I think that was all part of our really big goal was to sit by kids we wanted to and then that would give us those individual conversations” (Meeting Transcript_05.25.17).

The group reaffirmed that it was important for teachers to sit intentionally with students and to share their responses with students in the group by strengthening the wording about this part of the implementation in our Design Overview document (Shared meeting notes_05.25.17). Through wrestling with the two shared dilemmas, critiquing an aspect of the routine, and then and recommitting to this component of Dig Deep, the group demonstrated deliberative agency. Teachers believed this pedagogical practice was essential for achieving their goals of developing quality relationships with students.

**Design decision 9: Giving students more ownership over Dig Deep.** In the final meeting, the group decided to give students more ownership over Dig Deep and built in ways for this to happen. The idea of giving students more ownership was one that evolved and strengthened throughout our design work together. In our second meeting, the group decided that students would generate prompts after teachers modeled a few to establish the routine. Rachel made this suggestion in order to give students more ownership over the process. Teachers planned to use the student-generated prompts, rather than the teacher-generated prompts, after they modeled Dig Deep prompts for students several times. Teachers discussed this again in our third meeting and all teachers committed to trying it. Students in Rachel and Jane’s classes created prompts prior to our fourth meeting. Jane selected student prompts to use as the opener several times and Rachel selected a student prompt to use once. Students in Elaine’s class never got the opportunity to write their own prompts, although Elaine expressed interest in the idea in our meetings.
However, the desire to give students more ownership of the process continued to strengthen and the group designed opportunities for students to have more ownership over Dig Deep in our final meeting. Rachel suggested that teachers develop the routine with students at the start of the year, rather than determine the structure of the routine without student input. Rachel suggested that we use our own design work as a model for setting up the routine with students, by providing the frame and goals for students and then asking students to help make decisions about the routine. Elaine added that students could decide how they wanted to share by posing questions, “How do you want to share out? Should you share it with a partner, small group? Do you ever want to be called on? Should it always be optional?” (Meeting transcript_05.25.17).

Adding to Elaine’s idea, Jane said, we could give students a “start of just topics, like they could start a brainstorm of topics” (Meeting transcript_05.25.17). Jane also suggested using a Google form to capture students’ ideas about sharing, topics for prompts, and modes for expressing the prompts.

The group made the design decision to give students more ownership of Dig Deep for several reasons. First, Rachel felt that giving students more ownership over the routine would align with the Compose Our World curriculum, in particular a protocol in the curriculum in which students developed the criteria for a successful product. Additionally, Rachel articulated that establishing the routine with students would further help teachers develop relationships with their students as well as “establish a really strong classroom culture” (Meeting transcript_05.25.17). Third, teachers felt that the classroom conversations to establish Dig Deep would connect with activities to establish classroom norms with students, which were also meant to give students ownership of the classroom culture. In establishing the routine with students, teachers also envisioned facilitating conversations with students about what it means to listen to
one another. This was an idea raised in previous meetings, and stemmed from a shared dilemma around implementation of Dig Deep. Teachers also saw alignment to existing practices, as they connected establishing the routine to creating classroom norms, and felt that a focus on listening was important. The design decision to give students more ownership evolved over time as we refined the design, and through a process of deliberation teachers determined that student ownership should be a main feature of the design in the future. Teachers expressed deliberative agency when they envisioned new patterns for the activity together, such as when they suggested starting with student input at the beginning of the year and facilitating conversations with students about what it means to listen to one another, and when they committed to taking actions to give students more ownership of the routine.

Conjecture map 5. As a result of the design decisions and discussions, the high-level conjecture expanded to include three conjectures: 1) providing an opportunity for students and teachers to share about their lives can improve the quality of teacher-student relationships, 2) providing an opportunity for students to share about their lives can improve the quality of students’ relationships with one another, and 3) structuring opportunities for student ownership over the routine can improve the classroom community (see Figure 4.5). The conjectures were embodied through discursive practices, participant structures, task structures, and tools and materials. The discursive practices included the team planning and discussing the design together. I structured conversations to position teachers as partners in the co-design process, as we set goals together for the design. We met every other week (with the exception of one interval, in which we met four weeks later due to school scheduling) to engage in PDSA cycles. While teachers aimed to implement Dig Deep everyday in class during our design work, they decided that in the following school year they would use the routine once a week in class. We
Engaging in the co-design structures and using the tools and materials generated several mediating processes. As I have described throughout the chapter, teachers raised and discussed individual and shared dilemmas relevant to our design and their implementation. They adapted and implemented the design in their classrooms, resulting in slight variation in the design. In all classrooms, students responded to the prompts and shared their ideas in some form, either
through small groups or in the whole class. Teachers spent time focusing on the sharing component of Dig Deep and therefore began to focus on encouraging students listening to one another. In our final meeting, we added two components to the mediating processes as revisions to the design that teachers planned to implement in the following school year: 1) teachers build the routine with students, 2) students reflect on their record of responses periodically and share their reflections, and 3) students share in a two-step process as discussed in our fourth meeting. In addition to these observable interactions, we also created a number of participant artifacts as part of the mediating processes. Teachers administered the practical measure we designed to students at the end of three class sessions, which coincided with three of our PDSA cycles, so that teachers collected data over time. After the second meeting, I synthesized the group’s ideas for design into a Design Overview document (see Appendix P) and shared with the group. After each meeting, I updated this document to reflect changes, and, on occasion, we updated the document together during a meeting. Teachers used this document as a reference outside of our meetings and we used this document in our final meeting as a reference to determine what we would revise and how. As part of teachers’ implementation of the Dig Deep, teachers created slides to introduce it but also created slides to post prompts each day. We also revised the practical measure after each round of data collection, including at our final meeting. Together we created student interview questions and I used these questions to interview 3-4 students in each teacher’s class during the last week of school. I reported students’ responses to the interview questions teachers were especially interested during the final meeting. Student responses helped the group further analyze the data and understand students’ perspectives prior to our final revision of the design.
Finally, our group developed a number of aims for our design\textsuperscript{11}. First, teachers wanted to feel that they improved their relationships with students in class. Data for this aim was based on teachers’ observations as gathered in our meetings and during interviews at the end of the semester. For the next set of aims, we gathered data through items on our practical measure and through student interviews at the end of the semester. We wanted students to feel that they mattered in the classroom, and we wanted all students to have an opportunity to share about themselves in the classroom, either through recording their responses to share with the teacher, discussing ideas in small groups, or discussing ideas with the whole class. Through Dig Deep, teachers hoped that students would report that they learned something new about their classmates and that this helped them to care about each other. Finally, the group wanted students to listen to each other and feel that their peers and their teacher listened to them. Teachers agreed with this list of outcomes for our design and noted that their top priority throughout the semester was developing relationships with their students. After looking over the list Elaine reflected, “I agree with [your description of] how these evolved” (Elaine_Member check_1.30.18) and Rachel said, “This looks really accurate to me” (Rachel_Member check_1.30.18).

**Discussion**

Through our design work, we created a teaching strategy with the initial focus of improving the quality of teacher-student relationships. As the work progressed, we added goals related to students improving relationships with one another and developing a positive and caring classroom community, was seen in the high-level conjectures listed in Conjecture Map 5. Revisions were made to the conjecture map at each phase of the design. Likely, if the study had

\textsuperscript{11} The first five outcomes listed in the final conjecture map will be discussed in more detail in the following chapter, including progress toward these outcomes based on the data.
been extended, we would have continued to refine Dig Deep, and in doing so revise elements of
the conjecture map.

In the previous Design Decision section, I showed how the Dig Deep design evolved over
time by identifying key design decisions and the factors that influenced these decisions. I
highlighted how the group made these decisions collectively, and described how teachers
engaged in deliberative agency throughout the co-design process, and how they grappled with
dilemmas. In the sections that follow, I build on the work of Sandoval (2014) and Wilkerson
(2017), to analyze the series of conjecture maps to identify patterns of change and to understand
how the design evolved over time. Analyzing the conjecture maps for key patterns helped me to
further explore my research questions: 1) How and why did the design evolve over time?, 2) Do
teachers demonstrate agency within the co-design process? If so, how?, and 3) How did teachers
grapple with dilemmas? In this section, I compare the set of conjecture maps and explore the
key patterns, including the factors that influenced design decisions, the ways teachers engaged in
deliberation and demonstrated agency, and their evolving ideas about student ownership of Dig
Deep.

Factors that Influenced Design Decisions

Prior to data analysis, I hypothesized that the majority of our design decisions were
motivated by dilemmas. The data analysis indicated that seven of our design decisions were
motivated by dilemmas. Five of the decisions were motivated by shared dilemmas: asking
students to share, being intentional about joining a group of students, adding a goal focused on
students developing relationships with one another, recommitting to being intentional about
which students to sit with during Dig Deep, and giving students more ownership over the
routine. Two of the decisions were motivated by individual dilemmas: focusing on the beginning
of class and creating a menu of prompts. Other factors that influenced our design decisions included: use of tools (e.g., persona template, practical measure chart, research article), teachers’ goals, and alignment to existing structures. Upon further analysis, alignment to existing structures could be further divided: alignment to the Compose Our World curriculum, alignment with classroom practices, alignment to school goals, and alignment with Common Core State Standards for English language arts. With the exception of one decision, design decisions were influenced by a combination of these factors (see Table 4.1: Overview of Design Decisions).
<table>
<thead>
<tr>
<th>Design Decision</th>
<th>Factors that Influenced Design Decision</th>
<th>How the Group Made the Decision</th>
</tr>
</thead>
</table>
| 1: Focusing on the beginning of class | · Individual dilemma  
· Persona (tool)  
· Alignment to existing structures - school practices | · Deliberative form of agency: Criticizing, Explicating |
| 2: Developing prompts inspired by cultural probes | · Cultural probes article (tool)  
· Alignment to existing structures – Compose Our World | · Deliberative form of agency: Committing to action |
| 3 & 4: Asking students to share and being intentional about joining a group of students | · Shared dilemma  
· Persona (tool) | · Deliberative form of agency: Criticizing, Explicating |
| 5: Creating a menu of modes for prompts | · Individual dilemma  
· Cultural probes article (tool) | · Deliberative form of agency: Committing to action |
| 6: Asking students to record and keep track of their responses over time | · Teachers’ shared goals  
· Alignment to existing structures – Compose Our World | · Deliberative form of agency: Reporting on action, Envisioning, Committing to action |
| 7: Adding a goal focused on students developing relationships with one another | · Shared dilemma  
· Teachers’ shared goals  
· Alignment to existing structures – Common Core State Standards ELA  
· Alignment to existing structures – Compose Our World | · Deliberative form of agency: Explicating, Envisioning |
| 8: Recommitting to being intentional about which students to sit with during Dig Deep | · Shared dilemmas | · Deliberative form of agency: Criticizing, Explicating, Committing to action, Reporting on action |
| 9: Giving students more ownership over the routine | · Shared dilemma  
· Alignment to existing structures – Compose Our World  
· Teachers’ shared goals  
· Alignment to existing structures – classroom practices | · Deliberative form of agency: Envisioning, Committing to action |
Throughout the description of each phase of design work, teachers suggested ideas, raised challenges or dilemmas, or agreed upon solutions that led to design decisions. I examined which motivating factors the teachers initiated and which factors I initiated as the facilitator of the group.

**Factors initiated by teachers.** Teachers introduced individual and shared dilemmas. The shared dilemmas teachers raised focused on difficulties they faced in implementing the strategy as designed, such as when teachers did not know what was happening in other groups when they sat intentionally with one group during Dig Deep. The individual and shared dilemmas raised also focused on difficulties they experienced prior to the design, but that continued to persist in some way through our design work, such as the same students sharing each day. The group discussed, debated, and problem-solved the individual and shared dilemmas, which resulted in opportunities for teachers to reflect on, ask for, and receive help on their teaching practice. Some of these joint conversations led to collective design decisions; seven of the design decisions were influenced by individual or shared dilemmas teachers raised (see Table 4.1).

Teachers also pointed out when a suggestion for the design aligned with their teaching goals or with existing structures, such as the Compose Our World curriculum, school goals, or English language arts goals. The literature on professional development often refers to this alignment as coherence and argues that for professional development to be considered effective it must align with teachers’ goals and beliefs (Desimone, 2009). Likewise, teachers are more likely to adopt an innovation or new practice if it aligns with “district’s goals and with social pressures within the schools” (Penuel, Fishman, Yamaguchi, & Gallagher, 2007, p. 931). Alignment to existing structures influenced more than half (5/9) of the design decisions while
teachers’ goals influenced three of the design decisions suggesting that coherence was an important factor in making decisions.

**Factor initiated by the facilitator.** As the facilitator, I introduced all of the tools the group drew on to make design decisions. This is perhaps not surprising, as a basic premise of co-design is that it is a highly facilitated process that relies on practitioners as active and engaged partners focused on shared goals and a design task (Penuel et al., 2007). These tools included the persona template, the cultural probes article, the practical measures chart, and the Survey Items by Construct document. It is worth noting that not all of the tools introduced were used to make a design decision, as in some cases the tools were used as a stepping-stone for a later decision. For example, in our first meeting we completed a Fishbone Diagram to help us analyze why teachers observed persistent disengagement from some students as a step in identifying shared goals and determining the focus of our design. However, the fishbone tool itself did not lead directly to a design decision.

**Teachers’ Expressions of Agency**

Teacher learning occurred when teachers broke away from their old ways of beginning class and from how they had previously thought about developing relationships with students. Through co-design, we transformed teachers’ existing opening routine into a new activity and teachers engaged in deliberative expressions of agency to do so. Opportunities existed for teachers to demonstrate agency within this project and teachers expressed agency through deliberation within all nine of the design decisions. Beginning after our second meeting, teachers implemented the new Dig Deep routine in their classrooms daily. During each of our meetings, they reported back on their implementation. As part of the deliberation, teachers reported back to the group how they enacted the new routine, describing how they took action to implement or
adapt the routine (*reporting on actions*). Teachers had opportunities to raise and discuss dilemmas, criticize the routine, and reflect on connections to existing practices and structures. They drew on available resources, including past experiences in their classrooms and their knowledge of students, co-design tools such as the cultural probes article and persons, and our co-design meetings to reimagine future possibilities for Dig Deep and for building relationships with students.

**The six forms of deliberation as expressions of agency.** In this study, teachers exhibited all six forms of deliberation as expressions of agency. In their study of a Change Laboratory intervention, Haapasaari, Engeström, and Kerosuo (2016) also found expressions of all six types of agency, and noted that it was “significant” because it supported their “assumption that expansive learning …. [was] indeed a process of formation of transformative agency” (p. 244). The demonstration of the six forms of deliberation in my study suggests that teachers engaged in a process of expansive learning.

Teachers often engaged in various forms of deliberation when making design decisions (see Table 4.1), and I found multiple instances of *criticizing, explicating, envisioning, committing to action, and reporting on action* (see Table 4.2). The most frequent forms of deliberation when making design decisions were *explicating* and *committing to action*. This is perhaps not surprising in a co-design study where the goal is to develop and refine a design with the intention of putting it into action in rapid, iterative cycles of testing and refinement. While teachers engaged in all six forms of deliberation, they expressed just five of the six forms of deliberation when making design decisions. I found no instances of *resisting* leading to a design decision. However, I did find one instance of *resisting* in the data during the fifth meeting. This
pattern is consistent with findings of a Change Laboratory facilitated by Haapasaari, Engeström, and Kerosuo’s (2016) study, where *resisting* was the least frequently occurring type of agency.

Table 4.2

*The Forms of Deliberation Expressed When Making Design Decisions*

<table>
<thead>
<tr>
<th>Form of Deliberation</th>
<th>Number of Design Decisions</th>
<th>Design Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resisting</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Criticizing</td>
<td>4</td>
<td>• 1: Focusing on the beginning of class</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3&amp;4: Asking students to share and being intentional about joining a group of students</td>
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<tr>
<td></td>
<td></td>
<td>• 8: Recommitting to being intentional about which students to sit with during Dig Deep</td>
</tr>
<tr>
<td>Explicating</td>
<td>5</td>
<td>• 1: Focusing on the beginning of class</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3&amp;4: Asking students to share and being intentional about joining a group of students</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 7: Adding a goal focused on students developing relationships with one another</td>
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<tr>
<td></td>
<td></td>
<td>• 8: Recommitting to being intentional about which students to sit with during Dig Deep</td>
</tr>
<tr>
<td>Envisioning</td>
<td>3</td>
<td>• 6: Asking students to record and keep track of their responses over time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 7: Adding a goal focused on students developing relationships with one another</td>
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<tr>
<td></td>
<td></td>
<td>• 9: Giving students more ownership over the routine</td>
</tr>
<tr>
<td>Committing to action</td>
<td>5</td>
<td>• 2: Developing prompts inspired by cultural probes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 5: Creating a menu of modes for prompts</td>
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<tr>
<td></td>
<td></td>
<td>• 9: Giving students more ownership over the routine</td>
</tr>
<tr>
<td>Reporting on action</td>
<td>2</td>
<td>• 6: Asking students to record and keep track of their responses over time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 8: Recommitting to being intentional about which students to sit with during Dig Deep</td>
</tr>
</tbody>
</table>
Resisting. Despite having occurred only once, the incidence of resistance was an important one. As described above in Phase 4, Rachel resisted a suggestion made by Jane to ask students a prompt that Rachel felt might make students feel especially vulnerable. She resisted because she wanted a plan to “make it safe for everyone” to respond to the prompt. Rachel’s resistance was important for the work of the group because it surfaced a dilemma that we had talked around in several meetings: how to construct a safe space for students to share and at the same time encourage students to share. It was not until Rachel resisted that the group examined this dilemma and the discussion of the dilemma spurred a deliberation among group members in which they together envisioned possibilities for Dig Deep to address the dilemma, such as students sharing just a portion of their response such as a word or phrase or students sharing in project groups where they felt more comfortable. This example is further explored in Chapter Five.

Teachers’ Ideas about Student Ownership Evolve

An unanticipated result of the design work was teachers’ desire to build in more student ownership of Dig Deep. This notion evolved throughout our design work together, and as teachers had more opportunities to express agency through deliberation and to take ownership themselves over the design. Rachel explained,

… towards the end of the semester, we could see that then the students understood the purpose [of Dig Deep] and understood the positive aspects of it. But then, you kinda wanna put it back on them, because when they’re in the trenches, I think they even have a better perspective on how it could be better. (Rachel_Member check_1.30.18)

A persistent theme that arose throughout our work together and surfaced in the data in every meeting was teachers talking about their relationships with specific students. Throughout the
design process, teachers had opportunities to reflect on and think about students and students’ perceptions. For example, teachers had opportunities to think about specific students who they struggled to engage and get to know through the persona activity. Teachers also reflected on students’ perceptions during each round of analysis of their practical measure data. In the final meeting, I also shared some of the student interview data with teachers. In addition, teachers drew on their own observations of students and shared these observations with the group.

It is possible that as teachers experienced more ownership over the design and the design process and as teachers continued to deepen their relationships with students, they felt more comfortable thinking about ways for students to take on more ownership of Dig Deep. The notion of giving students more ownership over the routine seemed to have resonated and stuck with the teachers beyond the scope of the study. Elaine reflected that she realized that when students had a voice in the classroom they felt more engaged:

> When kids have choice they feel more invested in things and more engagement. I wonder if that had some influence. We just recognize that all the time. Kids appreciate having voice in the classroom and maybe this was a way we could give them some voice and how their daily life was going to proceed from here on out. (Elaine_Member check_1.30.18)

Such a reflection from Elaine was significant because she gave students the least amount of ownership over Dig Deep during the study as she was the only teacher who did not ask her students to write their own Dig Deep prompts. Rachel said that giving students more ownership “was a growth piece for me” and that in the following school year she continued to give students more ownership, so that a different group of students designed the prompts and led the Dig Deep routine each day (Rachel_Member check_1.30.18). Thus, what started out as a suggestion for
students to “create their own prompts,” turned into altering the routine by the final meeting so that students would help design the routine with teachers in the future.

**Conclusion**

In this chapter, I aimed to show how the design process evolved as we iterated on the design through making design decisions. Throughout the design process, teachers had opportunities to engage in deliberative moves as expressions of agency in ways that impacted what we designed. Teacher learning was evident when teachers broke away from their old routines to design, refine, and implement a new routine in their classrooms.

The nature of our design work focused on relationships as teachers intentionally designed for improving their relationships with students and creating caring classrooms. While teachers focused on building relationships with students, our group also built relationships with one another through the shared work. Individual and shared dilemmas proved important to our work; surfacing and discussing dilemmas signaled that our group had established a certain amount of rapport and trust. The subsequent chapters will further explore the relational and the emotional aspects of our design work. The next chapter focuses on the relational aspects of the design work by examining the nature of teachers’ talk within our meetings as it related to the students’ survey responses about their experiences in the classroom.
CHAPTER FIVE: TEACHERS’ TALK ABOUT THE DIG DEEP DATA

Purpose

In order to know if Dig Deep was an improvement in the quality of teacher-student relationships in teachers’ classrooms, we designed a survey to collect and study students’ classroom experiences. In our final three meetings, we spent time looking at and talking about the survey data. The student survey was a particular type of measure used in improvement science, referred to as a practical measure. Briefly, a practical measure is a measure used to determine if the change introduced is actually an improvement. The measures are used formatively to inform revisions to the design next steps (Bryk et al., 2015). The data collected from the practical measure differed from traditional forms of data collected to monitor and improve classroom practice, in that it focused on students’ experiences, rather than on academic outcomes. The practical measure was “practical” in two senses: 1) it was designed to gather information about student experiences that might be altered through changes in teacher practice, and 2) it was designed to be feasible to implement in the context of teaching (see Chapter Three for more details on what practical measures are and how this one was developed).

Prior to implementing Dig Deep in their classrooms, teachers administered the survey to establish a baseline of student responses. Following the design of Dig Deep, teachers implemented the routine daily and administered the practical measure to students approximately every other week. This resulted in four sets of data, one baseline set prior to implementation, and three subsequent sets throughout the semester. During our data discussions teachers toggled back and forth between their own data and the group data, examining the pie charts and noticing trends (see Appendix G for the final version of the student survey).
Using and analyzing the practical measure data is considered an important lever for change and therefore an essential component of improvement science work (Bryk et al., 2015). Despite this focus on collection and analysis of data, few studies examine what happens when teachers look at and analyze their practical measure data together in improvement science cycles. Little is known about what teachers talk about when looking at practical measure data and if these conversations afford opportunities for professional learning. More broadly, despite the popularity of data-driven initiatives in schools and a growing body of research on educators’ data use, Coburn and Turner (2012b) note that there is “shockingly little research on what happens when individuals interact with data in their workplace settings” (p. 99).

Collectively looking at data requires teachers to engage in public “reflection to build knowledge of practice” (Cochran-Smith & Lytle, 1999, p. 522). Using data in collaborative groups, including design teams, therefore requires that teachers engage in public reflection through discussion. In this chapter, I focus on one of the innovations our team developed, the student survey as a practical measure, to analyze teachers’ talk about the data to understand if and how looking at the data can provide a window into examining pedagogical practice. In doing so, I describe how looking at the data enabled the group to talk about pedagogical practice, as well as talk about the practical measure itself. Discussions about the practical measure data are of particular interest, because there is evidence from the data in this study that teachers improved their relationships with students, that teachers made improvements in their student data and in their relationships with students. I asked the following research questions:

- What was the nature of teachers’ talk when looking at practical measure data?
- How did teachers’ talk when looking at students’ survey data afford or constrain opportunities to engage in investigations of pedagogical practice?
Teachers’ Perspectives on the Data

The findings reported in this chapter center teachers’ interpretations of their data. Therefore, because Rachel did not use her baseline data as a starting point for comparison, I do not use it to report on her improvements (Rachel confirmed this during her member check). Rather, I report Rachel’s improvements as she perceived them, comparing her first survey after implementation to her third survey after implementation.

Similarly, I do not report statistical analyses of teachers’ data. It was important to teachers that their data showed growth or decline when we looked at it, even if only by a few percentage points. While this might not be statistically significant, it mattered to teachers if even one student who had agreed with a statement previously disagreed in the next survey. Rachel explained, “teachers still worry about one kid, if they’re not connecting with that one kid” (Rachel_Member check_01.30.18). Similarly, Elaine said, “Every kid matters. Any sort of improvement is something to celebrate and take note of” (Elaine_Member check_01.30.18). Jane explained,

When you’re looking at this data, especially when you’re only asking one class, you know, one student, that’s a person that you know who's in your room. That’s not just a number. Of course, you want to know what that's about because it has real ... because it’s a person. (Jane_Member check_01.30.18)

It mattered to teachers if one student disagreed with an item, when looking at the data teachers were cognizant that we were not just discussing percentages, we were discussing their students. Thus, to a teacher reflecting on her practice, or to the group reflecting on their implementation of Dig Deep, even a small increase or decrease was meaningful and fodder for conversation.
Findings: Teachers’ Talk about Data

The Findings section is comprised of three main parts. First, I provide data to show how teachers made improvements on some items of Dig Deep and how they improved their relationships with students. In order to more fully understand the substance of teachers’ talk, it is important to ascertain if teachers demonstrated improvement in their data over the course of the semester. Then, I provide an overview of the episodes of teacher talk within our data discussions, before analyzing specific episodes of talk. The purpose of the overview of the episodes is to provide a sense of the number of episodes and turns for each episode, and show how many of the episodes turned towards or away from discussions of pedagogical practice and or the practical measure (see Chapter Three for a description of pedagogical practice and practical measure). In the final section, I analyze four episodes to show how looking at the data afforded or constrained conversation that led to deeper investigations of teaching and the survey.

Was Dig Deep an Improvement?

Although this study was situated at the beginning of an improvement science study, the data indicate that teachers made progress toward their goals for Dig Deep even after just three plan-do-study-act (PDSA) cycles, as evidenced by improvements in their data gathered on their students’ experiences of the classroom.

Tables 5.1, 5.2, and 5.3 compare each teacher’s results on an early survey to their third and final survey results. The tables display the percentage of students agreeing to each item. The tables displaying Jane’s (Table 5.1) and Elaine’s (Table 5.3) results compare their baseline survey data to their third survey data. The table displaying Rachel’s results (Table 5.2) compares her first survey data to her third survey data. With the exception of Rachel, the teachers used their baseline data as a reference point to determine patterns of improvement. Elaine and Jane
used their baseline survey data to compare their results over time. After reviewing her baseline survey data, Rachel did not use her baseline data to compare her results, opting instead to compare her final results to the first round of data. Rachel observed that students were confused while taking the survey. She explained that her previous opening routine was going over the agenda, and that students’ responses to the items did not make sense to her. She explained,

I know we’ll be comparing [the initial survey results] to how we’re doing [the opening routine] different, but I still don’t feel like I should be scoring this high on some of these things. “It made me feel like I matter,” going over the agenda - why would they answer that? (Meeting transcript_04.12.17).

Rachel wondered why students would agree that going over the agenda made them feel like they mattered in class. Rachel did not trust the data results, and she felt like students answered positively to items to please her. As a result she did not use the baseline survey results as a comparison point.

All three teachers made improvements on item 5, “Today I worried about sharing something personal about my culture, background, or interests with other students.” In addition, teachers made improvements on different survey items, which may be expected given the varying goals they each had (as described in the previous design chapter) as well as the different needs of each class, both of which likely impacted their implementation of Dig Deep. Jane made the most improvement, improving on all but one item. That all teachers’ data showed improvement on at least two items indicates that teachers made progress toward their goals for Dig Deep. At the conclusion of the study, all teachers felt that their relationships with students had improved (Jane_Int_05.25.17; Rachel_Int_05.23.17; Elaine_Int_05.25.17).
Table 5.1

Percentage of Jane’s Students Agreeing to Each Item, Baseline and Third Surveys

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Baseline Survey</th>
<th>3rd Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Today the opening class routine made me feel like I matter in this classroom.</td>
<td>87%</td>
<td>93%</td>
</tr>
<tr>
<td>2. I learned something new about my classmates in the opening routine.*</td>
<td>78%</td>
<td>95%</td>
</tr>
<tr>
<td>3. Learning about my classmates in the opening routine helps me to care about them.</td>
<td>72%</td>
<td>93%</td>
</tr>
<tr>
<td>4. Today my teacher tried to find out what interests me or what is important to me.</td>
<td>79%</td>
<td>93%</td>
</tr>
<tr>
<td>5. Today I worried about sharing something personal about my culture, background, or interests with other students.**</td>
<td>38%</td>
<td>24%</td>
</tr>
<tr>
<td>6a. Today my teacher used examples from my culture or background when teaching.***</td>
<td>52%</td>
<td>38%</td>
</tr>
<tr>
<td>6b. Today my teacher used examples of my interests when teaching.***</td>
<td>52%</td>
<td>60%</td>
</tr>
<tr>
<td>7. Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.</td>
<td>70%</td>
<td>76%</td>
</tr>
</tbody>
</table>

Improvements indicated by bold font.

*Item 2 was added after the baseline survey. The percentage reported for this item is from the 1st survey after implementation.
**An improvement for item 5 was represented by a decrease in percentage.
*** Items 6a and 6b were originally one item in the baseline survey.
Table 5.2

Percentage of Rachel’s Students Agreeing to Each Item, First and Third Surveys

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>1st Survey</th>
<th>3rd Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Today the opening class routine made me feel like I matter in this classroom.</td>
<td>100%</td>
<td>86%</td>
</tr>
<tr>
<td>2. I learned something new about my classmates in the opening routine.*</td>
<td>68%</td>
<td>67%</td>
</tr>
<tr>
<td>3. Learning about my classmates in the opening routine helps me to care about them.</td>
<td>74%</td>
<td></td>
</tr>
<tr>
<td>4. Today my teacher tried to find out what interests me or what is important to me.</td>
<td>74%</td>
<td>63%</td>
</tr>
<tr>
<td>5. Today I worried about sharing something personal about my culture, background, or interests with other students.**</td>
<td>32%</td>
<td>13%</td>
</tr>
<tr>
<td>6a. Today my teacher used examples from my culture or background when teaching.***</td>
<td>47%</td>
<td>29%</td>
</tr>
<tr>
<td>6b. Today my teacher used examples of my interests when teaching.***</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>7. Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.</td>
<td>68%</td>
<td>70%</td>
</tr>
</tbody>
</table>

*Item 2 was added after the baseline survey. The percentage reported for this item is from the 1st survey after implementation.

** An improvement for item 5 was represented by a decrease in percentage.

*** Items 6a and 6b were originally one item in the baseline survey.
Table 5.3

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Baseline Survey</th>
<th>3rd Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Today the opening class routine made me feel like I matter in this classroom.</td>
<td>76%</td>
<td>63%</td>
</tr>
<tr>
<td>2. I learned something new about my classmates in the opening routine.*</td>
<td>100%</td>
<td>91%</td>
</tr>
<tr>
<td>3. Learning about my classmates in the opening routine helps me to care about them.</td>
<td>88%</td>
<td>82%</td>
</tr>
<tr>
<td>4. Today my teacher tried to find out what interests me or what is important to me.</td>
<td>71%</td>
<td>91%</td>
</tr>
<tr>
<td>5. Today I worried about sharing something personal about my culture, background, or interests with other students.**</td>
<td>47%</td>
<td>18%</td>
</tr>
<tr>
<td>6a. Today my teacher used examples from my culture or background when teaching.</td>
<td>76%</td>
<td>46%</td>
</tr>
<tr>
<td>6b. Today my teacher used examples of my interests when teaching.</td>
<td>76%</td>
<td>64%</td>
</tr>
<tr>
<td>7. Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.</td>
<td>88%</td>
<td>55%</td>
</tr>
</tbody>
</table>

*Improvements indicated by bold font.*

*Item 2 was added after the baseline survey. The percentage reported for this item is from the 1st survey after implementation.

** An improvement for item 5 was represented by a decrease in percentage.

*** Items 6a and 6b were originally one item in the baseline survey.

In addition to the practical measure data, I interviewed 11 students from the three classrooms about Dig Deep. All students I interviewed agreed that their teacher cared about them, although two of the eleven students said that the teacher could do even more to demonstrate care. One student wanted more communication with the teacher and suggested the teacher spend more “one-on-one time to talk about ideas when you don’t necessarily have to ask for it” (St7_Int_05.23.17). The second student said that the teacher could be “a little bit more attentive to the little things that we do that are different,” for example “if someone’s talking a lot less than normal or if they’re not paying attention or listening, if they just kind of have their head
down. Stuff like that” (St2_Int_05.23.17). He suggested that the teacher talk to the student in the hallway or check in and say, “I noticed this” (St2_Int_05.23.17). All students liked Dig Deep, speaking favorably about the new routine. A majority of students (7 of 11) liked that they could be creative in expressing themselves in the routine. All students agreed that their teacher tried to find out what interests them or what was important to them and several students explained that it was important to them that the teacher took a personal interest in them, beyond their grades or school work (Student interviews).

**Overview of Episodes**

Across the three meetings, there were thirty-one episodes total. Examples of each episode focus, turning toward or away from pedagogical practice and the practical measure, are displayed in Table 5.4. Turning toward pedagogical practice or the practical measure was when teachers engaged in a deeper investigation of their teaching practice, or the student survey items. Turning away from pedagogical practice was when the group changed direction or responded briefly, without engaging in talk about specific classroom teaching instances or advice. Turning away from the practical measure was when the student survey was raised for discussion but the group changed direction or responded briefly, without a deeper discussion of the items or the survey.
### Table 5.4

*Example Episode Excerpts for Each Focus*

<table>
<thead>
<tr>
<th>Focus</th>
<th>Episode Excerpt</th>
</tr>
</thead>
</table>
| Turning toward pedagogical practice     | **Elaine:** Well, I felt they learned something new about their classmates. …  
**Rachel:** I would hope that would be higher. I don’t understand why you would disagree with that.  
**Jane:** I do when I look at some of my classes.  
**Rachel:** Yeah.  
**Jane:** The community's just not coming together.  
“Learned something new about their classmates” – Meeting 4  |
| Turning toward practical measure        | **Ashley:** So, we talked about changing one survey question, did you like having students explain their response, was that helpful for you to know about how students answered, today I’m worried about sharing something?  
**Jane:** I’ve been really curious.  
**Rachel:** Or do we pick a different one for them to share about?  
**Ashley:** To write about you mean?  
**Rachel:** Yeah, so we heard from that one but I just wonder if next time we pick a different one to hear more voice, ‘cause I think it is kind of interesting. I don’t know what you guys, which one you would like to share more about their thoughts?  
“Students explain their response” – Meeting 5  |
| Turning away from pedagogical practice  | **Elaine:** I kind of wish I remembered what the topics were on those days, I’m sure I could go back and find it but does it suggest like: "oh one topic worked". …  
**Ashley:** There were responses to number 5, that was just for the second survey.  
**Elaine:** Oh, I see I totally just needed to keep reading.  
**Ashley:** Yeah, I remember I was there for the second one, it was the journey, the thing that you have courage for.  
**Elaine:** Oh! They didn’t like that one apparently, that’s okay. I can’t be personally offended by it.  
“I can’t be personally offended” – Meeting 5  |
| Turning away from practical measure     | **Ashley:** So, is there anything that you’re really hoping to see in either your data or the group data?  
**Jane:** Maybe some movement on the reverberations of the opener later in class or connections to it, you know? See a little positive movement on that score maybe?  
**Ashley:** Yeah. That seemed like something you were all thinking about working on …  
**Rachel:** I almost feel like I can’t even look very much at the first round of data because I feel like they didn’t really know what they were answering, ‘cause in a lot of mine I think I have the best scores or whatever, the pre-survey and I knew, the scores should not be this good ‘cause I haven't even done anything so to me, I feel more value comparing the second too, ‘cause I feel like they really understood what they were answering.  
**Ashley:** That’s useful. That’s good to know.  
“See a little positive movement” – Meeting 5  |
Overviews of the episodes from each meeting appear in Tables 5.5, 5.6, and 5.7. Each episode is listed, along with the number of turns in each episode, as well as the talk in the episode turned toward or away from pedagogical practice or the practical measure. Each of the three meetings analyzed included nine to eleven episodes of data discussions, ranging from two to forty-two turns of talk.

Table 5.5

Meeting 4 Episode Overview

<table>
<thead>
<tr>
<th>Episode</th>
<th>No. of turns</th>
<th>Turning toward pedagogical practice</th>
<th>Turning toward practical measure</th>
<th>Turning away from pedagogical practice</th>
<th>Turning away from practical measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Any time, any kid”</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>“Learned something new about their classmates”</td>
<td>11</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I have a lot of kids who said”</td>
<td>6</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>“I haven’t made that a goal”</td>
<td>4</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>“I worry”</td>
<td>42</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Data side-by-side”</td>
<td>17</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>“I’ve enjoyed whatever group I’ve sat with”</td>
<td>20</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>“My teacher used examples”</td>
<td>40</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Next steps”</td>
<td>32</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5.6

Meeting 5 Episode Overview

<table>
<thead>
<tr>
<th>Episode</th>
<th>No. of turns</th>
<th>Turning toward pedagogical practice</th>
<th>Turning toward practical measure</th>
<th>Turning away from pedagogical practice</th>
<th>Turning away from practical measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>“See a little positive movement”</td>
<td>5</td>
<td></td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>“I can’t be personally offended”</td>
<td>8</td>
<td></td>
<td></td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>“Made some progress”</td>
<td>2</td>
<td></td>
<td></td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>Students “speaking to you”</td>
<td>5</td>
<td>☑</td>
<td></td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>“Every element of my lesson”</td>
<td>8</td>
<td>☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Is it flexing for kids”</td>
<td>4</td>
<td></td>
<td>☑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Two comments”</td>
<td>5</td>
<td>☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Teacher wanted to get to know me”</td>
<td>10</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>“I did some backsliding”</td>
<td>24</td>
<td>☑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Kids are still learning about classmates”</td>
<td>2</td>
<td></td>
<td></td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>“Students explain their response”</td>
<td>12</td>
<td></td>
<td></td>
<td>☑</td>
<td></td>
</tr>
</tbody>
</table>
Table 5.7

Meeting 6 Episode Overview

<table>
<thead>
<tr>
<th>Episode</th>
<th>No. of turns</th>
<th>Turning toward pedagogical practice</th>
<th>Turning toward practical measure</th>
<th>Turning away from pedagogical practice</th>
<th>Turning away from practical measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>“It’s a student I had a good relationship with”</td>
<td>8</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>“Different peer groups”</td>
<td>8</td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“There’s a big jump in agreeing”</td>
<td>4</td>
<td></td>
<td>√</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>“A little more all over the place”</td>
<td>9</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>“It looks like they all feel better about that one”</td>
<td>5</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>“Open-ended responses”</td>
<td>3</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>“Differentiating between their presentation and Dig Deep”</td>
<td>6</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It seemed like I was interested”</td>
<td>11</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Keep going with it”</td>
<td>11</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Taking one of these questions and delving into it more”</td>
<td>6</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.8 summarizes the episodes across the three meetings. In approximately two-thirds of the episodes, our group turned toward deeper investigations of pedagogical practice and/or the practical measure. There were nine episodes in which the group turned toward a deeper investigation of pedagogical practice, three episodes in which the group turned toward the practical measure, and seven episodes in which the group turned toward both pedagogical practice and the practical measure. In approximately one-third of the episodes, our group turned
away from deeper investigations of pedagogical practice and/or the practical measure. There were nine episodes in which the group turned away from a deeper investigation of pedagogical practice, and two episodes in which the group turned away from both pedagogical practice and the practical measure.

Table 5.8

*The Number of Episodes in which Teachers Turned Toward or Away from Pedagogical Practice and/or the Practical Measure*

<table>
<thead>
<tr>
<th>Number of Episodes of Talk</th>
<th>Pedagogical Practice</th>
<th>Practical Measure</th>
<th>Both</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turning toward</td>
<td>9</td>
<td>3</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Turning away from</td>
<td>9</td>
<td>0</td>
<td>2</td>
<td>11</td>
</tr>
</tbody>
</table>

After identifying the episodes in which teachers turned towards and away from pedagogical practice and the practical measure, I investigated the episodes further to look for patterns about the kinds of topics associated with turning towards versus away. There were two items for which our conversation only moved towards, never away from, pedagogical practice and/or the practical measure: “Today my teacher tried to find out what interests me or what is important to me” and “Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.” The only item in which our conversation only moved away from, never towards, pedagogical practice and/or the practical measure was “Learning about my classmates in the opening routine helps me to care about them.” Our group only talked directly about this item once, which makes sense because it was not an explicit goal for teachers until the very end when they looked forward to the next school year.
The group was more likely to turn toward pedagogical practice and the practical measure when a negative data pattern was identified, suggesting identifying less than desirable data results opens a window into talking about the survey item or teaching practice. Out of the seven episodes that the talk turned toward both objects of attention, five of the episodes focused on a teacher identifying a negative or less than desirable data pattern. In two of these episodes, a teacher asked a question related to an item on the practical measure and this led to teacher talk about their practice and about the survey. In the “I worry” episode, Elaine asked a question about item 5: “Today I worried about sharing something personal about my culture, background, or interests with other students.” She asked, “We want them to agree with what? All of them except for this one?” (Meeting transcript_04.25.17). Following this question, teachers talked about the student survey and then shifted to talking about their practice. More details on the “I worry” episode are described in the next section. Later in the same meeting, during the “My teacher used examples episode,” Elaine again asked a question, this time related to item 6: “Today, my teacher used examples from my culture, background, or interest when teaching.” She asked, Does that mean, “I heard this kid talk about this and now I’ve got to find a way to somehow work that in throughout the rest of the period,” you know? Is that what we’re talking about, like something a kid specifically said that’s going to reappear later in the period? I don’t know, is that what that means? Something I heard from the opening thing, somehow use it again later on. Is that what that means? (Meeting transcript_04.25.17) Following this question, the group talked about the item itself, Jane and Rachel talked about their pedagogical practice as it related to this item, and we returned to talking about the item. While only two episodes included examples of a teacher asking a question about the item, both episodes
show how a question related to the survey item can lead a group to deeper investigations of pedagogical practice and the practical measure.

Teacher Talk About Student Survey Data

After coding the data, I reviewed each episode and carefully selected episodes to share in the findings section that showed the range of conversations our group had about data. I selected one episode to illustrate teacher talk turning toward pedagogical practice, two episodes to illustrate teacher talk turning toward both pedagogical practice and the practical measure, and one episode to illustrate teacher talk turning away from pedagogical practice. The first episode from the fourth meeting, “Any time, any kid,” is an example of teacher talk that began with identification of a positive data pattern and turned away from pedagogical practice. The second episode, also from the fourth meeting, “I worry,” is an example of teacher talk that began with noticing variability and negative data patterns, along with a teacher question, and then turned toward both pedagogical practice and the practical measure. The third episode, from the fifth meeting, “Students speaking to you,” is also an example of teacher talk that started with identification of a negative data pattern and turned toward both pedagogical practice and the practical measure. The final episode, from the fifth meeting, “I did some backsliding,” also began with the identification of a negative data pattern and then turned toward pedagogical practice. Considered together, the examples were selected to show the range of teachers’ discussions on the practical measure data and the ways in which teachers’ talk opened up possibilities for learning through investigations of their teaching. Teachers’ talk about practical measure data afforded and constrained opportunities for learning. In the sections that follow, I provide the turns of talk from each of the four episodes and analyze each episode to reveal the
nature of teachers’ talk about the student survey data and to reveal patterns in the talk that afforded or constrained conversations about teaching and about the practical measure.

“Any time, any kid”: Turning away from the objects of attention. Several times in the data the group turned away from both objects of attention. This occurred, as in the episode below, when a teacher identified a pattern in the data and then immediately made a generalization about the pattern, constraining opportunities for alternative interpretation or additional discussion. On these occasions, neither a further investigation of pedagogical practice nor a revision of the practical measure occurred.

In our fourth meeting, we looked at the first round of practical measure data teachers collected from students. Rachel made the first observation about her data, beginning with the first item on the survey, “Today the opening class routine made me feel like I matter in this classroom.”

Rachel: I guess for me, the first one really I read was, “The opening class routine makes me feel like I matter.”

Elaine: Yeah.

Rachel: I guess any time any kid in this building can feel like they matter, that’s really important. If the opening routine is helping that, I think, like what Jane said, that’s huge.

Rachel immediately generalized, making a broad statement that “any time any kid in this building can feel like they matter, that’s really important.” The generalization was not an actionable statement, nor did it invite further analysis or reflection and following her statement, the group moved on to discuss another item. All students in Rachel’s class agreed with the statement, “The opening class routine makes me feel like I matter.” It is probable that because all of her students agreed that they felt they mattered in her classroom, Rachel did not view this as
an item that needed further analysis or explication, or that the data was so convincing to her she quickly jumped to generalizing. In this example, Rachel jumped to generalizing, and her comment was not followed up on by anyone in the group, and further discussion of the item or of teaching ended. Rachel’s claim also contained a value judgment, stating that if the opening routine helped kids feel like they mattered, then that was “huge,” meaning important and positive. I followed Rachel’s statement with a prompt to invite her say more: “Is that one that stood out to you as a high positive?” She responded to my prompt with an affirmative “Mm-hmm,” but did not elaborate. Likely the closed-ended nature of my facilitation prompt failed to elicit more of a response from Rachel, and I took her brief answer as indicating that she was not interested in exploring this pattern further. The discussion turned toward identifying other patterns in the data and thus turned away from investigating pedagogical practical or from revising the practical measure.

In all of the examples of teacher talk which turned away from pedagogical practice or the practical measure, someone made a generalizing statement that ended the episode. This generalizing statement was broad and not actionable, such as “that’s interesting” or “I’m not surprised I didn’t score so hot” (Meeting transcript_04.25.17). It did not invite further discussion on the topic, but rather someone changed the topic, often by bringing up a new data pattern. Of the eleven episodes in which our talk turned away from pedagogical practice or the practical measure, eight instances included generalized statements that contained a value judgment. The remaining episodes in which our talk turned away from the objects of attention included general statements of a different nature; either someone made a general statement explaining the data pattern as something they chose to focus on or not in their teaching (e.g., “I haven’t made that goal, “See a little positive movement) or someone made a general statement constrained by my
facilitation prompt to “keep it low inference” (e.g., “There’s a big jump in agreeing, “A little more all over the place”).

**“I worry”: Turning toward both objects of attention.** In seven of the episodes, talking about the data led the group to turn towards both pedagogical practice and the practical measure. In the “I worry” episode below, the group engaged in a deeper investigation of teaching, spurred by an examination of the data on the item, “Today I worried about sharing something personal about my culture, background, or interests with other students.”

In “I worry” example from the fourth meeting, I asked a question from the data protocol to prompt teachers to consider variability in the data from their three classes. Jane began the discussion with the identification of a pattern and two participants affirmed, they too, saw the pattern, opening up the possibility for further discussion.

Ashley: Are there any [items] that we have variability in the three classes?

Jane: Probably the one about being worried.

Rachel: Worried, yeah.

Ashley: Worried, yeah.

Rachel: That’s probably the biggest range, from 30 to 70.

Jane identified a pattern in the data, that there was the most variability across the three teachers when it comes to “Today I worried about sharing something personal about my culture, background, or interests with other students.” Rachel and I agreed with her and Rachel added that it has the “biggest range.” The group data showed that on the low end, in one class 32% of students agreed with this statement, while on the high end, in another class 71% of students agreed with this statement (see Figure 5.1).
After Rachel noted the range, Elaine then asked about the pattern of responses we wanted to see across the survey items.

Elaine: This is probably not a valid point, but we want them to agree with what? All of them [survey items] except for this one?

Ashley: Yeah.

Elaine: Do you think there’s any kids who just put, put, put. You know, like aren’t really caring and just go through and agree, agree, agree, agree? I don’t know if that would, the way that this one’s worded differently would make any difference in the-

Rachel: Well, I have a student that did the [COW] exit ticket and picked every single emotion.

Elaine: Nice.

Rachel: Worried, happy, everything. I had one that said like, “Didn’t feel cared about or something.” I’m like, “Who is that? I need to know.”

Elaine: Right.

Rachel: Then I go and look at his survey and he checked all of them.

Elaine: Right.

Rachel: That is something though.

Figure 5.1. Teacher data for “Today I worried about sharing something personal about my culture, background, or interests with other students.”
At first read, Elaine’s question appears to ask for clarification about the survey use. Her follow-up question specified the issue she raised, wondering if some students took the survey without “caring” and selected “agree” for each question. However, Elaine’s data reveals that in her classroom 71% of students felt worried about sharing something personal about themselves with others. Given these results, Elaine was searching for a way to explain her data. Rachel’s response affirmed Elaine’s explanation and linked it to an experience she had when she administered a Compose Our World exit ticket previously in the year. Rachel explained that on one particular item that asked students to identify the emotions they felt during a lesson, one student selected every emotion listed. She assured Elaine that based on this experience, “that is something though,” that students do check all available responses without pausing to reflect. The exchange between Elaine and Rachel seemed to allow Elaine, with the support of Rachel’s experience, to turn attention toward the practical measure by attributing the undesirable results to students’ approach to answering the practical measure questions, rather than to something they really felt. In attempting to make sense of the data, Elaine and Rachel tried to dismiss the negative results, as it may have felt threatening to accept them. To accept the negative results meant that students actually did feel worried about sharing and that perhaps their teaching practice was less than perfect. In this instance, the group’s focus became the practical measure rather than a deeper investigation of teaching.

Following the turn toward the practical measure, I suggested revising the item. I then immediately ask the group about next steps, suggesting revisions to the opening routine or to the practical measure.

Ashley: Maybe we could think of a question or think about re-wording some of these, or if you want something that's more open ended that students put a response into, we could think about changing some of these. It’s a good point to bring up.
Do any of these patterns suggest anything to you about next steps or where you want to go from here? We can keep looking at the data. We can use this to make revisions to the opening routine, or to the survey, or both.

My suggestions were an effort to open the possibility of talking further about the practical measure or instruction through discussing the Dig Deep routine. Rachel was the first to respond. Rather than suggest a next step, she took the opportunity to identify and specify a problem connected to the pattern of variation in “Today I worried about sharing something personal” we identified at the start of the episode.

Rachel: You know, and I just feel sometimes worry can stem from the topic of the day, that can stem with who they’re paired with. We don’t really know what that connects to.

Ashley: Yeah.

Rachel: I mean, I worry. We have abortion in our text and I have a group doing that for their conversation, and that just makes me a little uncomfortable, like just the whole thing. You know? Even myself, like ... Or we haven’t gotten to that point in the text, but I worry about that even and I feel definitely there are some kids if their partners were some kids, they worry about sharing much of anything because they don’t have a trust thing there too. I’m just talking, I’m not really ...

Jane: No, but the more sort of vulnerable the prompt requires them to be, the more likely there’s going to be worry.

Rachel: Yeah.

Jane: It’s not necessarily-

Rachel: The culture.

Jane: Well, and it’s not even necessarily a bad thing –

Rachel: Right.

Jane: - because some of my students were suggesting prompts like, “What’s your favorite color?” Nobody’s going to feel worried about sharing their favorite color, you know?

Ashley: It’s a good point.
Rachel: Yeah.

Jane: It’s not necessarily a ... I mean, it might be part of growth. You know?

Rachel took the opportunity after my prompt to continue talking about the “worry” question, turning the discussion toward pedagogical practice. Through this comment, Rachel moved from dismissing the data to consider that students actually did feel worried, and she wondered why. She attributed their worry to “the topic of the day” or “who they were paired with,” both elements of Dig Deep that she structured in her teaching. She specified the problem by describing one topic, abortion, that was addressed in the text and that some students selected for a project that might cause students worry. Part of the group’s goals for Dig Deep included connecting it to the project or lesson, as well as providing an opportunity for students to share about themselves. Rachel viewed abortion as a challenging topic for discussion and one that could evoke a feeling of worry from students if they were asked to talk about it in class, and this, in turn, caused Rachel worry. As she continued to talk, she revised her ideas, explaining that some students worried about sharing with specific students in the class because they had not yet established trust.

Rather than accept Rachel’s explanation, Jane offered a counter explanation, “the more sort of vulnerable the prompt requires them to be, the more likely there’s going to be worry” and she reflected that it is “not necessarily a bad thing.” Jane then linked to her experience by providing an example of a prompt one of her students wrote about sharing a favorite color. Jane reflected, “nobody’s going to feel worried about sharing their favorite color.” Jane concluded with principled talk, connecting her concrete example with a more abstract idea about teaching: when students worry about sharing something personal, it is not always something to “fix,” but rather something to embrace as part of their growth. The teaching principle was not “cast as tips
or tricks but as [a] way of interpreting students’ responses” (Horn & Little, 2010, p. 200). As was the case in Horn and Little’s (2010) study, it was “not clear from this interaction whether this bit of … knowledge was incorporated into the [teacher’s] understanding … but it was made available to her and others at the table” (p. 199). Likewise, it was not clear if Jane’s principle was totally incorporated into Rachel’s understanding but it was made available to her and to Elaine.

Elaine did revise her original interpretation when she moved from dismissing the data or attributing student responses to careless survey-taking to conjecture about why a majority of her students felt worried about sharing about themselves.

Elaine: This just sounds like I’m trying to make excuses for my class, but when I look at, it’s a very small class, they strike me as being very immature. If I was a student in there, I don’t know that with those particular kids I would feel comfortable sharing. That’s just the mix of the kids that it is. If it was my third hour class, I might feel different. You know? It’s just I feel like some of those kids in fourth hour are liable to, or could, make fun of me for something. I just feel like there isn’t that trust, I guess. I don’t know if that makes any sense.

Again looking to explain her data results on the worry item, Elaine linked to a previous conjecture made by Rachel that a lack of trust among students led to feelings of worry when sharing. While Elaine did not talk specifically about her own teaching practice, she did engage in a reflection about her class of students, and in doing shared that her classroom was less than perfect. In this instance, she considered what it might be like to be a student in her fourth hour class, noting that students could “make fun of me for something.” She suggested that students could be worried about sharing something personal about themselves with one another because some students in her fourth hour class are not always kind to one another. Through analyzing the data, Elaine began to empathize with her students and paused to consider the feelings and perspectives of her students.
Following Elaine’s reflection, Rachel changed the topic briefly by returning to a topic identified earlier in the meeting. In an effort to guide the discussion back to the topic of the item “Today I worried about sharing something personal about my culture, background, or interests with other students,” I asked another set of questions.

Ashley: Do we want to go back to the survey or do we want to go back to the opening routine and talk about how to do those things or to change the survey if, like for instance, the “worry” isn’t the right word? What sounds useful to you?

Jane: Could we just add a follow up? I don’t know.

Ashley: Yeah.

Jane: Just an open-ended question afterwards?

Ashley: Yeah, please explain or ...?

Jane: Yeah.

Jane responded and suggested adding a follow-up, open-ended item on the practical measure for students to answer. The episode concluded with the addition to the practical measure so that teachers could better understand their students’ feelings of worry.

In the “I worry” example, teachers turned toward both the practical measure and their pedagogical practice and revised their ideas throughout the conversation. It is impossible to know for sure just how this conversation impacted teachers’ pedagogical practice, but by the end of the semester, all teachers did make improvements on this item and it was the only item on which all teachers improved (see Tables 5.1, 5.2, and 5.3).

“Students speaking to you”: Turning toward both objects of attention. In the “Students speaking to you” episode from our fifth meeting, the group again turned toward pedagogical practice and the practical measure, when we looked at the second round of practical
measure data from students. Teachers talked about the meaning of student responses to the item, “Today the opening routine made me feel like I matter in this classroom.” The group discussion turned toward teaching as Jane and Rachel reflected on aspects of their teaching that may have shaped their students’ responses to the items. The discussion also turned toward the practical measure when Rachel suggested that not every item on the measure was relevant each day.

This episode began with Jane identifying a pattern in her data on the item, “Today the opening routine made me feel like I matter in this classroom.”

Jane: My students slightly, a few more of them disagree that the opening class routine made them feel like they matter in the classroom today which is kind of sad but in fact, my numbers go backwards on that one. We start with 94% agreeing with that and then we go to 81 and then we go to 75 so they're feeling less like they matter in the classroom.

Jane talked about her declining numbers on the statement and in doing so acknowledged that her classroom and potentially her pedagogical practice were less than perfect (see Figure 5.2). Jane used the data to reflect on her classroom and how her students were feeling, and revealed that she felt “sad” about this.

Figure 5.2. Jane’s data for the item 1: “Today the opening routine made me feel like I matter in this classroom.”
Rachel followed Jane’s reflection with a conjecture to explain the decline in the data.

Rachel: I just wonder though if they’re being more like critical, I just feel sometimes when you take this survey the first time, they don’t know what they’re answering, they’re answering it but now that they’re being more aware I feel that that’s part of it, too. Like no this wasn’t really, I don’t know, that’s what I felt like that first round.

Rachel conjectured that perhaps students did not actually feel differently, but instead were being more critical when they took the survey the second time. She reasoned that as this was the second time that students took the survey, students might have been more aware of the items that were being asked. Jane could have accepted Rachel’s explanation of her data, but instead she replied with a conjecture of her own.

Jane: But I also wonder if they’re speaking to you, I mean, first thing that my first hour class that happened with them coming in this morning was me barking at them to leave the yearbooks alone, I just think, I know I’m carrying my stress in the classroom and I don’t know and probably increasingly so. So, how much of that is them not talking about the opening routine but my teacher is crappy, you know? It makes me feel like I don't matter. I wonder if that’s part of it. I hope not, but ...

Rather than accept Rachel’s explanation, Jane offered a counter-conjecture and further explained the pattern by providing more details of her classroom practice. Instead of attributing the decline in her data to students being more critical in the second survey, Jane believed that students were trying to “speak” to her through the data. Through reflection on her practice, she saw a possible connection between her expression of stress in the classroom and student responses. She wondered if students took into consideration the way she related to them over the Dig Deep routine when responding to the statement, “Today the opening class routine made me feel like I matter in this classroom.” Despite the potential to move away from talking about pedagogical practice based on Rachel’s previous statement, Jane met Rachel’s conjecture with
her own counter-conjecture and in doing so turned towards pedagogical practice. Jane not only reflected on her pedagogical practice, but also revealed her orientation to student responses, seeing them as students’ truth in that moment and understanding the survey responses as a way for students to communicate with her. While the students “spoke” to her, she used the opportunity to “listen” to them and looked inward at her pedagogical practice rather than look outward to blame the students for her data patterns. In doing so, Jane displayed vulnerability within the group when she publicly admitted that her practice was less than perfect and she also took ownership for the student responses in her data. Jane’s display of vulnerability regarding her teaching allowed for the possibility for the group to respond and invited the group to reflect on their own teaching practices. In admitting that her practice was less than perfect, she allowed the group to “see” into her classroom and offered this teaching example up for discussion. She wondered if students’ responses signaled that their “teacher [was] crappy” and expressed a bit of concern and disappointment when she concluded “I hope not, but …”

Rachel’s response below continued an investigation into her own teaching, and she provided additional details about her implementation of Dig Deep. Rachel’s turn also oriented the group toward the practical measure. In her response she referenced the COW project that students were engaged in at the time, Changing the Conversation. Within Changing the Conversation, students selected and researched an issue that impacts youth and created a public service campaign to “change the conversation” about the issue, adding their voices as youth and as researchers to important issues. As part of the research process, students learned about survey design, wrote their own surveys, distributed the surveys to community members, and analyzed the data. Rachel referenced students’ topics in the turn below and referenced a specific survey lesson within the COW materials that she taught, focused on writing good survey items.
Rachel: I think a lot of times we’re picking what [Dig Deep] prompts we want to use. Like, my driving force is not usually this prompt is gonna make them feel like they matter, right? Like a lot of times it’s either making some connections. Cause even I wanted do the cultural thing and I’m like, “I can’t handle all these things.” I wanted it to really connect to the [Changing the Conversation] project and I think it did matter to a lot of them ‘cause that’s the topic they chose. But then to read these prompts and they're answering one that is about my culture background or interests – It’s almost like they could be, I don’t know, like I could definitely see kids being, “The culture? No,” da da and by that time with “interest”, even though they all picked the changes topic and that was their interest, that they’re still answering not positively to that.

‘Cause we’ve learned about double-barreled questions and we’ve got all these different questions within one, then it gets confusing, and we’ve talked about that in this whole survey thing. And so I wonder with that, if interest was just on it’s own if I would’ve had a better percentage of kids saying that: “Well yeah, because I did choose abortion, we did write an acrostic poem about abortion.” But when it brings in some of these other – I don’t know. Do you guys?

Ashley: I’m adding that into the chart below where we were gonna, in case you want to change the survey to make it so that interest is separate to not conflate culture, background and interest.

Jane: Mm hmm.

Rachel: Mm hmm.

Rachel connected the topic of students feeling like they matter to a previously discussed topic of connecting Dig Deep to the rest of the lesson, noting that her “driving force is not usually this prompt is gonna make them feel like they matter.” Rachel explained, “We’re picking what prompts we want to use,” using “we” to flag the work of the collective and connect her pedagogical practice to that of her peers. Rachel also stated, “I wanted it [Dig Deep prompt] to really connect to the project and I think it did matter to a lot of them ‘cause that’s the topic they chose.” Rachel’s contribution at this point in the discussion was a turn toward the practical measure, when she suggested that the item “Today the opening class routine made me feel like I matter in this classroom” was not a priority for her on that particular day. Rather she was more
focused on the item, “Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.”

Rachel’s response referenced patterns in her data on two items: “Today the opening class routine made me feel like I matter in this classroom” and “Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.” Rachel’s data declined on the item, “Today the opening class routine made me feel like I matter in this classroom,” whereas her data improved on the item, “Today I can see how sharing something about myself during the opening routine was connected to something we did later in class” (see Figure 5.3). She attributed these trends to her focus on connecting Dip Deep to the rest of the class, over a focus on helping students feel like they matter.
Figure 5.3. Rachel’s data for Items 1, 4, and 7 for the first and second surveys

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>1st Survey</th>
<th>2nd Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Today the opening routine made me feel like I matter in this classroom.</td>
<td>Agree 100%</td>
<td>Agree 18.8%</td>
</tr>
<tr>
<td>6.</td>
<td>Today my teacher used examples from my culture, background, or interests when teaching.</td>
<td>Agree 52.8%</td>
<td>Agree 64.7%</td>
</tr>
<tr>
<td>7.</td>
<td>Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.</td>
<td>Agree 31.8%</td>
<td>Agree 23.5%</td>
</tr>
</tbody>
</table>
Rachel also identified a possible problem with the item, “Today my teacher used examples from my culture, background, or interests when teaching.” Rachel’s data declined on this item from the first survey to the second (from 47% of students agreeing down to 35% of students agreeing; see Figure 5.3). She argued that this item was a double-barreled item (and in this case it was perhaps a “triple”-barreled item), asking about too many different constructs in the item, and she referenced the survey lesson she taught saying “we’ve learned about that in this whole survey thing.” For Rachel, the PDSA work of designing the practical measure and analyzing the data paralleled the project she was teaching and guiding in her classroom, and it provided her with another way to understand and explain her data. Rachel concluded that the item was a double-barreled item because on the day that students took this survey, she felt she made a strong connection in Dig Deep to their interests, asking about the topic they selected for their Changing the Conversation project.

The ideas that Rachel raised were sensible within the context of PDSA cycles, as an important part of the process is refining the practical measure tool. As the facilitator, I could have moved this discussion forward by asking the group to identify items on the survey we could reuse every time because they are salient to the Dig Deep routine. However, I responded by saying that I would add it to the “chart below,” referring to a chart in our meeting notes that we used to keep track of changes we wanted to make to the survey items. In our meeting notes, under the item in question, I wrote, “separate interest out” so as not to “conflate culture, background, and interests” (Shared meeting notes_05.08.17). Based on this conversation, the item became two separate items for the third and final survey teachers administered (as displayed in Tables 5.1, 5.2, and 5.3): “Today my teacher used examples from my culture and background when teaching,” and “Today my teacher used examples of my interests when teaching.”
In this episode, “Students speaking to you,” both Jane and Rachel turned toward an investigation of teaching, sharing specifics about what they did in their classrooms, and thinking about students’ perspectives. Following Jane’s counter-conjecture in which she said “I also wonder if they’re speaking to you,” Rachel linked to Jane’s comment and positioned their work as shared when she said, “we’re picking prompts we want to use.” She then switched from using “we” to using “my” and “I” in the same turn to specify how she selected prompts for Dig Deep. In doing so, Rachel not only revealed something about her teaching practice, but she may have been supporting Jane in a deeper investigation of her teaching practice through providing an alternative explanation. The episode ended when Jane changed topics, by signaling, “This may take us a little off of what we’re doing here …” (Meeting transcript_05.08.17).

While it is not possible to know exactly how this discussion was incorporated into teachers’ understanding of their teaching practice and students perspectives, by the end of the semester, Jane and Rachel made progress on the items discussed in this episode (see Tables 5.1 and 5.2). Jane made improvements on item 1: “Today the opening class routine made me feel like I matter in this classroom” and well as on item 7: “Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.” After dividing item 6 into two items, Jane and Rachel both made some improvement on item 6b: “Today my teacher used examples of my interests when teaching.” Rachel’s data also improved on item 7: “Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.”

“I did some backsliding”: Turning toward pedagogical practice. In sixteen of the episodes, the group turned toward pedagogical practice (in nine of the episodes the group turned toward just pedagogical practice, in seven of the episodes the group turned toward both
pedagogical practice and the practical measure). The “I did some backsliding” episode occurred later in the fifth meeting, and is an example of the group turning toward pedagogical practice.

Jane began the episode by identifying some patterns in her data in regards to two items: “Today my teacher tried to find out what interests me or what is important to me” and “Today my teacher used examples from my culture, background, or interests when teaching.” This conversation occurred approximately ten minutes and four episodes after the “Students speaking to you episode,” so we had already talked about dividing “Today my teacher used examples from my culture, background, or interests when teaching,” into two items.

Jane: I did some backsliding on four, “Today my teacher tried to find out what interests me or what is important to me” and also on, “Today my teacher used examples from my culture, background, or interests when teaching.”

Ashley: So, based on that, what does it make you think about for next steps?

Jane noted that her numbers decreased on two items, again admitting in the group that her practice was less than perfect. Interestingly, while Jane interpreted her numbers as deceasing on item 4, “Today my teacher tried to find out what interests me or what is important to me,” they did not decrease but rather stayed the same (see Figure 5.4). Regardless, I responded to Jane’s identification of data patterns by asking the group about next steps, implicitly directing the group’s attention to the practical measure or to teaching.
Rachel responded first with a reflection and a next step for the following school year.

Rachel: Well I feel like what Jane said – I am totally all for doing things that are tied in to what I’m doing later in class – I think that culture and background I just don’t have time to focus on that, and it’s probably a weakness and I probably need to, but I see that bigger start of the school year and I think that's just not a focus for me right now and it shows in my data.

Rachel linked her response to Jane’s patterns, and reflected that while it was a worthy goal, she did not have time to focus on using examples from students’ culture and background when teaching. Rachel admitted to the group that it was a “weakness,” but felt she would have more success working on the goal at the start of the following school year. She explained that she did
not attend to this item, and implied that incorporating students’ cultures and backgrounds was not part of her teaching at this point in time. Further, Rachel’s response indicated that incorporating students’ cultures and backgrounds would require more work than she could undertake with just a few weeks left in the school year. In this turn, Rachel admitted that her practice was less than perfect and that “it shows in my data.”

I then summarized Rachel’s turn and validated her point about timing in the semester. Jane agreed, and also then shifted the focus of the conversation to the other item she raised at the beginning of the episode, “Today my teacher tried to find out what interests me or what is important to me.” In her response, Jane referenced a lesson she taught on ethos, logos, and pathos (modes of persuasion – ethical appeal, appeal to logic, and emotional appeal) in which students were asked to identify how their research projects in Changing the Conversation (described in the previous episode) fit into the three categories.

Ashley: So, it sounds like given where we are, time of the semester, the next couple or the next opening routine that you try is just gonna be focused on connected to the Changing the Conversation project in some way.

Jane: Well, yeah but I think we could also, I was thinking about number four, “Today my teacher tried to find out what interests me or is important to me.” I was thinking about having the [Dig Deep] opener really directly tied to the topic that they’ve chosen and be – I’ve already done this. We did an ethos, logos, pathos thing today and trying to figure out what in their survey data and their research fits those three categories, and what there isn’t really. There’s not a lot of appeal to pathos here and so I think I said, “Oh that’s okay ‘cause you can work that in later, that’s about how you want to present the message.” But maybe doing an opener where I ask them: “Why is this issue important to you? What have you experienced or felt or witnessed that makes you feel passionate about this topic?” And like with the specific focus on their experiences and inviting them to tell a story from their own life with it. That will serve the dual purpose of getting them to talk about what’s important to them and why their topic is important to them and also, to get them, they’ve got some material then to focus on the human side of their, you know, the emotional appeal side of their message.
Thinking about the data pattern spurred Jane to provide a concrete example from her teaching. In order to work on finding out about what interests students, Jane planned to ask students about why the issue they selected for their Changing the Conversation projects was important to them and she planned to invite students to “tell a story from their own life” related to the topics they selected. Rather than wait until next year, Jane used the data to think about what she could do differently in the near future. In doing so, she also specified her pedagogical practice and articulated the “dual purpose” of this particular Dig Deep prompt: the prompt would allow for students to share something important about themselves, but also addressed a gap in the content by helping students appeal to pathos in their projects. Jane revealed that she embraced content in her classroom that encouraged students to think about and attend to emotions, “the human side.”

Rachel posed a question to Jane, which invited her to further elaborate on the topics her students were researching for the project.

Rachel: And do you feel like most of the topics your kids have, that’s something they’re comfortable about talking to another peer with?

(5 second pause)

Jane: Like, so none of my kids chose abortion.

Rachel: I have abortion.

Jane: Yeah, I know, I was thinking that – The ones that chose, hmmm. The one’s that – It’s a mixed bag, I don’t know for sure. I have one group that is talking about sex education, they’re very free with their opinions and you know, even their experiences with it. But then I have another one who I’m pretty sure have very limited experience to draw from and probably just picked it to pick it kind of, you know?

Rachel: Yeah. Yeah.

Jane: But I might be surprised by that. So, I don’t know.
Rachel: Okay.

Jane: But it would require them to be like vulnerable, right?

Rachel asked Jane for specification, and at the same time indicated that she was concerned about students’ comfort levels in sharing about the topics they selected. Jane took a few seconds to think about Rachel’s question before responding. Anticipating Rachel’s hesitation, Jane replied that none of her the students chose abortion to research. Rachel had raised the abortion research topic in the previous meeting (see the “I worry” episode above), and the teachers viewed as a difficult topic to discuss. In response to Jane, Rachel stated that she had a group in her classroom who selected the topic of abortion, and implied that she thought some students would not be comfortable talking to peer with a personal story about their topic.

Rachel’s question and example gave Jane some pause. Jane revised her talk, starting, pausing, and starting again when she said, “Yeah, I know, I was thinking that - The ones that chose, hmmm. The one’s that – It’s a mixed bag, I don’t know for sure.” Jane realized that she was not exactly sure how students would feel to share personal stories about why they selected their topics. In talking through it, she provided examples of two groups, one group who she considered “free with their opinions” about their chosen topic, sex education, and another group who may have selected their topic “just to pick it” and had limited personal experience with the topic. Jane contrasted the two groups, implying that she thought the group who selected sex education would be comfortable sharing about why they selected the topic, but that she had another group who she was not sure would be able to share a personal connection to the topic because she was not sure they had one. However, Jane also admitted that “I might be surprised by that,” acknowledging that she did not know for sure why students selected their topics. Her
realization that she did not know this information may have been an argument in favor of such a Dig Deep prompt, which was designed to help teachers build relationships with their students. Jane ultimately decided that such a prompt “would require them to vulnerable.” Jane viewed vulnerability in the classroom as a positive attribute and one that helped her students grow; she stated in the previous meeting, in the “I worry” episode, that being vulnerable was “not even necessarily a bad thing.” Jane felt that inviting her students to be vulnerable in the classroom was positive and reasonable given her classroom of students, whereas Rachel worried about inviting her students to be vulnerable given her classroom of students.

Jane and Rachel both turned toward pedagogical practice. As Jane specified and revised her ideas, she turned toward her pedagogical practice. Jane’s turn toward pedagogical practice provided Rachel the opportunity to imagine how she might introduce a similar prompt in her classroom.

Rachel: ‘Cause I like your idea, but I feel like I’d almost have to preface it like, “This is for you.” And then, I don’t know, I just feel like I have a lot of suicide and drugs and alcohol and I feel like there’s a lot of kids who have connections, whether it’s family members or it’s whatever, with a lot of issues. And I know even with just with my music connections, one girl wrote about a song and then she’s like, “I really don’t want to share.” And I read her thing and it talked about how her dad had kind of abandoned them and she didn’t want to get up and talk about that and so yeah. No, I think that idea is really awesome, just trying to figure out how to make it safe for everyone.

Jane: Hmm mmm.

Rachel started her reply to Jane affirming Jane’s idea for a Dig Deep prompt and then she began to articulate how she could introduce the prompt within her class, by assuring students that their response to the prompt “is for you,” implying that students would not be required to share. She provided additional details about her students and the topics they selected, extending her concern
beyond just the group who selected abortion. Rachel noted that some students selected topics including suicide, drugs, and alcohol, topics that Rachel knew students had been touched by personally. She shared a specific instance from a prompt in which students selected a song and made connections to the song, noting that one student in particular did not want to share. Rachel indicated that she wanted to respect students who may have experiences they do not feel comfortable sharing with others.

Rachel articulated support for Jane’s idea, saying it is “really awesome, just trying to figure out how to make it safe for everyone.” Rachel pointed to a dilemma raised by Jane’s suggestion for a Dig Deep prompt, that while the prompt was “awesome,” not all students would feel safe sharing their ideas. So while such a prompt may have worked for Jane and her students, Rachel worried that the same prompt would be need to be adjusted so that her students would feel safe and comfortable sharing. Rachel could have turned away from pedagogical practice, stating that she would not ask such a prompt in her room, but instead she talked through her hesitation by providing more specifics about her class.

In the next turn, I picked up Rachel’s point about making it safe for students in the room to share and complicated the idea that all students had to share.

Ashley: I think that’s a good point ‘cause I think we’re like so focused on like sharing and building relationships through being vulnerable but there may be a line, right? Like there are things that I’m not ever gonna feel safe sharing in a group of thirty people and even as an adult that’s true. So thinking through what it could be, I mean, I was thinking of the group that’s changing the message on defiant teens, like I would love to hear from them about their interest in that, you know?

Jane: Yes, yes, absolutely.

Ashley: So, I wonder if it’s something like that where it’s a quiet reflecting writing period and then...

Rachel: Mmm hmm.
Jane: Maybe if they had the option to like only share one sentence or even a phrase so it might be kind of cryptic –

Rachel: Mmm hmm.

Jane: – but they get a chance to share part of it in a way that might help them stay safe.

Rachel: And like you said, and it might be something where when they go back into their working groups they might feel more comfortable there sharing more too, you know, or drawing from that, like you said.

While I agreed with Rachel that it was important to make it safe for everyone to share and that while we are building relationships with students, we might consider if there is a boundary or “line” to what we might expect or require students to share. In an effort to understand Rachel’s perspective as well as how her students might feel by responding to the prompt, I reflected that there were things I would not want to share in a group and that I might never feel safe doing so. My reflection opened the potential to consider changing or revising the sharing portion of Dig Deep routine. At the same time, I also expressed support for Jane’s prompt and could see how the prompt would help teachers and students build relationships with one another. I provided a concrete example from Jane’s classroom, the group of students who selected to change the message on “defiant teens” as their research project, and Jane agreed that she would also be interested in learning why they selected this topic.

I then suggested that teachers could structure a quiet writing time for students as a starting point for thinking about the instructional moves to help students feel safe. Jane took up my idea and added that students could be invited to share a word or phrase from their response, rather than the entire response. Rachel also added on to this idea, suggesting that then students could share in their project groups and feel more comfortable doing so.
Our shared talk surfaced a teaching principle: When asking students to respond a prompt, it is more important that students feel safe than that they feel required to share publicly. Our conversation, which began with Jane identifying patterns in her data, surfaced a dilemma created through the design of Dig Deep. Jane and Rachel investigated the dilemma, whether or not students had to share publicly in order for teachers to build relationships with them, through specifying aspects of their teaching and their knowledge of students in their classrooms. By the end of our conversation we determined that it was important for students to feel safe in their classrooms and rather than abandon the prompt, we figured out a way to invite students to tell their stories without requiring they do so.

Jane and Rachel ultimately decided to implement versions of this prompt in their Dig Deep routine following this meeting. Jane asked students, “Why do YOU care about this message? What have YOU experienced (or witnessed among your close friends and family) that makes you passionate about this issue?” (Teacher slides_Jane_05.10.17). Rachel asked students, “Why is this issue important to you? What have you experienced, felt, or witnessed that makes you feel passionate about this topic? Tell a story from your own life that relates to your topic.” (Teacher slides_Rachel_05.11.17). Rachel provided additional instructions to students, “Write it first (I will read), then share a phrase or a sentence with the entire group” (Teacher slides_Rachel_05.11.17). Our conversation resulted in creating these instructions to students. The group turned toward pedagogical practice to surface a dilemma around sharing and we engaged in shared problem-solving.

The episode began with Jane raising two items for discussion, item 4, “Today my teacher tried to find out what interests me or what is important to me” and item 6, “Today my teacher used examples from my culture, background, or interests when teaching.” Teachers agreed that
that the second item had not been a focus this semester, so that the talk in the episode focused mainly on the first item. By the end of the semester, teachers saw mixed results on item 4. For example, Rachel did not show improvements on this item by the third survey. While we can not know for certain, the decline in students agreeing to item 4 may have been a result of the prompt she selected, which did not focus on students’ interests but rather asked students to reflect on how they had personally changed since starting high school (Rachel_Ob_05.23.17). However, both Jane and Elaine did demonstrate improvement on the item 4 (see Tables 5.1 and 5.3). While Elaine was not an active contributor to the discussion, she was present and listening to the talk so that the ideas raised were made available to her, as they were to the rest of the group.

**Discussion**

Our data discussions were peppered with instances of both turning toward and turning away from pedagogy and the student survey data, as we examined individual and group data. As the findings indicate, discussions structured by improvement science cycles may have multiple objects of attention. In this case, we focused our attention on pedagogical practice and the practical measure. Discussions often moved back and forth between the two objects, such as in the “I worry” episode and in the “Students speaking to you” episode. At other times, the group focused on one object, such when teachers focused on pedagogical practice as in the “I did some backsliding” episode.

This chapter adds to the literature on the microprocesses of data use (Little, 2012) by illustrating that the content of the measure mattered for the ways in which teachers used and talked about their data. In this study, the practical measure data represented students’ experiences and feelings within their classrooms and the personal nature of the data contributed to a heightened sense of importance and to teachers experiencing emotional responses when
analyzing the data. Teachers were sometimes confronted with difficult realizations about their classroom culture, their teaching practice, and/or students’ experiences, which added an emotional dimension to analyzing the data.

**Turning Away from Pedagogical Practice and the Practical Measure**

Turning away from the objects of attention occurred when a teacher identified a pattern in the data and then generalized to explain the pattern, dissuading participant responses, such as in the “Any time, any kid” episode. In the majority of instances of turning away through generalizing, the general statement included a value judgment, which seemed to create a barrier for others responding to the statement and often resulted in a change of topic.

**Turning Toward the Pedagogical Practice and/or the Practical Measure**

Turning toward pedagogical practice and/or the practical measure almost always began when someone identified a pattern in the data, and then another teacher confirmed that they, too, saw that pattern. This occurred in the “I worry” episode when Jane identified the item 5, “Today I worried about sharing something personal about my culture, background, or interests with other students,” as having the most variability within the group. Rachel and I agreed and Rachel commented on the range of agreement from students across classes. While this item varied across teachers, collectively identifying it as one with variability allowed teachers to engage in discussion about why their students might feel worried. In the “Students speaking to you example,” Jane identified a pattern in her data, noting a decrease in agreement for item 1, “Today the opening class routine made me feel like I matter in this classroom.” Rachel responded that students could have been more “critical” when responding to the survey, sharing “that’s what I felt like that first round.” Rachel’s response included a conjecture, but also signaled a shared result, when she connected Jane’s data pattern to her own low data pattern from an earlier survey
round. The “I did some backsliding” also began with a teacher identifying a pattern, when Jane noted that she “did some backsliding” on two items, to which I replied, “Yeah, it’d be interesting to see if we get different responses if we pull that.” In my turn, I referenced a previous discussion about separating item 6, “Today my teacher used my culture, background, or interests when teaching” into two items and in doing so affirmed Jane’s pattern by reminding her that the other teachers also raised this data pattern in our previous discussion.

While all of the episodes in which the group turned toward pedagogical practice or the practical measure began with the identification or noticing of a data pattern and then followed with someone affirming that they, too, saw that pattern, the subsequent patterns of talk moves varied throughout episodes. Most often following such an affirmation of a pattern, a teacher provided specifics about her students, classroom, or teaching, including enactment of Dig Deep. This was consistent with talk patterns identified by Horn and Little (2010), who found that affirming was a “characteristic response to problems of practice across groups” (p. 191). Different combinations and patterns of talk ensued, including linking, revising, and principled talk throughout various episodes.

Emotional Dimensions of Teacher Talk

Students’ and teachers’ emotions were central to our data discussions; students provided insight into their feelings and experiences through their survey responses and teachers provided insight into their feelings and emotions in relationship to the data during our discussions. The data discussions focused on the student survey data, aimed at determining if teachers made progress toward the goal of developing relationships with students. In responding to the survey, students shared aspects of their feelings and experiences within the classroom. In this respect, the student survey data was very different from student achievement data or formative assessment
data typically collected in schools. The nature of the items on the survey required a more personal response from students and this likely heightened the experience of looking at the data for teachers as teachers cared about their students. Through our data discussions, we not only talked about how students felt, but teachers revealed their feelings as well. For example, in the “I worry” episode, Elaine’s initial reaction to her negative data was to dismiss it. Nearly three-quarters of her students worried about sharing something personal, and the implication of accepting these data as trustworthy was that there were real challenges with her classroom community that needed to be confronted and that students did not feel safe to share in her classroom. For teachers who care about the well-being of their students, this kind of negative data may be felt more intensely than a data point that indicates students did not understand a particular concept; the student survey data we analyzed focused on students’ experiences and feelings within teachers’ classrooms. Later in the same episode, as teachers were discussing why students might feel worried, Rachel shared that she also felt worried about some of the topics students selected for their research projects. In particular, she admitted that the topic of abortion made her feel “uncomfortable.” Talking about the data provided Rachel the opportunity to talk through her feelings and to identify with the “worry” that students felt.

In this same episode, Elaine later revealed that she felt some of the students in her class might make fun of her if she had been a ninth grade student in the classroom. Elaine described some of her students as “immature” and felt that there was a lack of trust among students. In this reflection, Elaine empathized with some of her students and also revealed how her emotions were connected to her concern for her students’ well-being when she admitted that she would feel uncomfortable as a student in her own classroom.
Likewise, in the “Students speaking you” episode, teachers also revealed emotional responses when talking about the data. The episode began with Jane identifying a pattern that fewer students in her class felt like they mattered and she revealed that this made her feel “sad.” She shared with the group that she was “carrying [her] stress” into the classroom and she worried that students’ responses were connected to students feeling like their “teacher [was] crappy.” Jane reflected that she hoped that was not the case. She understood her data patterns as resulting from her increasing stress in the classroom, which impacted the ways in which students felt within the space. Jane’s response to her data illustrated that her emotional experiences were intertwined with her students’ emotional experiences.

Finally, in the “I did some backsliding” episode, Jane suggested a specific prompt to ask students about their personal experiences connected to their chosen research topic. This served two purposes: to help students think about the emotional appeal of their research project and to connect Dig Deep to the lesson. The conversation that ensued focused on trying to figure out how to ask the prompt while making it safe for students to share. Teachers, particularly Rachel, demonstrated care for her students when she considered that students might not feel safe or comfortable sharing this information publicly and challenged the group to think about how to make it safe to respond to the prompt. The implications of figuring out a way for students to share their responses to the prompt were significant and important – to ensure students’ safety and well-being and create an environment where students were invited to share.

**Teachers’ Interpretation and Use of the Data**

Returning to Coburn and Turner’s (2012a) understanding of data use as an interpretive process, data is always “partial and filtered” (p. 177), the data discussions in our group were no different. We chose to focus our attention on certain data patterns and not others and our
interpretive processes informed how we made sense of and talked about the data. The episodes reveal that one teacher, Jane, participated in the data discussions in ways that differed from Rachel and Elaine. Jane brought a different orientation than her colleagues for looking at data to the discussions with the group. The practical measure served as a tool that supported Jane in articulating and displaying this orientation, and sharing it with the group. In both the “I worry” example and “Students speaking to you” examples, Jane challenged particular conjectures. Throughout the data discussions, Jane revealed her orientation to accept students’ responses on the practical measure as their truth and reality on that day. In doing so, she offered another lens for her colleagues to look at their data. During an interview, Jane explained, “I tend to think that these [surveys] are fairly reflective of how kids are really feeling” and asked, “What does a kid have to gain from lying?” She asked, “Why wouldn’t [students] tell us what they need?” (Jane_Member Check_1.30.18). In this interview, Jane confirmed that she accepted students’ responses on the surveys as their truth for that day and understood student responses as communicating their needs to her. Within the “Students speaking to you” episode, Jane attributed patterns in her data to her actions, not the students’ misinterpretation of the prompts, in a way that communicated a responsibility over the data and understood that improving the data and her relationships with students was within her purview. She did not blame the students for her data, but rather sought to understand their feelings and how her teaching impacted them. Noteworthy is the fact that Jane demonstrated the most improvement in her practical measure data; she improved on six out of seven items (as displayed in Table 5.1). It is difficult to say for sure what caused Jane’s improvements, although it is likely that her orientation to accept students’ responses as truth, her sense of responsibility for changing her data, her belief in her ability to enact changes, and her consistent and active participation in the data conversations, may have
contributed to Jane improving her data and her relationships with students by the end of the semester (Chapter Six provides more insight into Jane and her teaching practice).

There was evidence that looking at data also affected Rachel and her practice. Besides implementing Dig Deep in her ninth grade Compose Our World class, Rachel decided to try out a version of Dig Deep in her tenth grade class as well as survey her students to collect data on their perspectives. In the final meeting, Rachel also imagined looking at data with her students in the following school year, by showing the results on one item and asking students to help her interpret it. She explained,

Yeah, just focus on one [item], and say [to the class], “Yeah, you know, something that’s important for me in my classroom is I want you guys to learn. I love learning about you. When I look at my data here and I see that, [the item was] only in the 60s, and that’s like one of my goals for this. What do you guys think? How should we change this? How could we make this better?” That would be, I think, a cool way, and then [students] would feel a part of it, and then I’m sure the scores would go up, because they would be more aware or trying it. That’s the whole having kids be a part of the criteria and stuff like that. I think that’s the whole goal is once they’re aware of it, take more ownership.

(Meeting transcript_05.25.17)

Rachel realized that using her data with students could be a powerful tool for students to take more ownership in the classroom. Rachel’s idea to use data with her students in the future provided another example of how teachers planned to give students more ownership over Dig Deep in the future, as described earlier in Chapter Four. Finally, during the last interview, when

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12 There is little mention of teacher use of data with students in the research literature on data use. In a review on the practice of data use, Coburn and Turner (2012b) identify lines of research on data use that “extends beyond studying teachers” (p. 102) to include K-12 administrators as well as higher education administrators, but make no mention of teachers using data with students.
asked about what she learned from participating in this study, Rachel reflected that she improved on looking at student data:

I’ve probably become so much better at looking at data this year than my whole teaching career, so that’s good for all aspects of my teaching and reflection. When I’m doing this just on my own, I might do an exit ticket, just getting their feedback. But it’s going to look a lot different than what we were able to sit down and do and talk about and plan, you know, because as a teacher, you’re like “Okay. They don’t like this. They like this. All right, and I’m moving on.” Like, that’s about as fast as it goes, because that’s just reality, so I think it’s nice to kind of be able to slow down and really work through the process and then adjust and change and have that opportunity. (Rachel_Int_05.23.17)

Rachel contrasted our group’s process for looking at data to her own individual process of looking at data, and she revealed that her individual process was very quick and focused on what students liked and did not like from the class. Rachel felt that as a result of participating in this study and talking about the data, she became “so much better at looking at data.” For Rachel, looking at data was good for “all aspects of my teaching and reflection.” Rachel appreciated the process of looking at data in the group, as an opportunity take more time to examine the data, talk about it, plan together, and make adjustments. This is consistent with findings in the literature on data use that have demonstrated that collaboration, including working in teacher groups or working with an instructional coach, supports teachers’ use of data (e.g., Farrell & Marsh, 2016; Gasse, Vanlommel, Vanhoof, & Van Petegem, 2017; Means, Chen, DeBarger, & Padilla, 2011; 2016; Young, 2006).
Our Practical Measure

The practical measure we designed differed from the sorts of social and emotional learning (SEL) assessments that have been designed to make determinations about individual students’ SEL competencies (e.g., Denham, 2016; Elliot, Frey, & Davis, 2016; McKown, 2016). We did not ask students to identify themselves on the surveys, and we analyzed class data as a set as opposed to individual surveys. The goal of our data analysis was to inform the Dig Deep design as well as teachers’ pedagogical practice, rather than assess students on SEL competencies. It therefore allowed for a different conversation to take place; one in which Jane could position students as experts in their own lives with something important to collectively communicate to their teachers. While looking at practical measure data together invited teachers to consider their pedagogical practice and the practical measure itself, it also opened the possibility for valuing and listening to student perspectives about how they felt about what occurred in the classroom.

In general, teachers invested in the student survey and looked for it to reveal something about their students’ perceptions, their teaching, and / or their classroom. Teachers contrasted our design work and data analysis to a school-wide practice they had to do called “Data Dialogues.” For example, when I asked Elaine if she thought other teachers would benefit from engaging in co-design as a form of professional development, Elaine said yes, especially if teachers could see how they could use or apply the work in their classroom. She contrasted this to the Data Dialogues at her school: “You’ve heard us complain about our Data Dialogue because that’s just a waste of time so we don’t buy into it” (Elaine_Int_05.25.17).

While looking at practical measure data in this study was important for launching conversations about the practical measure and pedagogical practice, it should be noted that the
conversations could have included even deeper investigations of teaching. Talk focused on deep and sustained investigations of teaching can be rare. Horn (2010) described the teacher work groups that she studied as “highly collaborative teacher communit[ies]” (p.236) and these work groups are exceptional for the depth and time they spend on talking about pedagogical practice (e.g., Hall & Horn, 2012; Horn, 2007; Horn, 2010; Horn & Little, 2010). Nonetheless, this study indicates that the infrastructure provided by the PDSA cycles of improvement science of looking at practical measure data may provide opportunities for turning talk toward both pedagogy and evidence related to students’ experience of the classroom. This study marked the beginning of an improvement science study; future research could investigate if and how prolonged experiences of collaboration would support teacher groups to engage in deeper investigations of teaching.

Practical measures play an integral role in improvement science work and may be understood as part of the infrastructure of improvement science work that supports teacher engagement. Two key features of infrastructure are embeddedness and its degree of visibility (Star, 2010). Practical measures are not only an essential part of improvement science work to determine if changes result in improvement in outcomes, but when used in schools with teachers, they are intended to be embedded in teachers’ work. Collectively analyzing and discussing the practical measure data, then, provided an opportunity to make the infrastructure of teaching and the practical measure visible (Hall & Horn, 2012). When undesirable patterns are identified in the data, it may lead teachers to talk about their teaching practice and the practical measure itself. Within our discussions, the practical measure provided teachers a window into looking at their own practice on their own terms. The practical measure, as an important component of the infrastructure of improvement science, encouraged public reflection and at times an investigation into teaching practice, thus supporting teachers’ collective engagement in the endeavor. Future
research may continue to examine the extent to which practical measures, as part of the infrastructure of improvement science, support teachers’ engagement.

**Conclusion**

In this chapter, I examined the nature of teachers’ talk in our meetings, specifically when looking at data. In analyzing student data together, teachers’ talk turned towards and away from deeper investigations of pedagogical practice and the practical measure. This chapter illustrated that the content of the measure mattered for the ways in which teachers used and talked about their data. Teachers considered students’ perceptions, experiences, and feelings within their classrooms, which made the data more salient and contributed to the emotional dimensions of our design work. The next chapter zooms in on Jane’s experiences, as a case study of the relational and emotional dimensions of the co-design process.
CHAPTER SIX: THE EMOTIONAL EXPERIENCE OF DESIGN WORK:  
“WE CAN BOTH SEE EACH OTHER AS PEOPLE”

Jane had just finished telling me several stories about her students that revealed the depth of her relationship with them as well as the tremendous weight she felt caring for them. I had listened as her voice, filled with compassion and concern, wavered as she spoke about individual students. I looked across the table and noticed her shoulders hunch and her brows furrow as her eyes filled with tears. It was a moment in our interview that just “got real.” I took a breath and paused before acknowledging that I was going “off script” to ask a question I hadn’t really finished forming, “What do you with all of that? What do you do with all the heavy stuff that you get from students, and then how do you take care of yourself?” She immediately reached for a ready response, launching into a description of the mental health training the school provided to help teachers respond to students in times of crisis. She stopped short halfway through this explanation, “But I don’t think that’s what you’re asking me about.” I rephrased my question to ask about self-care. Jane instantly replied with a big sigh, “Yeah, I don’t know.”

(Jane_Int_05.25.17)

Purpose

The opening vignette captures one of the challenges of teaching from one teacher, Jane, in our group and illuminates a facet of the teaching experience that is not often discussed. The vignette underscores the notion that “teaching occurs on affective and cognitive terrain; it is emotional and intellectual work” (Liston, 2000, p. 81). This chapter explores the ways in which Jane was emotionally and personally committed to her teaching and how she revealed care for her students through articulating dilemmas within our design team. Jane experienced a range of emotions related to caring for students, as the opening vignette suggests. So while our group goal
was to develop a teaching strategy to build relationships with students in order to engage them in the curriculum, this case study indicates that there was much more happening within our group. Jane’s case reveals the simultaneous nature of teaching, as both emotional and intellectual work and this case study explores the emotional experience as an aspect of participation in an improvement science study.

Research Questions

In this chapter, I explore the following research questions:

- How did one teacher grapple with dilemmas within the co-design process?
- What was the emotional experience of participation within an improvement science study?
  - What did one teacher’s caring for students reveal about the emotional dimensions of participation in improvement science?

Chapter Overview

Jane articulated three dilemmas, which were unique to her context and the specific situations she encountered: 1) developing a positive classroom community while negotiating her co-teacher’s conflicting philosophies of classroom management, 2) navigating competing approaches to teaching language arts while ensuring student success, and 3) building relationships with students while attending to her own well-being. These three dilemmas were different from the dilemmas presented in Chapter Four because they were not directly about design decisions or the design itself, although they were connected to our work of building relationships with students. Jane’s dilemmas had several features in common. First, Jane talked about the dilemmas in our design team space, including our group meetings and her individual meetings with me, as a way to explore her dilemmas. Second, the dilemmas were centered on
tensions that arose from caring for students. In addition, Jane conveyed emotions when talking about each of three dilemmas and revealed emotions she felt around experiencing conflicts of caring. While I present Jane’s case, I acknowledge that it is but a snapshot of Jane’s ongoing and changing emotions embedded in a particular time, place, and culture.

In the sections that follow, I provide background on Jane, including a description of her teaching identity, as well as her teaching and personal context. I then present the findings by describing her three dilemmas; I examine each dilemma in turn, and situate the dilemma with the design team space. I analyze how the dilemmas reveal ways in which Jane cared about her students and the emotions Jane felt related to her caring. In the discussion, I identify key takeaways from this chapter along with reflections on the emotional experience of participation within an improvement science study.

Meet Jane

In this section, I provide a description of Jane, beginning with her teaching identity. I describe relevant facets of her context, including her relationship with her co-teacher and her classroom space. Then, I provide a brief context about particular school-related tragedies that impacted members of the school community and some personal factors that affected Jane throughout the semester in which this study took place.

Teaching Identity

Considered a veteran teacher, Jane taught for ten years at the same high school. She taught ninth and twelfth grade English language arts and was the Gay-Straight Alliance (GSA) faculty advisor at the school. Teaching was a central part of her identity: “Being a teacher’s definitely one of my chief identities” (Jane_Int_02.08.17). She described herself as adventurous in life and in teaching, and embraced trying new things. She noted it was important for her to feel
“intellectually engaged” in her teaching so that she could keep things exciting in the classroom. She described her interactions with students as her favorite part of teaching and for the reason that she has remained in education:

I will say that times when I have wanted to leave this profession ... I just decided to stop focusing on anything besides having fun in the classroom. They bring me up, and they draw me out, they rope me back in. (Jane_Int_02.08.17)

Jane shared with me that in previous years, she had thought about leaving teaching, but that she stayed because of her positive interactions with students. She reflected that her teacher training was focused on “traditional” teaching and that she has since shifted her pedagogy to include more student-centered practices that valued student perspectives:

When I went into teaching, I didn’t think that would be the case [that she would enjoy her interactions with students so much]. I think I thought I was interested in teaching as just a way to keep studying English basically. That was really kind of wrong.

(Jane_Int_02.08.17)

She also described herself as curious and credited her participation in Compose Our World as rejuvenating her teaching practice and she explained that it is “really nice to have a partnership outside of the school … we were pretty isolated” before Compose Our World. She described Compose Our World as “the best professional development thing I have ever participated in” (Jane_Int_02.08.17) in that it is “explicitly focused on what we are doing here,” “it is ongoing,” there is time to “check-in and reflect, and give more input, and get more input” (Jane_Int_02.08.17). Jane held an asset-based view of students and embraced the project-based learning curriculum of Compose Our World, explaining that the curriculum has “allowed me to see so much more what [students] do have to offer, and what they can do” (Jane_Int_02.08.17).
Jane embraced opportunities to continue her learning and growth as an educator. She also sought out ways to expand her own perspective,

I’m actually actively trying to understand how my biases and my background affect things I think I know and things I don’t. I don’t know. I’ve been reading a lot of stuff about issues like school segregation for example. Things that I did not know much about before and trying to think about. (Jane_Int_02.08.17)

She believed it was important for her to understand how her biases and background impacted the classroom and may be different from her students’ backgrounds.

My folks had a working class background, but they always believed that school was really important. I grew up in majority white communities. I know all of these things feed into me coming from somewhere different than my some of students are. I guess I don’t know. I’m always trying to bridge the gap, but I don’t think I’m great at it yet.

(Jane_Int_02.08.17)

Jane was a reflective teacher in the sense that she was committed to learning about her students and understanding how her own background impacted the way in which she interacted with them in the classroom.

**Context**

**Co-teaching context.** Jane’s Compose Our World class was a ninth grade language arts class of thirty students. She co-taught this class with Sally, a special education teacher at the school. Jane and Sally did not have common meeting time during the week to co-plan. As a result, Jane planned and led the lessons and during class Sally often supported individual students with Individualized Education Programs (IEPs). Sally was not a member of the
Compose Our World team and therefore did not attend COW sessions or receive support related to the COW curriculum.

**Classroom space.** The arrangement of Jane’s classroom space revealed her commitment to student-centered teacher. Upon entering Jane’s classroom, the room looked and felt different than other classrooms in the school. Absent was the intense glare of the institutional ceiling lights that emitted from the other classrooms, replaced instead by a warm glow that emitted from the various lamps placed strategically around the periphery of the room. The individual student desks had been swapped out for tables pushed together to form small groups. Hugging a sidewall was an old, worn loveseat. In another corner of the room were several upholstered chairs, also worn but inviting. The recycled living room furniture gave the classroom a warm and cozy feeling. The few shelves around the classroom were crammed with books and little trinkets given to Jane by students throughout the years. The classroom walls were filled with student-generated class norms, essential questions, and language arts-related posters. Jane’s desk was tucked in the back corner of the room, slightly disheveled and overflowing with papers, supplies, and photos of her young daughter. The effect of these collective details conveyed an atmosphere of warmth, welcome, and energy and signaled to visitors a focus on students. Jane wanted to make the “classroom feel different than it had in the past, and maybe different than other classes.” She wanted her classroom to “feel like a place where kids could feel centered and relaxed … for it to not feel like a stressful environment and also supportive. I wanted to create that sort of a vibe” (Jane_Member check_01.30.18).

**School-related tragedies.** The year of this study was a particularly long and difficult year for the Dover community and for Jane. That year, the Dover community was reeling from several tragedies, including a student suicide near the school campus and a fatal car accident that
killed a former student and left a current student in critical condition. Many in the community knew and loved the youth involved in these heartbreaking incidents, including many of the teachers at Dover High. Jane was among the teachers who taught and knew these students. She reflected on how difficult these events were: “We found out that another one of our favorite former students died … ‘cause it’s been that kind of a year. There shouldn’t be those kinds of years” (Jane_Int_05.25.17). Jane referred to these events only occasionally, and they remained in the background of our work.

**Personal factors.** Jane not only felt the impact of the local events, but also felt the impact of personal events. Three years ago, her spouse, Ryan, had been diagnosed with a rare but treatable disease. The couple sought help from local physicians, but eventually realized Ryan needed treatment from a specialist who was located in Canada. At first the couple thought that this arrangement would be temporary, a three month situation. However, three years later they were still living in separate countries, visiting one another on holiday breaks and Jane’s summer vacation. Jane cared for their young daughter, who was four years old at the time of our study. When Jane felt overwhelmed, she referred to herself as a “single mom” as she balanced working and caring for her daughter. The family connected each night through Skype, but Jane worried about Ryan’s health and about Ryan missing out on key moments in their daughter’s life. The arrangement took a toll on Jane emotionally and physically as she woke up at 4:00 each morning to lesson plan before her daughter awoke (Jane_Int_05.25.17).

Jane shared the information about the school-related tragedies and her personal situation with me during our individual meetings and interviews, but she did not discuss these experiences within our design team meetings. When she did raise these topics in our meetings, I was
reminded that Jane brought with her to the design work a host of experiences and feelings that she did not always share, but may have been felt.

**Findings**

Jane experienced dilemmas, which revolved around caring for students and were heightened by our design work. Through navigating these conflicts of caring, Jane experienced a variety of emotions, which she shared in our design team space. Jane’s case is an important example of how engaging in design work related to caring for students heightens the salience of the dilemmas. It also illustrates the layered nature of design work for Jane; as she contributed to the development of the routine and the student survey, she also made sense of her dilemmas and explored her emotions related to caring for students. I explore these claims by examining each of the three dilemmas in turn: 1) developing a positive classroom community while negotiating her co-teacher’s conflicting philosophy of classroom management, 2) navigating competing approaches to teaching language arts while preparing students for future endeavors, and 3) building relationships with students while attending to her own well-being. I address each dilemma one at a time. I first describe the dilemma, present its various elements, and situate it within the context of our design work. Then, I highlight ways in which Jane exhibited care for her students through her experience of the dilemma, drawing on Noddings’ ethics of care and caring conflicts. I then explore the emotions Jane experienced that arose from caring for her students and from navigating the dilemma. Finally, I discuss why Jane shared the dilemma in the design team space.

I use Noddings’ (2013) caring conflicts to understand and analyze Jane’s dilemmas. Noddings first conflict addressed the notion that a teacher may not be able to attend to all of her students’ competing needs and may find her attention divided or find that addressing her students
multiple needs requires “incompatible decisions” (p. 18). This caring conflict aligns to Jane’s
distinct dilemma, developing a positive classroom community while negotiating her co-teacher’s
conflicting philosophies of classroom management, in which Jane struggled to attend to the
needs of all of her students as well as those of her co-teacher simultaneously. Noddings (2012)
also notes that a caring conflict can occur when students’ expressed needs are in contradiction to
what the school or curriculum assumes to be their needs. This particular caring conflict aligns
with Jane’s dilemma of navigating competing approaches to teaching language arts while
ensuring student success. In this dilemma, Jane felt pulled between a project-based learning,
student-centered approach, which she understood addressed the expressed needs of her students,
and an approach that centered preparing students explicitly for the SAT exams, which addressed
the assumed needs of students. A third caring conflict is that the teacher may at times come to
feel overburdened in her role as caring-one (Noddings, 2013). This caring conflict aligns with
Jane’s dilemma of building relationships with students while attending to her own well-being, in
which Jane at times felt the weight of her students’ stories (as alluded to in the opening vignette
of this chapter). Maintaining an ethic of care and navigating dilemmas often evokes a range of
emotions from the caring-one (Noddings, 2013). For many teachers, caring for students is
rewarding. For example, Jane described the sense of satisfaction she felt when reading students’
positive responses on their survey as a result of her efforts on building classroom community and
relationships with students (Jane_Int_05.28.17). At other times, a teacher may feel burdened,
guilty, or frustrated. In Jane’s case, she indicated feelings of disappointment when unable to help
her students through improving her classroom community.
Dilemma 1: Developing a Positive Classroom Community While Negotiating Her Co-teacher’s Conflicting Philosophies of Classroom Management

Jane experienced a dilemma around developing a positive classroom community while negotiating her co-teacher’s conflicting classroom management philosophy. In articulating this dilemma, Jane contrasted her teaching philosophy to that of her co-teacher’s teaching philosophy. In doing so, she described her approach to developing a positive classroom community, and indicated ways she cared for her students. She also revealed emotions she experienced as a result of the dilemma and caring for her students. While this dilemma was not directly about the Dig Deep design, it was related to our goals for building relationships with students and Dig Deep was one example of the kind of pedagogy that contrasted with her co-teacher’s approach.

The dilemma. At the conclusion of our third meeting, Jane said with a concerned expression, “I don’t know about my class for the rest of the semester. I’m having trouble” (Meeting transcript_04.12.17). During this meeting, and in others, Jane signaled that she had “trouble” with her focal class and told us that she felt “stuck” on what to do about it. Part of Jane’s “trouble” was that while she embraced a positive classroom community, characterized by care and meaningful relationships, she felt her class could be characterized as a negative community. She worried about how students treated one another and she worried about how this would impact our design work - whether or not Dig Deep would achieve its goals in her class. Students also communicated to Jane that there were problems with the classroom community when she asked them to write “I need” statements about what they needed in the classroom, from each other and from her:
I’ve read on their “I need” statements that they don’t feel safe though. They don’t feel safe to participate, they don’t feel safe to be vulnerable and because there is a lot of snide, you know, people, I’ve got 17 class clowns in there and sometimes their humor can be mean. (Meeting transcript_04.12.17)

That Jane took the time to read the students’ statements and reflect on them showed Jane’s attention to her students and indicated how deeply Jane cared about students and her classroom community.

Further confounding this problem for Jane was that her co-teacher, Sally, had “hit the wall in terms of students’ behavior” (Meeting transcript_04.12.17), and that she and Sally had a difference of opinion on how to address the issues with the classroom community. Both Sally and Jane recognized that the classroom community was not a positive one, but they held different, and at times, competing philosophies about how to create a positive classroom community. Jane characterized Sally’s approach as a “more hard-nosed approach” and in contrast described her own approach as one that “focus[ed] on building relationships / trust / respect” (Jane_COW Refl_1.30.17). This presented a dilemma for Jane – to remain true to her beliefs, overriding her co-teacher and adding to the friction between them, or to put her beliefs aside and take Sally’s advice for more rigid classroom management in which students had to earn activities so as to resolve the tension between the two teachers. Jane’s dilemma was finding a way to develop a positive classroom community while negotiating her co-teacher’s conflicting classroom management philosophy. Jane described this dilemma as a “negotiation” between their two philosophies because they “were always trying to make our two approaches exist in the same space.” She reflected, “there was always a lot of tension with that” (Jane_Member
check_01.30.18). Throughout the semester, Jane searched for ways to care for her students while
also respecting her co-teacher, and this proved challenging.

Jane characterized Sally’s perspective on the students, “she gets so annoyed with them,
she thinks everything they do is so disrespectful.” During classroom observations, Sally did
appear visibly frustrated with students (Jane_Ob_01.26.17; Jane_Ob_04.20.17;
Jane_Ob_05.02.17), and Sally often gave students directives that conveyed her frustration, such
as “Can you guys quit the side conversations? It is so rude! It needs to stop!”
(Jane_Ob_03.08.17). According to Jane, Sally’s perspective was that in order to do activities
such as Dig Deep and project-based learning, students had to earn it through behavior such as
paying attention and following teacher directions. Jane explained, Sally feels that “we can do
cool stuff in the classroom, but [students] have to deserve it” and that Sally said this to her more
than once. Sally wanted Jane to address directly student behaviors, expecting students to be quiet
during the majority of class (Jane_Ob_170420).

Jane did not share in Sally’s approach and felt that such a plan would make the classroom
community feel worse. She lamented, “that’s going to make everything terrible forever.” Jane
summed up their difference of opinions, “I just think we have different philosophies on
classroom management, we have different approaches to it and different levels of chaos that we
can tolerate without taking it personally. I don’t think that’s going to change.”
Jane described her approach as “more laid back” and “more okay with noise in the classroom”
(Jane_Ob_170420). Rather than tell students how they should not act, Jane’s approach to
building a classroom community was to model for students how to treat other. Jane accepted
students as they were, stating, “this is who they are; they don’t have impulse control.” Jane
explained that in contrast her approach for building her classroom community was to “go more
vulnerable, open myself up to them. Be more human with them to try to help with the issue” (Meeting transcript_04.12.17). This approach was not only very different from Sally’s approach, but Jane explained it also made Sally feel “protective of me,” particularly at times when Jane shared about herself and students did not respond to it (Jane_Ob_04.20.17; Meeting transcript_04.12.17). Jane felt that it made Sally feel even more upset with students, describing Sally’s perspective that the students were “being such jerks” (Meeting transcript_04.12.17). However, Jane said that “the way the kids treat me is not of nearly as much concern to me” and that “the thing that I worry about … is how they treat each other.” She observed that some students were mean to one another and that was her biggest concern. Jane explained, “I don’t have a ‘you must respect me’” (Meeting transcript_04.12.17) approach the way that Sally did. Jane provided an example of her approach to open herself up to students:

I said, “I need respect not because I’m your teacher, not because I’m an authority figure, but because I’m a person. I need you to treat me like a person,” and then I said, “I need to remember that you all need the same thing, even if you don't ask for it.” (Meeting transcript_04.12.17)

In contrasting this approach to Sally’s she said, “Maybe I’m wrong and maybe I’m too soft, which is I think what Sally thinks. [But] I think the nicer I am, the teacher sets the tone [for the students].” Jane felt that “If I can be kind and vulnerable, I think they’re more likely to follow suit” (Meeting transcript_04.12.17).

The difference of approaches to building a classroom community caused friction between the teachers that was visible during class. For example, during one class period, Sally became frustrated that students were not listening to one another during discussions and were instead looking at their cell phones. Sally announced to the class that they all needed to put their phones
away. This was not something Jane and Sally decided together, and it was in fact an action that Jane disagreed with because she viewed it as a teacher “power move” (Jane_Ob_170126; Jane_Ob_170420). Sally told Jane that “she would do things differently” in terms of classroom management and building classroom community (Jane_Ob_01.26.17).

Jane shared with the design group, “I just can’t get to a place [with the class] where we can make it feel good,” and this was in part because of the tension between Sally and Jane. However, Jane did not blame Sally for her troubles with her class, saying “she’s not the problem,” but Jane did see Sally’s opposition to her approach to building a classroom community as a roadblock. Jane admitted, “It’s a crazy class, but I can’t move it to a place where it’s crazy and generative.” Jane reflected, “I don’t know. I don't think there's much I can do about it right now, I just wanted to voice that I feel stuck in that class and it's hard for the Dig Deep stuff to work because it feels yucky in there” (Meeting transcript_04.12.17).

Jane’s caring. Jane understood her approach to building classroom community as an alternative to a more rigid prescription to classroom management. Jane’s approach to building classroom community was built on caring for her students. She committed to caring for students by making the classroom a “safe” place for them. She was attentive to the needs of her students and was searching for ways to respond to their needs. It was important to her that students were kind to one another and she felt a responsibility for teaching students how to care for one another. In Jane’s accounts of her classroom community, she did not talk about the importance of students staying quiet, following directions, or completing their work. Rather, Jane’s focus was on the importance of students feeling safe, respected, and cared for in the classroom. Jane engaged her students in a kind of dialogue, by asking them to write and share “I need” statements. She modeled for students her own “I need” statements and ways to open up and share
feelings, in what Jane described as vulnerability. It was her hope that in setting an example for students, students would gain an understanding of how to treat one another with kindness and care and that she would signal to students that her classroom was a place where it was safe to do so. It was important to Jane that students had opportunities to practice caring for one another, through participation in Dig Deep and project-based learning activities; Sally’s approach would limit opportunities students had to practice care. In recounting to the team her students’ “I need” statements, she showed that she took the time to read what they had written and reflect on them, indicating that she cared about her students and classroom community. When Jane described students’ responses, the emotion in her voice suggested she was deeply troubled that some students in her room didn’t feel safe. Jane revealed that she was upset with the way in which students treated one another, describing some students as “snide” and “mean.” When Jane shared with us how she modeled the “I need” statements for students, she positioned herself as a member of the classroom community, by engaging in the task she asked her students to complete as well as reminding students that she is not just their teacher but also a person.

In relaying what she said to students to our group, Jane revealed an important aspect of her personal philosophy, “I need respect not because I’m your teacher, not because I’m an authority figure, but because I’m a person. I need you to treat me like a person” (Meeting transcript_04.12.17). Jane asked for respect from students, not because of her position of power, but because she believed that was how you should treat people. Jane continued to tell students, “I need to remember that you all need the same thing, even if you don’t ask for it,” and in doing so she conveyed to students that she in turn would treat students, as people, with respect.

During an interview, Jane revealed another aspect of her personal philosophy on caring for students,
I’m not the get-in-your-face person. I don’t do tough love well. I’m not going to do that with a kid. That’s not the kind of relationship I think I can do convincingly. That’s what I mean by it feels mythical to me ... It just seems like that’s every Hollywood movie about really impactful teachers. (Jane_Int_02.08.17)

Jane felt “uncomfortable” with the version of the movie teacher who demonstrated tough love so that a student did not fail. Jane felt that “tough love” with students looked like “getting in their faces,” being direct and at times forceful with students as a way to motivate students for success. Rather, Jane understood her approach as one that centered caring-for students, being attentive to their needs, giving them “some space” to be themselves, and “notic[ing] what they are doing well” (Jane_Int_02.08.17). In doing so, Jane provided opportunities for students to also practice caring. Jane believed that demonstrating this kind of care for students would result in a relationship in which the “kid trusts you, looks up to you, and wants to work for you because they want to do well by you, which will then help build some confidence in them” (Jane_Int_02.08.17). It was important to Jane that students knew she cared for them as people and that she wanted them to do well in her class.

**Jane’s emotions in caring.** Embracing an ethic of care and navigating this complex dilemma raised emotions for Jane. Several times throughout the semester, outside of the classroom, Jane used the word “stressed” to describe her emotions related to her classroom community and these feelings brought her to tears (Jane_Ob_05.02.17, Jane_email_05.02.17, Jane_Ob_05.04.17). In one meeting with me, Jane explained that felt like she was on a “roller coaster” with her class and that “it really hit her” (Meeting fn_05.08.17) and she explained she “felt this way everyday after class” (Jane_Ob_05.04.17). In large part, Jane did not reveal to students the intensity of her emotions and stress regarding the classroom community, but rather
she shared these feelings with me after class. However, sometimes these feelings made it difficult to teach, as she explained,

I’ve got to check myself sometimes. I get so in my feelings sometimes, about how a class goes, that I sort of can’t see what’s even happening in the class. I feel like that’s happened to me it’s not specifically about Dig Deep, but I think that Dig Deep can be a way to help to sort of defuse that reaction, and I’m going to keep working on it. So if I have a kid that I am really having a hard time with, then what I should be doing is sitting by them for Dig Deep for a long time, and seeing what I can get them to share ... to just get myself out of that head zone that, “This class is mean, and I can’t get past it.”

(Jane_Int_05.25.17)

Jane’s feelings about her classroom community made it so that she could not “see what was happening in the class.” She saw the Dig Deep routine as a way to “defuse that reaction,” as a way to help her attend to the students in her classroom. The Dig Deep routine and our discussions in planning it helped Jane to rethink her approach to students she was “having a hard time with,” so that instead of getting upset with these students or avoiding them, she should be sitting with them during Dig Deep to learn more about them. Jane felt that using Dig Deep would help her get out of her head, and get past the feelings of this “class is mean,” to understanding and developing empathy for individual students.

Jane’s interactions with Sally also raised some emotions for Jane, as their competing approaches to the classroom caused tension and additional stress for Jane. Jane felt that the tension with Sally impacted what happened in the classroom, and her perspective on what happened in the classroom. Jane said, “every time I was reflecting on a day, I was reflecting through my own eyes, and I was also acutely aware of my co-teacher’s perception of how things
went. Those two visions were not the same exactly” (Jane_Member check_01.30.18). During the class periods in which I observed tension between the two teachers’ approaches, they did not share their feelings about differences of approaches with each other in order to focus on the students. Occasionally as a result, Jane felt she had to go along with things she did not agree with, such as asking students to put their cell phones away, rather than disrupt the classroom by publically disagreeing with Sally. Jane regretted that she and Sally did not resolve their differences in a way that supported building a positive classroom community, explaining:

I don’t think we necessarily got to a better place with that. What we ended up doing by the end of the semester, which I think you probably observed, was just she did a lot of working with a few kids in isolation so that she wasn’t having to deal with the kids who were “behaviorally”, a problem for her. (Jane_Member check_01.30.18)

The solution that the teachers settled on was to work with different groups and Sally took small groups of students to another room. Jane regretted this because dividing her students did not improve her classroom community or resolve the tension between the two teachers.

Jane’s approach to building her classroom community was to “go more vulnerable, open myself up to them” and she tried to “be more human with them to try to help with the issue.” In these instances, Jane told students that she was treating them as people, and that she wanted them to treat each other as people. Jane understood being vulnerable as a way to care for her students and she connected vulnerability with kindness: “To be kind is to be vulnerable” (Jane_Member check_01.30.18). When asked to define vulnerability, Jane shared two stories about relationships with students who had each written essays about her as their favorite teacher for a school contest. She described one essay, written by a senior whose “perfect plans for her future were not panning out” (Jane_Member check_01.30.18). The senior viewed Jane as a “different model of
how to be in the world,” explaining that Jane was “upfront” in class by making statements such as, “I’m not having a great day, but I’m going to try to pull it together for you” (Jane_Member check_01.30.18). Jane reflected that she must have showed her student “a different way of being possible in the world, and made it okay for her to reconfigure her plans, and that was really meaningful to her” (Jane_Member check_01.30.18). Jane gave an example of a second essay by a student, which Jane felt spoke to the vulnerability she showed students in the classroom. She paraphrased the essay’s main idea to be, “Yeah, adults, they’re figuring things out, too.” She explained,

   It’s just kids, you know, when they see you as a human who has flaws and screws up sometimes, and also acknowledges that, and isn’t trying to hide it all the time with this veneer of toughness or professionalism, or whatever, you know, then maybe sometimes they find it easier to reach out and also to accept that in themselves, and not be so hard on themselves. (Jane_Member check_01.30.18)

Jane’s definition of vulnerability included the importance of revealing herself as human to her students, with “flaws,” and presenting an authentic version of herself to your students, rather than hiding behind a “veneer.” Jane saw value in this approach and used it to care for her students, modeling for them, providing other ways of being in the world, and helping kids accept themselves for who they are.

Sometimes, however, this approach caused her pain. She explained, “I’ve had times … where I … keep trying to be more vulnerable, and more like, ‘I care about you’ … And then I often feel like that gets stomped on, and can’t help but take that personally, and that’s something I’ve got to figure out how to deal with that. (Jane_Int_05.25.17). While Jane committed to opening herself up with students to show them she cared about them, the students did not always
respond as she would have hoped and this hurt her personally. Jane wondered if students did not respond to her vulnerability as she would have hoped, due to how infrequently they were asked to be vulnerable or have opportunities to practice vulnerability. She explained, “I think about all of the ways in which they are not invited to be vulnerable and how that’s a really difficult position for them to put themselves in” (Jane_Member check_01.30.18). Jane came to realize that students being vulnerable in the classroom felt “riskier” for them than it did when she was vulnerable. This was partially because they did not have as much practice, but it was also due to the unequal balance of power between teacher and student. Jane reflected,

> Me being vulnerable is so different than them being vulnerable. I risk less, I think, you know? I think I’m starting to realize that a little bit more. But I think some of the rejection is coming from that place where they’re like, “I can’t be vulnerable.”

(Jane_Member check_01.30.18)

While Jane’s approach was to be more vulnerable with students, and she did at times share how she was feeling, she did not usually elaborate on her feelings and did not share all of her feelings with students. For instance, while she shared with our group that she “worried” about students being “mean” and “snide”, she did not share this worry with students. To Jane, being more vulnerable, did not mean that she was sharing with students all of her feelings about the classroom community.

Occasionally, Jane revealed to students how she was feeling at the moment through a quick statement. For example, during one class period, Jane announced to students that she was “feeling stressed about this project, feeling stressed about a few things (Jane_05.02.17)” but she did not elaborate on her feelings. Rather, she used this statement as an opportunity to introduce the Dig Deep prompt for the day, saying the prompt was about “calming.” She read a quote from
one of her favorite authors, Anne Lamott, “‘I am going to try to pay attention to Spring. I am going to look around at all the flowers, and look up at the hectic trees. I am going to close my eyes and listen.” Then, she posed this question to students, “What does it mean to REALLY pay attention to someone or something? In your life, what do you pay attention to? What do you wish you’d pay attention to more? There’s not a right answer to that.” (Jane_Ob_05.02.17; Teacher slides_Jane_05.02.17). Rather than elaborate on her present feelings with students, Jane used her emotions to guide the Dig Deep prompt for the day, and offered students a strategy for handling their own stress. In linking her stress to the need for calming, she signaled calming was an antidote for stress, and offered a quote about calming oneself through attention. She then invited students to consider what it means to attend to someone or something; and in this sense she was really inviting students into a dialogue on caring and to practice caring.

**Why did Jane bring this dilemma to our design group?** While Jane’s first dilemma was not explicitly around Dig Deep, it was very much connected to our design work and very likely the nature of our design work made this dilemma more salient for Jane. The dilemma and Jane’s responses to the dilemma were relevant for our design work; Jane viewed Dig Deep as being aimed at “empathy and community-building” (Jane_COW Refl_1.30.17). Jane raised challenges with her classroom community several times throughout our work together and used the design team space to make sense of the situation (Jane_Ob_04.20.17, Jane_Refl_04.13.17, Meeting fn_05.08.17). Jane articulated the dilemma at the end our meeting, after we had finished discussing the agenda items, conveying it was significant to her. That Jane raised challenges with her classroom community and with her co-teacher several times signaled that this was a dilemma that weighed on her and was one that she continued to grapple with throughout the semester.
With our design team, Jane expressed feelings of anxiety and frustration around this particular dilemma.

Jane worried that Dig Deep would not be successful with this group of students, even though Dig Deep was designed to reach students who teachers struggled to engage or get to know well. When she said, “I don’t know. I don’t think there’s much I can do about it right now, I just wanted to voice that I feel stuck in that class and it’s hard for the Dig Deep stuff to work because it feels yucky in there” (Meeting transcript_04.12.17), Jane indicated that she wanted Dig Deep to be successful, and she wanted to develop relationships with students and create a caring classroom community. It is possible that Jane shared this dilemma within the design team space because she was concerned that Dig Deep would not be successful in her classroom and that her data from student surveys would reflect this. Jane likely understood this dilemma as relevant to the work we were doing together as a design team, and was therefore also seeking advice. Finally, Jane experienced a lot of emotions related to this dilemma and caring for students and it is also possible that she shared this dilemma with our group as a way to talk about her feelings.

**Dilemma 2: Navigating Competing Approaches to Teaching Language Arts While Ensuring Student Success**

Jane also experienced a dilemma of navigating competing approaches to teaching language arts while ensuring student success. Jane’s articulation of the dilemma pitted project-based learning against preparation for the SAT, and this dilemma was intensified by our design work in which teachers used class time to build relationships with students. In articulating this dilemma, Jane contrasted her approach to teaching language arts to a colleague’s approach and she communicated goals for her teaching that allied her goals to those of the design team.
Through describing her commitment to project-based learning and building relationships with students, Jane demonstrated caring for students. Confronting this dilemma evoked some emotional turmoil as it led her to question her commitments and her teacher identity.

**The dilemma.** It was the middle of our fourth meeting and we had just been talking about possible revisions to our designed strategy, when Jane interjected, “Can I bring up a conversation that’s troubling me that I had at lunch actually, but it’s been sort of an ongoing thing?” (Meeting transcript_04.25.17). Jane let the group know that she was feeling “troubled” by these interactions and that they had been “ongoing.” Jane’s question did not flow from the previous discussion, but rather Jane introduced it as a new topic, further emphasizing that the conversation in question had been a source of trouble for her.

Jane’s colleague, Ingrid, a fellow English language arts teacher, was concerned about students’ increasingly low SAT scores and felt that the teachers in their department were not adequately preparing students for these high-stakes standardized exams. In explaining her conversations with Ingrid, Jane said, “But every time we talked about it and it’s coming from a place of frustration from her too. [Ingrid’s] like, “What am I not doing?” It’s not like she is accusing everybody else. It’s just, it’s very much like the SAT is the measure – like this is what her job is, her job is to prepare them for the SAT” (Meeting transcript_04.25.17). Jane’s statement, “it’s coming from a place of frustration from her too,” revealed that both Ingrid and Jane felt frustration during these discussions.

Jane further characterized Ingrid’s perspective, “She’s got this sense that people are becoming increasingly not in control of the English language, it’s a problem, and the English teachers of the world need to solve it” (Meeting transcript_04.25.17). Ingrid, according to Jane, felt a sense of urgency and frustration around this particular problem. Jane characterized these
conversations as pitting explicit preparation for the SAT’s against other progressive forms of teaching, such as project-based learning.

Their conversations led Jane to question her pedagogical approach and led to a dilemma about how to best prepare students for future academic success. Jane explained,

I’ve been talking to her quite a lot about project-based learning, and rigor, and stuff like that. It’s just got me – here comes that anxiety again. I’m anxious about this. I do feel like this is important. I feel like if a kid doesn’t buy into the culture of a class, they’re not going to do any work for the class. Can we prove that this works? (Meeting transcript_04.25.17)

Jane revealed to our group that the dilemma for her, about how to navigate conversations with Ingrid and the competing approaches to teaching language arts, was emotionally fraught; it made her feel anxious. She connected the dilemma to our design work when she said, “I do feel like this is important,” she was referring to project-based learning (as she noted in the two sentences prior) as well as to the work of our design group (as indicated by her question, “Can we prove this works?”). Jane wanted to use our design work and the student survey data to support her teaching approach and to use as evidence in her conversations with Ingrid. Jane asked again, “Can we prove this works?” and suggested that her question was “a good segue into looking at the data” (Meeting transcript_04.25.17).

Jane continued on and explained with a big sigh, “I think her concerns are valid and I’m just not sure what the answer is I guess” (Meeting transcript_04.25.17). Jane indicated that this had been a dilemma for her, raising a similar concern in an earlier interview (Jane_Int_02.08.17). Jane explained,
Because that’s a skill, I think, is taking the test, and reading those questions in a certain way. I don’t really want to spend time in class on that. I think there’s this underlying assumption that if you teach well, and not teach to the test, if you teach the skills, then that’s going to help out in the test. I just don’t know if that’s true. Then I’m not sure how to navigate that. (Jane_Int_02.08.17)

Jane was not ready to abandon her approach to teaching or our Dig Deep design work, as she embraced a student-centered classroom, project-based learning, and building relationships with students. However, Jane did worry that she was not doing enough to prepare students for the SAT exams. She reflected,

I think that this stuff is important and I think that a kid feeling welcomed and like they have a space to be themselves once in their school day is maybe more important than how well they do on a test. Then I feel like I’m a bad English teacher for thinking that and that I am the problem. (Meeting transcript_04.25.17)

Jane considered Ingrid a close friend and this further complicated their conversations for Jane. She explained, “When I counter, or when I feel like countering with other things, I often don’t feel like I can actually. I’m really good friends with this person but we’re really on different pages with this stuff” (Meeting transcript_04.25.17). Jane revealed that her conversations with Ingrid on this topic were difficult and that she “ended up feeling really defensive” (Meeting transcript_04.25.17).

The dilemma of navigating the competing approaches to teaching language arts and preparing students for academic success caused Jane to question her approach to teaching. Jane confided,
It just spirals into this big question of, “What can we do? What do we do?” You know? I don’t know. Yeah, I’m just having a little bit of an identity crisis about all of it I think. I just want to make sure we’re doing the right thing, but this has always been, I think the way that I, in general, that building relationships is important and things like that I think has always been where I’ve come at it from. (Meeting transcript_04.25.17)

Jane revealed to the group that this particular dilemma cut to her core as a teacher and caused to feel an “identity crisis.” At the end of the meeting, we returned to talking about Jane’s dilemma and she further revealed the impact of the dilemma, “I’m just exhausted … I think the thing is that it’s a really hard job. You can’t do all the things” (Meeting transcript_04.25.17). Jane also revealed a sense of feeling overwhelmed when she reiterated, “I can’t. I can’t do all the things” (Meeting transcript_04.25.17).

**Jane’s caring.** Through discussing this dilemma, Jane revealed caring for her students. Jane viewed her approach to teaching, including using the Compose Our World curriculum as a way to attend to her students needs. Jane believed that students had collectively expressed to her in the previous year and semester that the project-based learning curriculum attended to their needs. She explained that if students “don’t want to be engaging with it, then they won’t” (Jane_Int_02.08.17), suggesting that if what and how she was teaching did not meet her students’ needs, they would let her know by disengaging from it and that they had done so in the past. She reflected,

Doing things this year the way that we have, it’s allowed me to see so much more what they do have to offer, and what they can do. I like [the students] so much more. I bet they probably like me better too. Because it’s set up to let kids shine. (Jane_Int_02.08.17)
For Jane, embracing project-based learning as well as Dig Deep offered a way to “behave ethically through” the curriculum (Noddings, 2013, p. 162), to care for students through seeing the best possible version of students.

The major focus of the dilemma was that Jane wanted to make sure that she was doing the “right thing” in committing to student-centered pedagogy through project-based learning and building relationships with students. She understood Ingrid’s point of view, and recognized that the SAT’s can be consequential for students. However, she was not convinced that preparing students for the SAT’s was the main purpose of language arts teaching. She believed that in order for a student to be successful in language arts, they needed to “buy into the culture of the classroom” and feel welcomed. She explained, “I think that a kid feeling welcomed and like they have a space to be themselves once in their school day is maybe more important than how well they do on a test” (Meeting transcript_04.25.17). Jane was also responding to students’ expressed needs, which they shared with her on their “I need” statements (as described in the first dilemma). The dilemma revealed Jane’s caring; she wanted students to do well in her classroom and believed that the way to do that was through “building relationships.” Jane explained that her student-centered approach to teaching “has always been where I’ve come at it from” (Meeting transcript_04.25.17). Jane embraced an ethic of care when she put her students’ expressed needs ahead of institutional structures (e.g., standardized exams), which are based on the assumed needs of students (Noddings, 2013).

Jane’s emotions in caring. In caring for her students, Jane faced a dilemma and experienced emotions. Jane said that she was “venting” and “trying to puzzle through” the dilemma with the group – suggesting that she was unable to do this during her conversations with Ingrid. She revealed that it was difficult to engage in these discussions because Ingrid was
her friend and they both felt frustrated about how to prepare students for success in language arts, and about what success meant. Jane felt “defensive” in these interactions and did not always feel like she could “counter” Ingrid’s arguments and she shared with the group how these conversations made her feel anxious.

This dilemma also caused Jane to question her teaching identity, such as when she admitted feeling like a “bad teacher,” and when she lamented that she couldn’t “do all of the things” expected of an English teacher. Her latter statement could be understood as connected with her identity; and it could also be understood as pushing back against competing institutional perspectives and expectations of the role of an effective language arts teacher. Jane recognized and felt that such expectations were, at times, at odds with one another and that it was not realistic to suppose that one person could reconcile the various perspectives. Jane also shared that she “felt exhausted,” and that teaching and caring for students “is a really hard job.”

These conversations led Jane to question her pedagogical approach, which she described as an “identity crisis.” Jane felt “anxious” about preparing students for the future. Jane questioned her pedagogical approach and confided in the group a real struggle, that she felt like a “bad English teacher” and that she was “the problem” to which Ingrid referred. This dilemma called into question Jane’s core beliefs as a teacher and thus called into question her teaching identity. At the end of the meeting, Jane looked at us, face flushed with tears in her eyes confiding, “It’s so easy to feel bad at this job. It’s so easy to feel that way because there is so much to do” (Meeting transcript_04.25.17). Jane felt the pull of the competing perspectives on teaching language arts and felt overwhelmed at not being able to do “all of the things” because she cared about her students’ success.
**Why did Jane bring this dilemma to our design group?** The dilemma of navigating competing approaches to teaching language arts while ensuring student success was significant to Jane. She raised it in the middle of a meeting, and it was not connected to our group’s previous conversation. Jane interjected by asking if she could bring up a conversation that was “troubling” her, and then we returned to this same topic at the end of the meeting, suggesting it was a dilemma that persisted and gave her worry. But the dilemma was connected to our design work; Jane spent class time implementing Dig Deep to build relationships with her students, while her colleague felt that class time was better spent on SAT preparation. Jane appeared to want affirmation from the group that the time she spent in class and with us on improving relationships with students and among students was “worth it.”

*Jane communicated goals that allied her with other teachers and the researcher on the design team.* In raising this dilemma, Jane wanted to process the competing perspectives that appeared to pull her in different directions but she also wanted something from the group, to “prove this works.” This question was important to Jane for bringing evidence to Ingrid in their conversations, but it was also important for assuring herself that committing to project-based learning and building relationships with students was a good pedagogical approach. This question was also important to the research; this is the kind of question that improvement science teams ask when looking at the data. So, this question was important for our small design team as well as the Compose Our World team, in which a big research focus is proving the PBL curriculum “works” for teachers and students. There was also tremendous uncertainty as to whether it would “work,” which may have left Jane feeling vulnerable. She invested in something that was not guaranteed to work or produce “success” in a more traditional sense. In posing this question, Jane allied with teachers and the researcher in pursuing a similar goal and
working within uncertainty. Working within this place of uncertainty can evoke emotions and
Jane named her emotion, anxiety, providing insight into the impact of the conversations with
Ingrid and the dilemma around the competing approaches and goals to teaching language arts.

**Dilemma 3: Building Relationships With Students While Attending to Her Own Well-being**

Jane experienced a dilemma around building relationships with students while attending
to her own well-being. When I asked her about this dilemma, she reflected, “I think it’s like any
time you’re going to open yourself up to students, then that’s something that you’re doing. I feel
like all teachers have that, or always trying to figure that out.” (Jane_Member check_01.30.18).
Jane reflected that this is a dilemma that all teachers must confront, and that any time a teacher
opens herself up to students she has to find a way to also attend to well-being. Jane did not feel
that this was a unique dilemma and it was one that teachers in her school were forced to confront
since the school-related tragedies, with “all the trauma that we had last year” (Jane_Member
check_01.30.18). The dilemma was also made more significant as a result of our design work, in
which Jane felt she improved her relationships with students by learning more about them.

Jane’s third dilemma differed from the first two in that it was not a dilemma that she
raised in our group meetings, but rather one that came up in her interview with me. During the
interview, Jane described several specific relationships she formed with students in her class, in
large part through Dig Deep, and in doing so revealed care for the students. Students shared
intimate and personal stories and feelings with Jane, and she felt the weight of these stories.
While it was difficult for Jane to know what to do with her emotions related to students’ stories,
learning more about her students allowed Jane to develop empathy for them, and she found such
relationships rewarding.
The dilemma. Jane believed that she developed stronger relationships with students over the course of the semester, in large part due to our focus in the design work. She explained,

One of the things that has come out of this [participating in the dissertation study] is that I feel like I have a little better perspective on what [students are] bringing. And they are bringing so much to class. And I would not have known this stuff. (Jane_Int_05.25.17)

As she got to know students, they shared intimate stories with her and Jane felt the weight of some of these stories. Jane understood that students sharing these stories and their feelings with her as a sign that they had developed meaningful relationships (Jane_Int_05.25.17). She related several of these stories in our final interview, conveying through her voice and facial expressions her concern and care for them.

During one story about an experience she had during the Dig Deep sharing time, she became visibly upset, with a quiver in her voice and tears in her eyes when she said, “I had a student today …she shared with me, but not with anybody else, that she blames herself for her sister’s death. And she has nightmares about it. I’m like, ‘Okay, this is a lot.’” Jane took a deep breath just before reflecting, “this is a lot,” and paused for some time after this statement, suggesting it was a lot for the student to handle and also a lot for her (Jane_Int_05.25.17). She eventually concluded, “but that's where we got to at the end of the semester” (Jane_Int_05.25.17), indicating that this relationship had developed over time.

In another story, Jane talked about a student sharing with her and his table during their Dig Deep discussion, that what he was proudest about was that “he broke his prescription drug addiction, and he’s celebrating an anniversary with it.” Jane emphasized, “I mean, this is a ninth-grader, who broke an addiction and is celebrating an anniversary now.” She indicated that this story impacted her in its “magnitude:” “You sort of always know that kids have stuff to deal
with, but I think the magnitude of that ... this drove that home for me, and made me feel more empathetic” (Jane_Int_05.25.17).

Jane revealed a sense of worry about students when they shared such stories. In another example, she had asked the class the Dig Deep prompt, “What motivates you?” (Teacher slides_Jane_05.08.17). She was surprised to learn that one student wrote, “Nothing motivates me anymore, it just doesn’t seem like anything’s worth it” (Jane_Int_05.25.17). Jane indicated that this worried her, reflecting, “That’s not okay, you know what I mean? What’s going on with that kid, that he’s so checked-out? Why does he have this feeling? It’s just ... they’ve got such bigger stuff going on, that ... I don’t know.” (Jane_Int_05.25.17). Jane related several other student stories in our final interview, conveying through her voice and facial expressions her concern and care for them.

As Jane developed relationships with students, she became privy to some of their intimate stories, thoughts, and feelings and Jane conveyed to me the emotional weight that receiving these stories had on her. As the opening vignette indicated, Jane did not always know how to care for herself or attend to her own emotional well-being. As noted earlier when I asked her how she cared for herself, she first provided a response about her mental-health training on how to help students in times of crisis. When I rephrased my question, with a big sigh she replied, “Yeah, I don’t know.” (Jane_Int_05.25.17).

Jane’s care. Jane’s dilemma highlighted her approach to caring for students. Jane exhibited care for students when she provided opportunities for students to share their stories with her and entered into dialogue with students, when she attended to students through listening to their stories, and when she responded to students’ stories. This was connected to her personal
belief in treating students as people and creating a supportive classroom environment through building relationships. Jane explained,

I want to feel good in class. I think everybody wants that, everybody wants a class where they can feel really welcomed and supported. That in and of itself, I think is a goal. It’s an okay end-goal, in and of itself. It’s okay with me if I’ve got a kid who likes this class because whatever bad thing they’re dealing with, like it’s a respite from it … a classroom that feels good is a classroom that works better. (Jane_Int_05.25.17)

When I asked Jane about how she would describe her relationship with students, she immediately began sharing stories that students shared with her as examples of her relationship with them. Listening and receiving students’ stories was connected to her philosophy that this is an important part of treating students with respect and treating students like people.

**Jane’s emotions in caring.** For Jane developing meaningful relationships with students meant that students may (and did) share heavy and emotional stories with her, and she shouldered the responsibility of receiving these stories. These stories impacted Jane and her dilemma was about how to attend to her well-being as the receiver of these powerful stories. As an attentive and receptive listener, Jane did not share personal stories when talking with students one-on-one in the way they shared with her, nor did she process the way she felt about these stories with students. Rather, she used the design team space to process her feelings. This meant that as she continued to cultivate relationships with students, especially through Dig Deep, and they continued to share intimate stories and feelings with her, she continued to feel their weight. Jane’s third dilemma was about how to care for her well-being, so that she could continue to care for her students. Jane continued to worry about students’ well-being ahead of her own. When asked how she cared for herself, her first response was about how she cared for students.
Despite at times feeling exhausted and overwhelmed at receiving her students’ stories, Jane viewed her relationships with students positively and understood their sharing these stories with her as a signpost of their deepening relationship. Engaging in caring relationships allowed Jane to develop more empathy for her students. She explained, “I think it’s really easy, as a teacher, to just feel like, ‘These kids are doing this to me,’ and I still, in class, sometimes feel that way ... but that kind of stuff helps put it in perspective a little bit” (Jane_Int_05.25.17). Learning more about her students gave Jane a window into her students’ lives, helped her shift her perspective, and resulted in Jane developing more empathy toward her students. Jane said, “If you don’t see [students’ backgrounds], and all you see is the behavior without any context, you don’t see the person” (Jane_Int_05.25.17). She concluded that this was a reason that Dig Deep “can be valuable, and I’m going to keep at it” (Jane_Int_05.25.17). In talking about the intimate stories students shared with her, Jane reflected, “You sort of always know that kids have stuff to deal with, but I think the magnitude of that ... this drove that home for me, and made me feel more empathetic” (Jane_Int_05.25.17). Understanding her students better also helped Jane to decide to “meet their hostility with warmth” (Jane_In_05.25.17).

Jane found these relationships rewarding. She not only cared for students, but students acknowledged they received her caring in a way that completed the caring relation (Noddings, 2012). During our final meeting, in modeling a Dig Deep prompt, I asked teachers to draw an image of a time they felt valued as a teacher. Jane drew a representation of a hug and explained,

For the first time in memory, my ninth grade classes, as they were leaving today [last day of the school year], they wanted hugs and said “really great semester” and “great year” and “have a great summer.” Just the first time I felt like the freshman really [felt] like [that]. (Meeting transcript_05.25.17)
Jane recognized that students received her caring and valued when the students hugged her and told her what a great semester it had been. Later she explained that it was “a good sign, that kids are feeling like they’re actually sad that the class is over” (Jane_Int_05.25.17).

Jane also felt valued when the students “confide[d]” in her, “being able to tell about the things that are important to them, being able to be vulnerable” with her and in her classroom (Jane_Int_05.25.17). She summed up the positive aspect of caring for students and developing relationships with them: “I think the results of it is that we can both see each other as people, beyond just the role. That’s really what it comes down to” (Jane_Int_05.25.17). Jane’s third dilemma presented a paradox, for the more she focused on building relationships with students and caring for them, the less she focused on attending to her own well-being. Likewise, the more she got to know students, the more rewarding this felt, and, it seemed, the more she felt depleted.

**Why did Jane bring this dilemma to the design space?** While Jane did not explicitly share this dilemma with the entire design team, she did talk about it with me. Our end of project interview was filled with instances of Jane describing her relationship with specific students. She seemed to enjoy the opportunity to talk about her relationships with students and reflect on her teaching practice; her interview was more than twice the length of the interview with the other teachers. In addition, it became a routine for the two of us to talk after I observed her class and during these meetings she frequently talked about her relationships with particular students in the class. Jane liked having a thought partner to process challenges and dilemmas with, and she enjoyed being able to reflect aloud on how she was feeling. Jane embraced the opportunity to talk with me about her students and that this was perhaps one way she navigated the dilemma and attended to her own well-being.
Discussion

A central aim of this chapter was to trace the emotional experience within design and improvement science work, addressing a gap in the literature in this area (P. LeMahieu personal communication, October 26, 2017). Jane felt the three dilemmas more intensely as a result of the nature of our design work focused on building relationships with students; the Dig Deep routine and the focus of our design work made her dilemmas even harder to navigate. Jane was committed to the work and she was committed to the team, and did not want to disappoint herself or us. For instance, in the first dilemma, she worried that Dig Deep would not work in her classroom because of the negative classroom community. In my understanding of Jane, she was concerned that she would not be able to improve her classroom community through Dig Deep, but she was also concerned that she would let our group down. In the second dilemma, Jane asked if we “could prove this works,” recognizing the uncertain territory our design team had entered and implicitly worrying about the risk involved if this failed. By the end of the semester, Jane felt she successfully improved relationships with a number of students in her class and her marker of this success was that students shared personal stories with her and trusted her with those stories. For Jane, the success of her implementation of Dig Deep had an emotional cost, in that she felt the weight of these stories.

While our design work may have heightened these dilemmas and at times made them harder to handle, Jane used the design team space to explore, reflect on, and talk about these dilemmas. Our goal was to design a strategy for improving relationships with students, but as the findings indicate, there was much more happening within our group. Jane found opportunities to voice to her feelings and in doing so care for herself; this appeared particularly important for her in such a challenging year. Jane shared her dilemmas within the design team space for several
reasons. First, she worried at times that her dilemmas would negatively impact the progress of our design team, such as when she worried Dig Deep would not work in her classroom because of her classroom community. She also sought out advice and reassurance from the team about how to navigate her dilemmas. For instance, after a conversation we had about the dilemma with her co-teacher, Jane wrote in a COW bi-weekly reflection, “Ashley built up some of my lost confidence in my own approach today” (Jane_COW Refl_1.30.17). She also sought support in the dilemmas, such as when she said she “wanted to voice that I feel stuck” or that she needed to “vent” and “puzzle through” the dilemma with the group. Jane’s reflection suggests that she viewed sharing her dilemmas with the team and with me as a way to re-build her confidence and reaffirm her teaching approach. Jane also benefited from having people to talk to and embraced opportunities to reflect on her practice and her dilemmas aloud. It helped Jane to express her emotions with the design team and several times she used the phrase, “I just need to voice this…” Jane shared that it also helped her to hear other teachers’ challenges, as it helped her to articulate her own. For instance, she reflected “sometimes I can hear Elaine or Rachel verbalizing something that has been sort like … Yeah, ‘cause I feel like we’ve been kind of talking around it the whole time” (Jane_Int_05.25.17). She said that having a team to share with is “always really helpful” and that “I’m like, ‘Hey guys, I want to talk about this thing,’ because I value the perspective and being able to hash stuff out” (Jane_Int_05.25.17). Jane valued having a team to talk through dilemmas and her feelings and actively used the design team space to do so, whether this was in the whole group meetings or individual meetings with me.

The design work not only made some dilemmas more salient for Jane, but she also viewed our design work as a way to persist in her caring for students. This was evident when she revealed that she got “so in my feelings sometimes” about her classroom community, that it was
difficult for her to see what was happening in class and really attend to her students and their needs. She came to realize that the Dig Deep routine was a tool for her in caring for her students, as she intentionally sat with students who she “had a hard time with” to learn more about them. In doing so, she communicated to students that she cared for them and that she would not give up on them. The Dig Deep routine helped Jane move from generalizations about her class, such as “this class is mean,” to understand and empathize with students and their individual experiences and needs. Thus, using Dig Deep in this way helped Jane shift her perspective on her class and students.

Teaching is an emotional endeavor (Hargreaves, 1998), and perhaps more so when there is an expectation that “we need to give all of ourselves most of the time. To do so means giving (up) too much” (Liston, 2000, p. 98). Through articulating her dilemmas, Jane revealed the ways in which she cared for students and some of the emotions she experienced in doing so. The findings from this study suggest that at times the caring-one needs to be the cared-for. This may be especially true when teachers engage in design work that is about human connections in teaching, or the social and emotional aspects of schooling. It also seems to be the case that co-design, while in many ways educative and fulfilling for teachers, also creates or intensifies teaching dilemmas for them. When Jane used the design team space to explore her dilemmas, she became the cared-for within our team as we listened attentively and responded to her needs. That Jane embraced an ethic of care, combined with our design work on developing meaningful relationships with students, meant that Jane was consistently giving of herself in the classroom. In order to sustain caring, teachers also need to be cared for; caring for teachers within the design team may support them in being more fully present with their students.
Jane’s story is also one of figuring out how to share about herself authentically in the classroom. She often spoke about modeling vulnerability with students as a way to care for them and show them how to care for others. However, many of her examples of vulnerability still had a guarded nature to them, as she seemed to be struggling with how to be vulnerable with students in a way that matched their vulnerability but maintained her role teacher; she seemed to struggle with how much to share with her students. For instance, when reflecting on the first dilemma of developing a positive classroom community while negotiating her co-teacher’s conflicting philosophies of classroom management, Jane said, “maybe I’m wrong and maybe I'm too soft, which is I think what Sally thinks” (Meeting transcript_04.12.17). Jane seemed to be grappling with when, where, and with whom to be vulnerable.

Jane’s participation in the design team suggests multiple benefits of improvement science and co-design as teams begin to address dual goals of designing for the classroom and providing emotional support to team members. It may be especially important for groups to give and receive emotional support when the very nature of implementing an intervention creates new dilemmas for teachers. Understanding Jane’s experience within the design team, the complexity of her care for students, and the emotions she felt as a result, has implications for those working with teachers as co-designers or within professional development experiences. Isenbarger and Zembylas (2006) warn that “maintaining emotional neutrality all the time seems excessive and harmful” (p. 133) and suggest that those wishing to contribute to positive schools and classrooms “would do well to allow and encourage the development of diverse emotional cultures.” (p. 133) School leaders should “ensure that felt emotions are not unduly suppressed to the point of stressful consequences, but they should ensure that teaching is exciting, fun, and exhilarating” (Isenbarger & Zembylas, 2006, p. 133). Furthermore, teachers’ emotions may signal instances
and areas in which teachers need help or support. Within our design team, Jane shared that she felt like a “bad teacher” and worried that she couldn’t “do all the things.” Jane not only revealed her feelings, but also indicated to the group that she needed emotional support and needed to be cared-for. When Jane asked, “Can we prove this works?” she communicated to the group that needed support for her pedagogical approach. Had Jane not spoken these statements, our group would not realize their importance to Jane and we would have missed the opportunity to further discuss and explore them with her.

Researchers and facilitators of design and improvement science efforts should also attend to the emotional aspects of teaching and designing. As Jane’s case indicates, teaching – as well as engaging in design work – evokes emotional responses. This may be particularly true when the focus of the design work intersects with aspects of teaching which in and of themselves are emotional endeavors (e.g., caring for students), or when the design work brings teachers into dilemmas of practice such as when it pushes on school culture or institutional structures (e.g., student success is defined through SAT scores). Researchers in such positions should be aware of the emotions teachers are feeling and find ways to make spaces for teachers to express and explore their emotions. In this study, for example, we began our meetings by responding to and discussing a Dig Deep prompt. Making space for teachers to express and explore their emotions would not only ensure that teaching is “exciting, fun, and exhilarating,” (Isenbarger & Zembylas, 2006, p. 133), but also help teachers and researchers “both see each other as people, beyond just the role” (Jane_Int_05.25.17).

**Conclusion**

In this chapter, I explored the ways in which Jane grappled with dilemmas within the co-design process and highlighted the notion that the dilemmas were amplified due to the focus of
the design work. As a result, participation in the design work was an emotional experience for Jane, as Jane cared deeply about her students, her teaching practice, and the goals of our design team. Jane’s participation reveals that teachers feel a range of emotions throughout the co-design process, and underscores the importance of attending to teachers’ social and emotional well-being. In the concluding chapter, I synthesize the three findings chapters and provide overarching observations about the relational and emotional dimensions of teacher learning within co-design.
CHAPTER SEVEN: CONCLUSION

In this study, I set out to understand the ways in which the co-design process could support teacher learning as a form of professional development, and recognize teachers both as learners and as experts with valuable experience and ideas to contribute to the design work. I collaborated with three teachers to design a routine for improving their relationships with students to create caring classrooms, using key strategies of design-based implementation research and improvement science. Through engaging in plan-do-study-act cycles (PDSA), we designed, tested, studied, and refined the routine and a student survey. As our design evolved over the course of the semester, so did teachers’ discussions. Teachers raised and grappled with dilemmas created by or intensified by our design work. Teachers deliberated, drawing on past experiences in the classroom and with their students to inform present conversations and shape the future design and implementation. Teachers implemented the new routine, Dig Deep, in their classrooms and collected survey data from students to understand their perceptions. Teachers investigated their teaching practice through talk and reflection based on their observations and looking at data. Teachers made progress toward the goal of improving their relationships with students. Teachers collaborated, problem-solved, and offered one another support. And, teachers explored their emotions as they related to the design work and building relationships with students.

The findings suggest that teachers had opportunities to demonstrate deliberative agency, learn, and grow professionally. In Chapter Four, I described the ways in which the Dig Deep routine evolved over time. I examined the ways in which the group grappled with dilemmas and how teachers exercised deliberative agency throughout the process. I argued that teachers engaged in learning as they broke away from their old routines to design, refine, and implement a
new routine in their classrooms. In Chapter Five, I examined the nature of teachers’ talk when looking at data and found that in analyzing student data together, teachers’ talk turned towards and away from deeper investigations of pedagogical practice and the practical measure. In Chapter Six, I examined how Jane grappled with dilemmas connected to the co-design process and described how Jane used the design team space to reflect on and talk about the dilemmas and her emotions.

In this final chapter, I present one last, revised conjecture map to illustrate and articulate my theory for supporting teacher learning in co-design for caring classroom communities. Then, I identify and explain three overarching observations gleaned from this dissertation study: 1) designing for improving teacher-student relationships and creating caring classrooms requires risk-taking, 2) creating caring classrooms can be complex, requiring intention and attention, and 3) the design team space became a site of care, as the caring-ones also need to be cared-for and to care for themselves. Within each takeaway, I also make visible my role as the facilitator, as co-design allowed for teachers to engage in deliberative agency through a highly facilitated process. Following the takeaways, I discuss several limitations of the study. Then I describe implications for researchers, improvement science facilitators, school administrators, professional development coordinators, and teachers. I conclude with thoughts for future research.

**Theory of Teacher Learning in Co-design for Caring Classroom Community**

In order to illustrate and articulate my theory for teacher learning in co-design for caring classroom communities, I include a final, revised conjecture map (see Figure 7.1). My high-level conjecture is that the co-design process for creating a caring classroom supports teacher learning. As part of the discursive practices, at each of our meetings teachers shared about their
implementation of Dig Deep and we talked about their student survey data. I acted as the facilitator to plan and lead our meetings, and worked with teachers as co-designers. We met approximately every other week and engaged in three plan-do-study-act cycles to design a routine for improving relationships with students. We used a variety of tools and materials, including Google documents such as meeting agendas, persona templates, and diagrams. As the facilitator, I created facilitator guides for each meeting which included the agenda, questions to pose to the group, and my rationale for including agenda items. I also adapted a data protocol to guide the team in looking at student survey data.
Figure 7.1. Final conjecture map
Using these tools, structures, and practices involved a number of mediating processes. Together, we agreed upon a shared problem of practice, student disengagement, and determined that we could influence this problem through focusing on teacher-student relationships. Teachers completed persona templates, shared about their persona students, and occasionally referred to their persona students when designing for improving relationships with students. The team also drew on research, particularly the cultural probes article (Gaver et al., 1999) I shared, to create the Dig Deep routine. Teachers implemented the routine, and they collected data using the student survey we developed as a practical measure. Teachers reflected on their practice by analyzing student survey data and developing new insights. These insights led the group to refine the routine and the student survey, make design decisions, and enact the changes in the next round of implementation. Throughout the process, teachers raised and discussed dilemmas and expressed emotions related to the dilemmas and the design work.

The mediating processes supported several outcomes. Teachers demonstrated deliberative agency throughout the co-design process as they discussed dilemmas and made design decisions (Chapter Four). Teachers enacted new teaching practices when they implemented Dig Deep; this routine replaced their existing routines for the start of class (Chapter Four). Teachers engaged in investigations and reflections of teaching, and this was evidenced in their data discussions (Chapter Five). By the end of the semester, teachers all felt that their relationships with students had improved (Chapter Five). In addition, teachers’ notions about student ownership evolved, so that by the end of the semester teachers envisioned new ways of including students in the planning and implementation of Dig Deep (Chapter Four). All teachers demonstrated improvements on some of the items from the student survey by the third PDSA cycle, and students interviewed in all of the teachers’ classes felt that their teachers cared about them and
took an interest in them (Chapter Five). Teachers made sense of dilemmas together, and the
design team became a site of care (Chapter Six). Finally, in our last meeting our group devised a
“change package” of our project, that could be shared with others interested in a routine for
building relationships and creating a caring classroom (Chapter Three).

**Designing for Teacher-Student Relationships Requires Risk-Taking**

The goal of improving relationships with students and creating caring classrooms was a
risky endeavor and increased potential for teachers to feel vulnerable. Many teachers see
themselves as being good at relationships with students, and for these teachers forming good
relationships with students is close to the core of their identities. The teachers in this study
identified their relationships with students as their favorite part of teaching, and as I understood
the teachers, this was central to their teaching identities. Likewise, many people assume that
forming relationships is a natural and intuitive aspect of the teaching profession (Goldstein &
Lake, 2000; Kim & Schallert, 2011). Therefore, it can be difficult to acknowledge or recognize
that relationships with students can be improved. A co-design study focused on improving
relationships through looking at student survey data runs counter-intuitive to these notions. This
study demonstrated that cultivating relationships is something we can design conditions for and
that can be studied through looking at student experience data. Like other research on teacher-
student relationships, my dissertation study suggests that a teacher can intentionally work on and
cultivate relationships with students and that this is necessary and important work in teaching
(e.g., Alder, 2002; Claessens, et al, 2015; Pianta, Hamre, & Allen, 2012). This dissertation study
is situated within a small but growing body of work that uses improvement science cycles for
social and emotional learning related goals (e.g., Gould et al., 2014; Rutledge, Brown, &
Because the goal of improving relationships to create caring classrooms connects so closely to teachers’ identities, the design work and the examination of student data heightened. At times, looking at data evoked emotional and personal responses from teachers, who were dismayed that their data were less than perfect. The awareness that teachers had room to grow in creating caring classrooms, could at times feel threatening, as it may challenge features of their teaching identity. Looking at data that focused on students’ experiences and feelings inside the classroom is a different experience than looking at data that focused on student outcome scores: “my students don’t feel cared for” has a different emotional valence than “my students don’t understand symbolism.” Looking at student responses on the practical measure we designed was also risky because our questions asked students about their experiences and feelings in the classroom. To see for instance, that a student did not feel cared for in the classroom, meant that the student was revealing something important about their personal and interpersonal experience, and signaling to the teacher that something needed to change.

The work involved in engaging in PDSA cycles can also evoke emotions from teachers, particularly when teachers examine their students’ survey responses and as they reflect on their practice. As Chapter Five highlighted, analyzing student survey data about students’ experiences in the classroom is a different experience from analyzing student achievement data; the survey items required a more personal response from students and this intensified the experience of making sense of the data for teachers. Through the survey data, teachers were confronted by their students’ perceptions and feelings about Dig Deep and their classroom, and teachers reacted to students’ responses in various ways as they tried to make sense of the data. Sometimes the data
results were unsettling, and a teacher’s initial reaction was to dismiss the results, as was the case in Elaine’s response in the “I worry” episode. At other times, the data results resonated with teachers, such as when Rachel revealed that she, like her students, also felt worried at times in the classroom. Rachel worried about facilitating conversations with students about the “difficult” research topics they selected, such as abortion, revealing that it made her feel “uncomfortable.” When Jane suggested posing a Dig Deep prompt that asked students to talk about their personal connection or experience with their research topics, Rachel again expressed worry and concern. Elaine also highlighted how her emotional experience was connected with her students, when she imagined herself as a student her in own classroom. Elaine admitted that she would not feel “comfortable” sharing with students and that she worried students “would make fun of [her] for something.” At other times, teachers reflected on their teaching practice, such as when Jane conjectured that her negative results might have been a result of bringing her stress into the classroom (in the “Students speaking to you episode”). Analyzing the student survey data results evoked a range of emotions from teachers because the results were directly connected with their students’ social and emotional well-being in their classrooms, and the teachers cared about their students and their relationships with them.

In addition, there is much that is still untested in the improvement science approach that embraces a particular set of strategies for supporting “learning by doing.” A key assumption of improvement science is that the design team is expected to experience failures and learn from them to improve the innovation. Co-design is a very different approach to professional learning than what teachers are typically used to receiving. Unlike in traditional workshop models where the ideas and answers are given to teachers, in co-design researchers and teachers work together to determine the answers. This has enormous potential, and the uncertainty can be both exciting
and unsettling – and researchers and teachers are allied in these feelings as they engage in the work together. Teachers in this study, at times, felt unsettled, such as when Jane asked if we could “prove that this works” and I shared this unsettled feeling with her at the time. This uncertainty, coupled with the personal and emotional nature of the design work, elevated the salience of our work. The consequences of “failing” at improving relationships were great from the perspective of caring for the well-being of students, and from the perspective of preserving teachers’ identities.

Because the work was personal and emotional for teachers, teachers engaged in interesting and meaningful discussions about how to improve relationships with students and build a caring community. For instance, teachers initially felt discomfort with sitting with one specific group of students during Dig Deep, rather than roaming the room to get a pulse on what each group was talking about and making sure that students were on task. However, as teachers continued to implement the routine and we continued to discuss this issue, teachers realized that while they were sitting with one group, students in the other groups were getting to know each other in similar ways. They shifted their focus from needing to know and control what was happening in the other groups, to trusting their students and the routine, and in doing so came to see that this was an important component of building a caring community.

**Facilitating Risk-Taking**

Teachers in this study decided to take a risk by investigating their relationships with students. This focus emerged through the co-design process as I facilitated conversations about responsive teaching and suggested looking into student disengagement as a shared aim. Using tools, such as the Fishbone Diagram and Driver Diagram, I asked teachers to consider all of the reasons why disengagement existed and we selected one of the reasons within teachers’ control –
their relationships with students. Through these facilitated conversations, teachers took the first challenging step to admit that they had room for improvement in this area. One concrete move I made as the facilitator in helping teachers begin to see that their relationships with students were something they could improve, was to ask teachers to complete the persona template (described in Chapters Three and Four) about a student who they struggled to engage in their classroom. The original goal for this activity was to ground our design work in actual students in teachers’ classrooms, to share about specific students with one another, and to establish a norm of talking about students in asset-based ways. This activity foregrounded teachers’ relationships with students at the start of our design work and invited teachers to take a risk in sharing about a student they had a difficult time engaging in the classroom.

Complexities of Creating a Caring Classroom Requires Intention & Attention

Creating a caring classroom is complex and requires intention and attention. The PDSA inquiry cycle served as an infrastructure of improvement science that facilitated the teachers’ intention and attention. Improving relationships and creating a caring classroom through Dig Deep was a complex endeavor. The Dig Deep routine asked students and the teacher to share about various aspects of their lives, including interests, culture, and background. While seemingly a straightforward idea, the very notion of sharing something personal runs counter to everyday and school norms. As Jersild (1955) explains, “people have been schooled to avoid sharing with others the things that concern them most” (p. 95-96). And, sharing something personal with others requires a risk, and not all classrooms are safe for students to take that risk. This may be especially true for students who do not identify with the dominant, normative culture of society; for these students sharing something personal with others poses an even greater risk.
The Complexities of Caring

As the previous section illustrated, creating a caring classroom community is complex because it’s about teacher-student relationships. It is personal in the sense that for teachers it often feels connected to their teaching identity, and it is emotional in the sense that it raises emotions for teachers. Creating a caring classroom requires a certain level of emotional investment on the part of the teacher, and as Jane’s case illustrated, this emotional investment can be, at times, both taxing and rewarding. The personal and emotional nature of creating a caring classroom makes it all the more difficult to take a hard look at one’s teaching practice and make sense of student survey data. It can be difficult to admit when one’s teaching practice is less than perfect, or that students do not feel cared for or safe in one’s classroom. A teacher’s role in creating a caring classroom is complex. Specifically in Jane’s case, she struggled with how vulnerable to be with her students. At times she seemed unsure about how to be vulnerable with students in a way that matched their own vulnerability, but still maintained her role as the teacher. While neither Jane nor the group developed an answer to this, it reveals a layer of complexity to creating caring classrooms that teachers must consider and navigate.

The caring dilemmas that teachers raised point to the complexities of building relationships and creating caring classrooms. Creating caring classrooms requires teachers to cultivate relationships with many students in their classrooms, and dilemmas often arise in attempting to address the various needs of multiple students. The Dig Deep routine created a particularly salient dilemma for teachers; whether or not students must share something personal about themselves in order for a caring classroom to be established. Ultimately, the group decided it was more important that students feel safe in the classroom over students being required to share publicly. Similarly, teachers debated the extent to which students should be invited to be
vulnerable in the Dig Deep routine. Teachers in the group held different views on this; one teacher advocated for posing prompts that asked students to be vulnerable and believed that students feeling a bit of discomfort in sharing meant that they were growing, while another teacher worried that the risk involved in responding with vulnerability to a prompt was too great for her students. Even within our small group, how to create a caring classroom was contested at times, indicating the complexity of achieving this goal.

**Caring dilemmas are emotional.** As others have noted, design work brings to light dilemmas for its participants (e.g., Penuel et al., 2007). Teachers in this study raised and grappled with dilemmas created or intensified by the design work, and experienced emotions connected to the dilemmas. As described in Chapter Six, Jane experienced three dilemmas that were heightened by our design work, and related to caring for her students. Jane felt concerned when students were mean to one another, and when her classroom community was not coming together as she would have liked. At times she talked about feeling stressed and overwhelmed from addressing the dilemmas, and revealed that sometimes she felt “like a bad teacher.” She expressed satisfaction and a sense of fulfillment with the relationships she developed with students, while also feeling the weight of stories they shared with her.

As Chapter Five discussed, Jane suggested posing a Dig Deep prompt that asked students to talk about their personal connection or experience with their research topic. Rachel pointed out a dilemma that Jane’s prompt raised for the group; she did not want to pressure students into sharing information that would make them feel anxious, upset, or worried, and encouraged the group to think about a way to make it “safe for everyone” to respond and share. Rachel expressed worry and concern about asking the prompt in her class, and this led the group to talk about how to make it safe for students to respond to the prompt. This study illustrates that
teachers who care about their students and their teaching practice may experience a range of emotions as a result of the dilemmas that are created or amplified by the design work.

**Inquiry Cycles Focused the Groups’ Intention and Attention**

The PDSA cycle structure served to focus teachers’ intention and attention on improving their relationships with students, and helped to surface these caring dilemmas for discussion, such as through examination of students’ data or shared observations from implementation of Dig Deep. As part of the design work, we decided together that improving teacher-student relationships was an important lever for engaging students in the curriculum. Within our meetings, we planned a routine for building relationships and then teachers implemented the routine. They administered the student survey and collected data. Teachers talked about their experiences and observations from implementing the routine, and we analyzed the data together. Analyzing the data opened opportunities for teachers to investigate their practice related to building relationships. In addition, we revised the student survey to gather more meaningful data from students and to learn more about their students’ perspectives (such as when we added “Please explain” to two items). We also made adjustments to the design of the routine to get better at developing relationships with students. Importantly, teachers could see successes and setbacks almost instantly from their observations and the student survey data, which kept the goal of improving relationships with students relevant to teachers. Rachel highlighted this idea when she explained, “If I see that I have more kids more disengaged or even if it’s just a few [students], I think that is important, and I do want to reflect on what I’m doing, or how I could change that” (Rachel_Member check_01.30.18). Repeating this process through multiple PDSA cycles allowed our group to maintain focus on our goals and with each cycle more deeply investigate teacher-student relationships.
The routine of the inquiry cycle provided the group a structure for exploring the caring dilemmas, and then moving forward to try to do something about the issues raised. Rather than get “stuck” on one dilemma or topic, the structure of the PDSA cycles helped the group consider next steps, such as adjusting the design or the practical measure items. Through the PDSA cycles, we intentionally planned for developing relationships with students and the cyclical nature of the routine allowed the group to remain attentive to the goal. A basic assumption of the PDSA structure is that in order to address the problem at hand, the intervention requires testing multiple iterations through a process of continuous improvement. In this way, the cyclical structure enabled the group to see that improving relationships with students did not have a simple, straightforward solution, but rather we “learned by doing” and studying and revising. Using the PDSA cycles also underscored that developing a caring classroom takes time.

As part of the process, teachers attended to the perspectives and experiences of their students. Teachers’ observations and experiences were valued in the process, but they did not overshadow students’ feelings. Creating a student survey, analyzing it, and revising it brought an additional layer of attention and intention to the work, as we actively sought to value and listen to the experiences of students. Approaching a classroom community from this perspective differs greatly from traditional forms of classroom management, in which teachers determine what is best for students based solely on their observations and judgment. Through co-design, teachers considered and valued students’ experiences when making decisions related to their classroom community.

**Teachers Recognize the Importance of Intention and Attention for Caring Classrooms**

Teachers talked about the importance of intentionally designing for caring classrooms and for attending to their relationships with students. In talking about building relationships with
students, Rachel explained, “You have to be purposeful [about getting to know students] or it’s not going to happen” (Rachel_Int_05.23.17). Rachel highlighted the importance of being purposeful, in planning for the relational work in the classroom. Elaine also talked about the intentionality behind our design work, with the main purpose being to learn about her students. In the excerpt below she contrasted Dig Deep with students’ class writing, such as essays or stories, as opportunities for her to make connections with students.

Elaine explained,

I mean, yeah, I always want to learn about my kids, but that was the purpose and the point. And [Dig Deep] was quick and it was right there, where otherwise I’m learning about kids through their writing (e.g., essays, stories, etc.) and that must seem so removed. [The essays or stories] were handed in and then two weeks later [students] see that I’ve read it and maybe I’ve learned something about them, but maybe I don’t even remember because I read a hundred of them. When I hear the kid tell me something right there it’s probably gonna stick and probably having that conversation as opposed to written comments is more impacting to them. (Elaine_Member check_01.30.18)

Elaine pointed to using Dig Deep in an intentional way to learn about students, and to respond to students, as a step toward building relationships with them. Dig Deep added a personal and relational element to her classroom that she felt was missing when she relied upon reading and responding to students’ written work to get to know them. Elaine felt that Dig Deep had a greater impact for her students and for her because she responded to students in the moment. Jane described the benefits of being intentional about improving relationships with students:

A classroom that feels good is a classroom that works better. By being intentional about this stuff [teacher-student relationships] this year, I’ve gotten so much out of it - classes
where it’s working really well, and then, imagine, the projects are better. And it’s not because of the caliber of student, but because they trusted each other and were invested in the work, because they were invested in each other. That’s a really nice other thing that happens. And I’ve seen it happen. (Jane_Int_05.25.17)

Improving teacher-student relationships requires intentionality and effort, and the PDSA cycles provided a structure for our relational planning and helped sustain teachers’ focus on improving relationships. By being intentional about building relationships with students, teachers can make progress in this goal and feel successful.

**Facilitating the Inquiry Cycles and Making Space for Dilemmas**

I facilitated the PDSA cycle process, and I designed agendas to move through the cycle. At each stage I planned open-ended facilitation questions to focus our attention on relationships for students and to guide the process. For instance, in our second meeting, I asked teachers, “When can we focus on the quality of interactions with students?” (Facilitator guide_03.15.17). This conversation led the group to narrow our design focus to develop a routine for the beginning of class. During the meetings, I listened to teachers and made space for them to follow up on wonderings or noticings, as well as to help each other problem-solve. I did this by allowing for pauses, or asking others what they thought, rather than always offering my own ideas. I positioned myself as a learner with teachers, and was cognizant to refrain, as much as possible, from passing judgment. These facilitation moves, I believe, contributed to making space in our meetings for teachers to raise caring dilemmas, or admit when their practice was less than perfect. However, as a next step in this research I would investigate more systematically the facilitation moves that support this kind of inquiry.
Creating Caring Classrooms Leads to Creating a Caring Design Space

Teachers, consistently in the role as caring-ones, need spaces to become the cared-for, and we created opportunities for caring within our design team. Teachers cared for each other and themselves and the design team became a caring space for several reasons. First, a focus on caring for students encouraged the group to “practice what we preach” by caring for each other. Second, the PDSA inquiry cycle, while structured, was also flexible enough to allow for teachers to share dilemmas and emotions with the team and for the team to respond to and attend to these feelings. When teachers talked about their relationships with students and their students’ social and emotional well-being, teachers felt and expressed emotions themselves, and the two could not be separated. And finally, as the facilitator, I brought an ethic of care to my interactions with the teachers and tried to make space for the group to care for one another.

As I illustrated in the previous sections, designing for improving relationships with students and creating classrooms is challenging and emotional work, and it is intimately connected to teachers’ identities. Throughout the project, teachers expressed a variety of emotions related to caring for their students and our shared work, including satisfaction, stress, confusion, uncertainty, sadness, worry, and happiness, to name a few. More than once, Jane confessed that “it’s easy to feel like a bad teacher,” revealing how this work connected to her teaching identity. To be sure, the co-design work demanded an emotional investment on the part of teachers. I believe that as the semester progressed our design team became a site of care for one another, and that the flexible structure of the PDSA model allowed for the team to make space for caring.

The caring dilemmas that arose in our design work heightened emotional responses from teachers and at times increased the stress that teachers felt. In Jane’s case, this was not only
because she cared deeply about her students, but she also committed to our co-design work and wanted it to be successful. Jane used the design team space to explore caring dilemmas and express her emotions, in a way that allowed her to care for her well-being and allowed the group to care for her well-being. She was an example of a teacher who needed to process the dilemmas aloud, and who wanted thought partners. The PDSA cycle structure was flexible enough for our group to make space for Jane to explore her emotions within the design team space. Talking about the caring dilemmas, and at times finding ways to navigate the dilemmas, allowed for teachers to persist in caring for students.

This study suggests that teachers should have opportunities to process and talk about their emotions with colleagues, especially as they arise in relationship to caring for their students or to addressing dilemmas. We worked on relationships on several levels; through talking about and working on teacher-student relationships, we also developed relationships with one another in our team. As we listened to one another’s dilemmas, and as teachers articulated their emotions, we made space for these kinds of conversations and in doing so cared for one another. As Chapter Six illustrated, Jane relied on the design team space as a site for talking through her dilemmas and emotions as they related to caring for her students, and it seemed important to Jane to be able to do this. This was an unanticipated consequence of our work together, and I did not initially intend for Jane or the other teachers to use the space to explore their own emotional terrain, and in doing so care for themselves. However, this was an important consequence of our work, as Jersild (1955) contends that when teachers understand themselves, and especially their emotions, they are better equipped to attend to their students: “A teacher’s understanding of others can be only as deep as the wisdom he possesses when he looks inward upon himself” (p. 83). According to Jersild, it is our relationships with others that provide such opportunities to
understand ourselves. Thus, by exploring emotions connected to caring dilemmas in the design work, teachers – particularly Jane – had the opportunity to deepen their understanding of themselves, and in turn, deepen their understanding of their students.

Likewise, all teachers valued the collaboration that the design team offered. Many scholars have written about the power of collaboration and community to support teacher learning (e.g., Desimone, 2009; Grossman, Wineburg, & Woolworth, 2001; Horn & Kane, 2015; Little, 2002; Putnam & Borko, 2000), and this study suggests that collaboration can also support teachers in processing and exploring their emotions. Liston (2004) described the importance of collaboration for teachers, “Without companionship in their love of learning, teaching feels quite isolated and can be difficult to sustain for a long period of time. It seems many teachers yearn for some sort of intellectual connection and companionship” (p. 471). Teachers need “meaningful discussion” and “intellectual connection and companionship” in order to feel sustained and endure in teaching. For teachers like Jane, it is important and necessary to have a community to not only share ideas with, but to also talk through and process dilemmas and emotions. Our group created an opportunity for intellectual connection and companionship as we supported one another throughout the semester, and all teachers talked about the importance of our collaboration (Elaine_Int_05.25.17; Jane_Int_05.25.17; Rachel_Int_05.23.17). Absent in in the design-based implementation research and improvement science literatures are studies that address the multiple benefits of design teams, particularly for supporting teachers in both the intellectual and emotional endeavors of design and teaching.

There is a limited research base that explicitly addresses teachers’ social and emotional learning (SEL). Some of the SEL research approaches teacher SEL with the goal of encouraging teachers to manage and regulate their own emotions so that they can be prepared to attend to
students in the classroom, model SEL practices, and teach explicit SEL practices (e.g., Jennings & Greenberg, 2009; Jones & Bouffard, 2012). Some SEL research also focuses on understanding teachers in their own space as needing to take care of their emotions and well-being – this work includes The Center for Courage & Renewal (http://www.couragerenewal.org/) and the Courage to Teach program (Palmer 2001, 2007), as well as research in the area of teacher mindfulness (e.g., Flook, Goldberg, Pinger, Bonus, & Davidson, 2013; Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013; Napoli, 2004).

Feeling a range of emotions may be a sign of a teacher who cares deeply about her students and her practice, and exploring these emotions may be beneficial for the well-being of the teacher and her practice. Efforts should be made to recognize the emotional landscape of teaching and overcome the dichotomy of emotion and reason, to view emotions as an integral and necessary component of teaching and decision-making (Liston, 2011; Zembylas, 2010). To date there is little research in the realm of improvement science and design-based implementation research focused on the social and emotional aspects of teachers’ lives.

Expecting teachers to manage and regulate their emotions, without providing opportunities for teachers to talk about and explore these emotions, fails to support teachers’ social and emotional well-being and ignores the idea that caring about students is emotional work. Jersild (1955) argues, “If people could encourage one another to come out from behind the curtain that commonly conceals their emotions from others and from themselves, these emotions might be faced in an insight-producing way” (p. 85) and in a way that helps teachers attend to their students. Attending to teachers’ social and emotional well-being is one way we can care for teachers while they are caring for students.
Facilitating a Caring Collaboration

The flexible, but structured nature of the PDSA cycles allowed for our team to care for one another and to explore and reveal emotions. The structure of the PDSA cycles allowed and encouraged teachers to raise issues, including dilemmas, pertinent to the implementation of Dig Deep, especially when we debriefed the routine or examined student survey results. The structure of the PDSA cycles was flexible enough for teachers to not only raise the issues but to express emotions related to the issues and it was flexible enough for the team to follow up on these issues as we saw fit at the time.

As the facilitator I also worked to develop caring relationships with teachers. I had developed relationships with the three teachers individually, prior to the start of the dissertation project, as part of our involvement in Compose Our World. I observed all three teachers frequently in their classrooms and often “popped” into their classrooms when I was in their school, just to say “hello.” I got to know teachers on a more personal level, as we shared about ourselves with one another. Teachers joined my dissertation study for a variety of reasons, including that they wanted to continue to work with me. I continued working on building relationships with teachers throughout the semester of the study.

After we developed the foundation of the Dig Deep design, I began our meetings with a prompt in the spirit of our design – a prompt to elicit sharing about ourselves and our feelings, but also connected to our design work in some way. This worked as a technique for modeling our design, for valuing the work that teachers put into it, and for inviting teachers to talk about personal and emotional aspects of teaching. For example, in the fourth meeting I asked teachers to find and share an image “that represents how you felt in the classroom today” (Facilitator guide_04.25.17). Collaborating to improve student relationships and create caring classrooms led
our group to create a caring design team space, and the flexible yet structured inquiry cycles and facilitation made space for this to occur.

**Limitations**

The goal of this study was to engage in theory building about how the co-design process for creating caring classrooms could support teacher learning through a case study of our design team, rather than be able to generalize. While this was a good case to explore teacher learning in co-design, there are a couple of limitations to address. First, my data collection and analysis did not capture the norm building that was a critical condition for being able to begin almost immediately with the improvement science cycles. I spent a year and a half getting to know the teachers in this case study, and so had already established a rapport and way of working with teachers individually. Therefore, this case study was different than if I had started an improvement science study with three teachers previously unknown to me.

An adaptation I made to the study is that I began the work with a small group of teachers. Traditional improvement science studies begin with one teacher as a pilot and after several PDSA cycles expands to include three to four teachers. However, structuring the improvement science work in the way that I did allowed teachers to collaborate with one another immediately. This was an important aspect of supporting teacher learning in the study, as active learning and collective participation are key features of effective professional development (Desimone, 2009).

**Implications**

The findings from this dissertation study have implications for researchers, improvement science facilitators, school administrators, professional develop coordinators, and teachers.
Implications For Researchers And Improvement Science Facilitators

This study suggests that there may be multiple benefits of design and improvement science work. In this case, we created a design and worked towards improving teacher-student relationships, and our group offered emotional support to teachers. Teaching, as well as engaging in design work, evokes emotional responses and researchers and facilitators of design and improvement science efforts should attend to the emotional aspects of both teaching and designing. This may be particularly true when the focus of the design work intersects with aspects of teaching that are focused on emotional aspects of teaching, such as developing relationships with students, or when the design work brings teachers into dilemmas of practice. Building in time and opportunities within the design work to explore dilemmas and emotions may be one way to support teachers throughout the process. Likewise, modeling routines of care and support, such as when we modeled the Dig Deep routine in our meetings, can be another way to support teachers’ social and emotional well-being. Being intentional about how to introduce the work, and sharing ownership of the work with teachers may also create caring design teams.

Likewise, it is important to think carefully about how looking at data is structured. Discussing student data is a vulnerable activity for teachers, and it is especially so when the nature of the data focuses on students’ experiences and feelings. Before looking at any student survey data, I facilitated a conversation with teachers about whether or not they were willing to share their data with one another. Teachers decided that they wanted to share and see each other’s data, and we then talked about how to share the data. We ultimately decided on keeping the survey links in our shared Google folder. I created displays of teachers’ results, in the form of pie charts, to share with the team during our meetings. While teachers had access to all of the
data, I intentionally left off teachers’ names when showing teachers’ pie charts side-by-side. This was a small step, but it kept teachers talking about their own data or the group data as a whole, avoiding the potential for pointing out flaws in someone else’s data.

**Implications for School Administrators and Professional Development Coordinators**

In challenging traditional models of professional development, this study also speaks to professional development coordinators and school administrators. Despite, and perhaps in spite of, the absence of workshop models or delivering content to teachers, teachers had ample opportunities to learn throughout the co-design process. Teachers engaged in deliberative agency, enacted a new routine for improving relationships, and examined their practice through analyzing student survey data – all with the goal of creating caring classrooms. Throughout the process, teachers collaborated with one another as professionals, as experts, and as learners who cared about their students, each other, and the design process. This study illustrates that schools do not have to rely solely on delivering content to teachers through workshops, but rather finding ways for teachers to take ownership of their professional growth can benefit both teachers and students.

**Implications for Teachers**

This study also has implications for teachers thinking about joining an improvement science team. In order for teachers to fully engage in the co-design work, it seems important that teachers bring to the co-design work an orientation that they want to participate in order to “give” and to “receive.” In order to fully engage in the PDSA cycles, teachers should want to share their knowledge and expertise with others, but they should also want to learn from their colleagues and improve their practice. This aligns with Bryk and colleagues’ (2015) assertion that improvement communities “must nurture a culture that values both individual and collective
improvement” (p. 163-164). The three teachers who continued in the study joined the team hoping that they would learn something new from our collaboration, and were open to figuring out together what that something new would be. It appeared important for teachers to agree upon and see the shared problem of practice as one that was relevant to them. Daniel missed our first meeting, and by the time he joined our second meeting, we had already begun moving forward with a focus on building relationships with students. Daniel viewed building relationships with students as his teaching strength and members of the Compose Our World research team who spent time in his classroom also commented on his strong relationships with students. Therefore, improving relationships with students was not a relevant goal for Daniel and he did not feel that he had much to learn in this area of his teaching (Daniel_int_05.26.17). During the meeting in which he participated, most of his contributions focused on sharing with the group how he built relationships and made connections with students, rather than contributing to the design of the strategy through future-oriented suggestions. In order to commit to and persist in the work of co-design, and to be in a position to examine one’s practice, it seems important that teachers desire the opportunity to both teach and to learn. It is also important that teachers see the problem of practice as relevant to their own pedagogical practice and classroom.

Additionally, Daniel’s participation in this project raises questions about setting up co-design teams with a goal for supporting teacher learning: How could Daniel be supported in his professional growth through co-design? Would Daniel feel more connected and more supported in a team of teachers at his own school? What would have happened if we had revisited and revised our aim in the second meeting with Daniel? Considering and exploring these questions have important implications for the ways in which I plan to establish and facilitate future co-design teams.
Creating a caring classroom takes intention, attention, and persistence. Relational planning should be part of teachers’ classroom preparation, just as they engage in curriculum and assessment planning. One teaching principle our group came to rest on was that in creating a caring classroom, it was more important that students feel safe, then that they share ideas publicly (see Chapter Five). This teaching principle was in tension with another teaching principle, articulated by Jane, that when students worry about sharing something personal, it is not always something to “fix,” but rather something to embrace as part of their growth.

**Future Research**

In this section, I address four areas for future work, including: expanding the time frame, taking the design to scale, shifting the focus, and exploring emotions in design work. I discuss each point in the following sections.

**Expanding the Time Frame and Taking the Design to Scale**

This study represented the beginning of an improvement science study. Due to time constraints of data collection for this dissertation and the school calendar, we began the design work in the second half of the school year; our team engaged in three PDSA cycles to design, refine, test, and study Dig Deep. Teachers viewed the improvement science work as useful for getting to know their students, and it made sense for teachers to work on this goal as their rosters shifted second semester to include a new mix of students in each of their classes. Despite this, all teachers thought the routine we designed was best suited to be implemented at the start of the academic year, and they looked forward to doing so. While teachers wished we had started our design work earlier, it is likely that the timing of the design work actually led us to this particular design. In this case, starting the design in the middle of the school year meant that certain challenges were salient for teachers, such as engaging their students in the curriculum and
building relationships with students; teachers had ample previous experiences and challenges to draw on during our design discussions.

In the future I would like to begin an improvement science project with teachers at the start of the year. This would allow for more PDSA cycles, to engage more deeply in the inquiry process and refine the design. This would also provide more time and opportunities for teachers to investigate their pedagogical practice and make improvements. A key aim of improvement science is to scale-up the initiatives by testing designs under increasingly varied conditions with the goal of bringing about improvement reliably across a range of settings (Bryk et al., 2015). While it was beyond the scope of this study to take our design to scale, next steps for future work could include testing the design with more teachers under different conditions. The Dig Deep routine was relevant to the three teachers in my study, who all worked at the same school. We did not test Dig Deep in other contexts, so we cannot make claims about its efficacy in varying conditions. Future work might also consider what role pilot teachers would play in efforts to expand the initiative and examine potential benefits to teachers in continuing with the design work. This might include, for instance, understanding how pilot teachers could serve as teacher leaders when expanding design efforts, and if and how they continue to learn in these leadership roles. Future work might also document the new dilemmas that arise when expanding initiatives to include teachers who were not part of the initial planning process. For instance, teachers may have students who respond differently to the Dig Deep routine or they may have different kinds of relationships with students that pose new and varied dilemmas.

Shifting the Focus

I began this study with the intention of focusing on responsive teaching practices with teachers. During our initial conversations, we determined that our shared aim was to improve
teacher-student relationships. Our aim was connected to responsive teaching; a key element of responsive teaching is developing caring relationships with students and creating a classroom characterized by care (Gay, 2000). Teachers must learn about their students and become knowledgeable about the diversity in their classrooms (Gay, 2000). In developing relationships with students, teachers must also share about themselves and allow students opportunities to learn about them. As I understand it, building relationships with students is an important and early step toward developing responsive teaching practices. I believe that the focus on improving teacher-student relationships met teachers where they were at, as it was relevant and timely for challenges they experienced in the classroom. As a next step, I am interested in pursuing and studying how building relationships with students can serve as an entry point for teachers to improving and developing more equitable and responsive teaching practices. Several times throughout our work, teachers noted that the student survey item, “Today my teacher used examples from my culture or background when teaching” was not a priority or “too much” to address in the semester of our project, and in fact teachers did not make any positive progress on their survey data on this item. If I had continued working with this same group, I would have guided teachers to examine this particular item and consider ways to build on teachers’ relationships with and knowledge of students to select materials or plan learning activities that explicitly incorporate and value students’ various and diverse identities (Moje & Hinchman, 2004).

Exploring Emotions in Design Work

I did not originally set out to examine teachers’ emotions within design work in this study, but I have been interested in this topic for some time. As the semester unfolded and as I analyzed the data and noticed that teachers were feeling and sharing emotions with the group, I
realized it was worth investigating as a research focus in this study. I would like to continue to pursue this line of work, as I think it has implications for the ways in which we engage in design with teachers, how we support teachers, and how we think about the work of teaching. In order to more fully capture and understand teachers’ emotional experiences within design work, I would plan to ask teachers to keep a journal or log to capture their emotions and feelings throughout the design process. Likewise, I would more intentionally design for opportunities for teachers to explore their emotions within the design team, through facilitation questions, modeling, and design activities that invite teachers to share their feelings – such as when we modeled using the Dig Deep prompt to being our meetings.

**Final Thoughts**

This work mattered to the teachers and to their students who participated in this study. When I returned nearly a year later to conduct member checks with teachers, I felt anticipation about asking questions related to this project. *Would teachers remember what we did? Would teachers speak positively of the work or dismissively about the work? Did it make any impact on them?* What I discovered through my interviews with the teachers is that they did, in fact, remember the co-design work and they talked about it in such a way as to communicate that it mattered to them. Jane revealed that she has continued to think about how to model vulnerability to develop her classroom community (Jane_Member check_01.30.18). Elaine reflected, “To me it was all about relationships and just sharing whatever you had to share so I liked this [design project]” (Elaine_Member check_01.30.18). And Rachel spoke about the importance of students sharing with her and with one another as a way of developing a caring classroom community: “Even though we were sitting intentionally with groups to develop [relationships with students],
kids were developing [relationships] in their other groups at the same time” (Rachel_Member check_01.30.18).

Our goal of improving teacher-student relationships, structured by the PDSA cycles, underscored the necessity of engaging in relational and emotional work to create caring classroom communities. I conclude with Jane’s words, which capture the impact of the co-design work on her teaching and on her students.

I think we’ve got a pretty tested idea, now. I think we’ve definitely made improvements on it. I think the sharing of our different experiences with it, and different ideas about where to take it next, has given us a pretty rich bank of stuff to work with … I think hearing from kids, and seeing some of the open responses on the survey, where [students] said that it mattered, that it made a difference, that it was nice to be able to share with each other, that it was nice to get to know somebody else, and to kind of have that space. Sometimes we think that stuff like this doesn’t matter and doesn’t make a difference, and it’s just filler. And I think my big takeaway is: I think it’s actually really, really necessary. When kids do trust each other and know a little bit more about each other, it totally dramatically impacts how the class works, and what you can get done, and how the class feels for everybody, and what kids are willing to do. So I just think it’s - I sort of already knew that it was important, but I got better evidence of exactly how and why I think. (Jane_Int_05.25.17)
References


Desimone, L. M. (2009). Improving impact studies of teachers’ professional development:


Wilson, S. M., & Berne, J. (1999). Teacher learning and the acquisition of professional


Appendix A

Compose Our World Core Principles

* Collaboration
  * Empathy
  * Reflection

* Social and Emotional Learning

* Project Based Learning
  * Authentic
  * Challenge driven
  * Culminate with projects/performances
  * Collaborative/Civic Engagement

* Universal Design for Learning
  * Multiple means of
    * engagement
    * representation
    * action and expression

_Composing Our World, 2015_
Appendix B

Invitation to Teachers

Invitation to Join Ashley’s Dissertation Project
Collaborating to Respond to Our Students

Overview:
I would like to invite you to join a small design team next semester that will be part of my dissertation work. I am looking for a small group of teachers interested in developing habits and routines for being responsive to students’ specific backgrounds, experiences, and interests within the Compose Our World projects. Using the research literature and our experiences in COW thus far, we will narrow this focus to address issues relevant to your students and classrooms. Then, we will use the plan-do-study-act cycle (see diagram on the reverse side) to design and implement strategies for responsive teaching, collect and analyze data together, and iterate on our designs.

Time Commitment:
The project would begin the last week of January 2017 and continue through to June 2017.
- Two interviews lasting about 30 minutes each, at the beginning and end of the project
- Initial project meeting – 2 hours
- Design team meetings – 1 to 1.5 hours every 2 weeks for the semester

Other Commitments:
In addition to the meetings every two weeks, you would agree to implement the design developed in the meetings at least once in the two weeks between our meetings as well as collect data about the effectiveness of the design using a practical measure. I will also attend your class to take field notes and help with the practical measures.

Integration with COW Project:
This project is aligned with Compose Our World and supports our project goals. Other than the meeting time, I don’t anticipate additional instructional or planning time.

Contact information:
If you are interested in joining this design work next semester, please contact me by November 19 via Slack or email at ashley.potvin@colorado.edu.
Adapted from Bryk, Gomez, Grunow, & LeMahieu (2015), *Learning to improve: How America’s Schools Can Get Better at Getting Better*
Appendix C

Persona Template

Think about a student who you are hoping to engage in the COW curriculum. Develop a persona about the student to share with the group. As much as possible, write about the student in positive terms. Use the template below to guide you.

The kinds of things that do engage the student:

What I learned about the student from previous projects: (i.e. their heroes in UTM or family stories from WHH)

What I know about their identity and background: (i.e. gender identification, culture, race/ethnicity, SES, where they live, where they are from, languages, etc.)

Words the student would use to describe themselves:

What I know about the student’s home life:

What I know about what the student likes to do outside of school:

What the student cares about:

What brings the student joy:

What the student worries about:
Appendix D

Fishbone Diagram

- Participant Frameworks
  - S don't feel they have friends to work with
  - S trying to figure out culture of school and class
  - Same Ss always share - makes it hard for others to take risks

- Students' preparation to engage in grade-level work / ZPD
  - Lack of skills
  - Organization skills not yet developed

- Students' self perceptions
  - Fear of failure
  - Used to failure
  - Do not feel successful in school
  - Feelings of anger

- Persistent student disengagement
  - Many students we've only had for a semester
  - There isn't always time to get to know students
  - Don't know the right time to find out more about students
  - Lack of coping strategies
  - Big things happening at home

- Quality of relationships with students
  - Factors outside of school
  - Large class sizes
  - Don't feel part of school culture

- Curriculum
  - Factors related to school
  - Receive consistent negative messages about school
  - Don't feel school is a positive experience
Appendix E
Driver Diagram

[Diagram showing a flowchart with nodes such as 'Increase number of students engaged in class', 'Help students shift self-perceptions', 'Shift culture and school classroom', 'Send positive messages / combat negative messages', 'Shift feelings of failure', 'Help students feel successful', 'Determine the right time to find out more', 'Make time to get to know students', '1-1 interactions with students', 'Ask daily personal questions', 'Check-in at start of class', 'Spend time in hallway', 'Offer praise', 'Position students as experts', 'Time for students to design', 'Check in with Ss', 'Provide pos. feedback', 'Pair Ss with strong partners', 'Model pos. self-talk', 'Help Ss identify strengths', 'Celebrate strengths', 'Write pos. notes and leave on Ss desks'].
Appendix F

Possible Student Survey Items (Practical Measure)

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Step 1: This is something I care about <em>(mark with your initials)</em></th>
<th>Step 2: I would know what to do with this information from students <em>(mark with your initials)</em></th>
<th>Step 3: Here’s what I would do if students rated me low on this ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>If we have something to say, this teacher will listen.</td>
<td>JL ds RH EM</td>
<td>ds JL RH</td>
<td>I would make space to listen to students, and be sure that I am not dominating conversations in the classroom.</td>
</tr>
<tr>
<td>We can decide some things in this teacher’s class.</td>
<td>ds EM</td>
<td>ds JL</td>
<td>Specific to tasks that students can reflect on—this might be more helpful</td>
</tr>
<tr>
<td>This teacher thinks we can’t do things well.</td>
<td>ds</td>
<td>ds</td>
<td>Class meeting. Making sure that they are being treated fairly, receive direct feedback from students.</td>
</tr>
<tr>
<td>My teacher wants students from different cultures to respect one another.</td>
<td>JL RH EM</td>
<td>JL</td>
<td></td>
</tr>
<tr>
<td>My teacher uses what I already know to help me understand new ideas.</td>
<td>JL ds</td>
<td>ds JL</td>
<td></td>
</tr>
<tr>
<td>My teacher treats all students like they are important members of the</td>
<td>JL ds RH EM</td>
<td>ds JL RH</td>
<td>Individual reflection or entire class??</td>
</tr>
<tr>
<td>Classroom aspect</td>
<td>Codes</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>My teacher tries to find out what interests me.</td>
<td>JL ds EM RH</td>
<td>ds JL</td>
<td></td>
</tr>
<tr>
<td>My teacher uses real-life examples to help explain things.</td>
<td>ds EM</td>
<td>ds</td>
<td></td>
</tr>
<tr>
<td>My teacher uses examples that are interesting to help students learn.</td>
<td>ds</td>
<td>ds</td>
<td></td>
</tr>
<tr>
<td>Questions them on their interests. More student choice in the classroom.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My teacher uses examples from my culture, background, or interests when teaching.</td>
<td>ds JL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My teacher asks about students’ home-life.</td>
<td>ds JL</td>
<td>ds</td>
<td></td>
</tr>
<tr>
<td>Ask them.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My teacher is interested in my culture.</td>
<td>ds JL</td>
<td>ds</td>
<td></td>
</tr>
<tr>
<td>Take the time to learn about it, and then ask questions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My teacher asks about ways that students’ culture may be different from others.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My teacher helps students learn about other students and their cultures.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My teacher seems to know if something is bothering me.</td>
<td>ds JL</td>
<td>ds</td>
<td></td>
</tr>
<tr>
<td>My teacher wants us to share our thoughts.</td>
<td>ds EM JL</td>
<td>ds</td>
<td></td>
</tr>
<tr>
<td>Create a safe environment for sharing thoughts, and model what this looks like.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My teacher makes me feel that s/he really cares about me.</td>
<td>ds EM RH JL</td>
<td>ds</td>
<td></td>
</tr>
<tr>
<td>My teacher respects my ideas and suggestions.</td>
<td>ds EM RH JL</td>
<td>ds</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------------</td>
<td>----</td>
<td></td>
</tr>
<tr>
<td>My teacher models how to interact with other people with care.</td>
<td>EM RH JL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My teacher invites students to share about their lives in ways that matter.</td>
<td>Ds EM RH JL</td>
<td>ds</td>
<td></td>
</tr>
</tbody>
</table>
Appendix G
Final Version of the Student Survey – Practical Measure

Please think about TODAY'S class when you respond to each statement.

Today's date:

1. Today the opening class routine made me feel like I matter in this classroom.
   ○ Agree
   ○ Disagree

   Please explain your answer to #1.

2. I learned something new about my classmates in the opening routine.
   ○ Agree
   ○ Disagree

3. Learning about my classmates in the opening routine helps me to care about them.
   ○ Agree
   ○ Disagree

4. Today my teacher tried to find out what interests me or what is important to me.
   ○ Agree
   ○ Disagree

5. Today I worried about sharing something personal about my culture, background, or interests with other students.
   ○ Agree
   ○ Disagree

   Please explain your response to #5.

6. Today my teacher used examples from my culture or background when teaching.
   ○ Agree
   ○ Disagree

7. Today my teacher used examples of my interests when teaching.
   ○ Agree
   ○ Disagree

8. Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.
   ○ Agree
   ○ Disagree
Appendix H
Looking at Data Adapted Protocol

Before we look at the data:
- What would count as a successful pattern of responses in the data? (What would the pie chart look like if we were successful?)
- What would make you upset?

Look at your own data
- How do you feel when you look at the data?
- What do you notice about the patterns in the data?
- What are some questions with high positive student responses?
- What are some questions with lower positive student response?

Now, let’s look at the group data. Same questions
- Notice where your classes are contributing to the average.
- Which item did we do the best on?
- Which one implies that we have a lot of work to do on?
- Which one has a lot of variability?
- Which one is similar across teachers?
- What contributed to high results?

Now, let’s make some interpretations.
- Encourage teachers to think about as many possible interpretations for a pattern as possible.
- What does the data suggest?
- What questions did looking at the data raise for you?

How do the results compare to our hypotheses? Re-designing the opening routine will …
- improve relationships with all students in the class, in particular students who we struggle to engage / don’t know well
- provide an opportunity for all students to share about themselves - their culture, background, interests, home, family, etc.
- expand on the kinds of topics / things are “okay” to share
- connect what kids share to the lesson or topic for the day
Appendix I

Change Package

Dig Deep Routine

Overview:
This is a routine to use with your class focused on building relationships with and among students. It was designed to be used at the beginning of class, but it could also be used at the middle or the end of class depending on your lesson and goals for the day. In the Dig Deep routine, students have the opportunity to reflect on a prompt and share something about themselves with others. This should be a time for students to share something about their culture, background, interests, home, family, etc. When possible, try to connect the prompt to the project or lesson for the day. This activity should be fun and engaging for students and should not be graded. It was designed to feel different than a typical writing prompt. In fact, we encourage you and your students to develop a variety of ways for responding to the prompt. Some examples are provided below.

The inspiration from the Dig Deep routine comes from work of several researchers who explain that the prompts “are collections of evocative tasks meant to elicit inspirational responses from people—not comprehensive information about them, but fragmentary clues about their lives and thoughts ….It’s an approach that values uncertainty, play, exploration, and subjective interpretation as ways of dealing with those limits” (Gaver, Boucher, Pennington, & Walker, 2004).

Goals:
- Improve relationships with all students in the class, in particular students who we struggle to engage / don’t know well
- Provide an opportunity for all students to share about themselves - their culture, background, interests, home, family, etc.
- Expand on the kinds of topics / things are “okay” to share
- Connect this routine to the project or lesson for the day
- Improve relationships among students
- Practice listening to one another

Establishing the routine:
- To establish this as a routine, use the Dig Deep protocol at least once a week. In the beginning of the year, you may use the routine daily to build community within your classroom.
- Introduce the Dig Deep routine to students.
  - Teacher slides for introducing the Dig Deep routine
  - In the introduction, tell students that they will be sharing about themselves with others in the class. Facilitate a discussion about how students want to share with
others and together set up expectations for what sharing will look like in the classroom. You may also suggest different modes for sharing out.
- Part of this discussion should include what it looks like and feels like to listen to others.
- For the first week or two, provide a Dig Deep prompt for students to model the kinds of prompts they might ask.
- After students have had a chance to try out and share some prompts during the week, ask students to brainstorm ideas that the class could respond to for the remainder of the project.
  - You may ask students to write their prompts on index cards or type in a chart.
  - Periodically, invite a student to select the Dig Deep prompt for the day.
- Practice listening during student sharing. Provide students with sentence stems for validating what the last person said.
- We suggest asking students to keep track of their responses in an interactive notebook or journal so that they have a record to look back on and reflect on their growth throughout the year. Note: Not every response will fit into a “notebook” format, so students might not have an entry for every prompt and that is okay. If using a digital notebook, students could take an image of an artifact and upload it or link to a website.
  - As a culminating Dig Deep prompt, you may ask students to pick out several selections from their notebooks and tell a story about their journey.

**Implementing the Dig Deep routine daily or weekly:**
1. Remind students about the expectations they set together for sharing and listening.
2. Post a prompt or ask a student to select one of the student generated prompts.
3. Provide some quiet time for students to reflect on and respond to the prompt.
4. While students work, respond to the prompt yourself.
5. Students share with a partner, small group, whole class. (See list below for ideas about sharing.) You should join a student group and share as well. Be intentional about which group you join. Make it a point to work with a student whom you want to improve your relationship or get to know better.
6. Depending on the prompt, groups might share verbally, show an artifact, read something, etc.
7. Facilitate a brief whole class discussion or share-out. Invite students to share, but do not require it. Mix up the ways you invite students to share. For example, one day you might ask for some volunteers to share their ideas verbally or you might invite students to place an artifact on the board, in a Google document, or on a Padlet and invite the class to view each other’s artifacts.

**Tips for facilitating student sharing:**
- Find quick ways to regroup students, such as using playing cards.
- Ask students to share with members of their project group.
- Ask students to share in two steps: 1) Share with someone you are comfortable with and then 2) Together find two other people to share with.
- During a whole class share-out:
  - Ask partners to share what they learned from their partner.
  - Share an image.
- Focus on listening and remind students that this is an important goal during the Dig Deep time.
  - Provide students with sentence stems for validating, making connections, and building on what someone said.
  - Encourage students to use one another’s names during these discussions.

**Sentence frames for sharing:**
- I like what *(student’s name)* said about ______________ because ______________.
- I can connect to what *(student’s name)* shared because I was thinking about ______________.
- *(student’s name)* said made me think about ______________.
- *(Student’s name)*, thanks for sharing that with us.

**Format of Dig Deep Prompts:**
Each Dig Deep prompt should include a mode for **how** students will share and content for **what** students will share. Be creative when designing prompts with students!

**Menu of Modes for How Students Might Share:**
- Draw a picture
- Share an image from your phone
- Create a chant/cheer
- Write a haiku
- Give each group a different color
- Audio record 10 seconds of sound
- Write a scar story
- Find a map
- Create a symbol
- Compose a 6 word memoir
- Share an artifact
- Curate a series of 3 pictures to tell a story
- Compose or find songs or lyrics
- Decorate a quote
- Brainstorm a motto
- Pick a crayon color
- Find or create a headline
- Find something that you have in your possession now
- Make a parody
- 3D model

**Menu of content ideas for what students might share:**
● Change in your community
● Change in our school
● Change in your life over the past year
● Something you are proud of
● Identify a place where you have power (or don’t)
● Identify a place where you feel heard
● Identify a place where you feel comfortable or yourself. What about that place makes you feel that way?
● Something you are unhappy about in your community
● Design your perfect class
● If you could be doing anything with your time right now, what would it be? Why?
● What’s something that you heard today that you wish you could change?
● What is the best compliment you have received and why?
● Favorite line in a song and why
● What is one thing about YOU that you would not change
● What is an important part of yourself that you don’t often show in class?
● Something that concerns or worries you
● Something that is taking up a lot of time or thought
● Something you have been putting a lot of energy and effort into lately
● Something that has had a big influence on your thoughts and/or actions lately
● Where have you witnessed bullying in your life? What does bullying at this school look like? Share a story about bullying.
● Is the known better than the unknown?
● Use a quote or an image from a text the class is reading and ask students to make a personal connection
● How do you feel today?
● Something about your week so far
● How do you calm down when you are angry, anxious, stressed, or wound-up? Share your best tips.
● What’s something that you have done that you feel proud of?
● What parts of you - your background, your interests, your culture, your strengths - have you been able to share in this class?
● What do you wish the class and your teacher knew about you that we still don’t?
● Favorite childhood memory
Appendix J

Compose Our World Field Note Template

Y2 COW Observation Template Working Draft (9-22-16)

Class Information

1. Date:
2. Teacher Initials:
3. School initials:
4. Other adults present:
5. Class session time/period:
6. # of students:
7. Observer Initials and observer role(s):
8. Project:
9. Lesson: [create brief descriptive lesson name]:
10. Lesson goals/objectives:
11. Photos audio-recording video recording student work collected:
12. List of instructional/student materials (e.g., handouts, PowerPoint, surveys, etc.):
13. Texts (title; genre; media format):

Brief overview of today’s lesson: [in a brief paragraph, provide a high level overview of the lesson, including activity chunks, connection to project/challenge and estimation of percentage of lesson related to project vs. as ‘unrelated other’)

Teacher check-in (address relevant areas)

1. We need to be aware of…
2. To dos
3. Future plans/lessons
4. Other teacher comments
5. Ask teacher about adaptations/decisions around utilizing curriculum

Commentary (for each area, address relevant design criteria)

1. Authentic Making:
2. Feedback/Revision:
3. Collaboration:
4. Empathy/Perspective Taking:
5. Reflection:
6. Student Engagement/Tone:
7. Explicit Instruction & Scaffolding:
8. UDL (may cut and paste from above)
   a. Multiple means of action and expression
   b. Multiple means of representation
   c. Multiple means of engagement
9. Customization/Adaptation of Project:
10. Ideas for Revision:
Notes
Class starts xxxx, I enter about xx

T = teacher; S=student; Sm (male s); Sf (female s)

-For each new activity, list time, activity, and brief description of student and teacher activity structure.
  [e.g., 11:57   Discussion of design criteria   whole group discussion]
-Then describe what teachers and students are doing, including relevant quotes.
-For activities clearly not related to project, include time and above information with very brief description
-Comments or personal notes in parenthesis
Appendix K

Teacher Interview Protocol: Pre-project Interview

Date:
Interviewee Name:

Participant Introduction
- How would you describe yourself?
- Describe your classroom of students.
- What is your favorite part about teaching?
- What are some challenges you face in teaching?
- Why did you sign up for this study? What are you hoping to gain?
- Do you have specific students you would like to plan for / teach for in this project?
- How would you describe your planning and teaching style?
  o Do you often try new things in your classroom?
  o Do you often use data to inform your instruction or teaching practice?
- How would you describe your teaching philosophy?
- What are the goals you have for your teaching practice?
- What are some ways that you currently work on improving your teaching practice?

Co-design
- How would you describe co-design to an outsider?
- What does it mean to you to participate in co-design?
- What do you want your role to be in the co-design process?
- What do you hope the group accomplishes in the process?

Professional development
- What do you think of when you hear the phrase “professional development?”
- Describe the best professional development you have participated in.
- Describe the worst professional development you have participated in.

Responsive teaching
- Describe your ideal teacher-student relationship.
- How would you describe your relationship with students?
- How do you connect with students who may come from a different culture, class, background than you?
- How do you get to know about your students, including their culture, class, background, experiences, etc.?
- What does the term “responsive teaching” mean to you?
- What is your experience with responsive teaching?
- Have you ever had any training or professional development in responsive teaching?
- Do you have specific students in mind when you think about responsive teaching? Why?
- Do you have supports at your school for responsive teaching? If so, what are they? If not, why do you think that is?
Teacher Interview Protocol: Post-project Interview

Date:
Interviewee Name:

The questions I’m going to ask you are related to the smaller dissertation study that we have been working on the past few months, rather than the larger COW study. So our smaller design team has been focused on the problem of practice of engaging students through building relationships with them, using a plan, do, study, act cycle.

Overall:
- In the pre-project interview you stated that you hoped to gain ________ by participating in this study. Do you think that happened?
- What has been your biggest take-away from participating in this study?
  - What did you learn about your students? Your teaching practice? Your colleagues?

Relationships with students / teaching practice:
- How would you now describe your relationship with students?
  - What is hard about building relationships with students?
- What does a meaningful relationship with students look like? Feel like?
- What were you hoping to accomplish by strengthening relationships with students? (What’s the end goal?)
- In terms of what we designed, what do you want to keep and what do you want to do differently next year?

Working with the group:
- What do you think we accomplished as a group?
- Did the group influence your thinking in any way?
- The structure that we used was a different kind of structure than typical PD. Do you think other teachers would benefit from it? Would schools ever take it up?
Appendix L

Student Interview Protocol

Date:
Interviewee Name:

*Your teacher started a new opening routine, Dig Deep, in the last few months to get to know you better and so that you could get to know your teacher and classmates better. I want to ask you a few questions about that opening routine.* (Print out copy of the survey)

- Tell me about the opening routine. What stands out to you about the opening routine?
  o Probe for a specific prompt or time they shared

- You have been taking some surveys about the about Dig Deep. You’ve probably seen this before on a survey. I’m going to ask you again now. (Show survey with this item highlighted)
  o *Today my teacher tried to find out what interests me or what is important to me.*
  o Thinking about the last couple of weeks, do you agree or disagree with that statement? If so, what did your teacher do to make you feel like that?

- When in this classroom do you feel like you are listened to? (probe for small group and whole group)
  o Your teacher is hoping that this is a time and space in which you feel comfortable sharing about yourself and your emotions. I noticed that sometimes students wrote or shared something in the small group, but didn’t share that same thing in the whole class. Was that ever true for you? If so, why?

- We’re working on understanding ways that teachers can help make you feel cared for. Are there ways that your teacher makes you feel cared for that we might not know about? Or are there things that your teacher could do to make you feel cared for?

- Are there ways that your classmates make you feel cared for that we might not know about? Or are there things that your classmates could do to make you feel cared for?

- How could we improve the opening routine? (Or how could it be re-designed)
Appendix M

Data Accounting Log

<table>
<thead>
<tr>
<th>Meeting #</th>
<th>Date</th>
<th>Participants</th>
<th>Location</th>
<th>Field notes / Coded?</th>
<th>Transcripts / Coded?</th>
<th>Team meeting notes</th>
<th>Artifacts created in meeting</th>
<th>Artifacts prepared prior to meeting; used in meeting</th>
<th>Artifacts meet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.27.17</td>
<td>Elaine, Jane, Rac WHS</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td></td>
<td>Person - Rachel, Person - Jane, Person - Elaine; flashlight diagram; brainstorm of strategies</td>
<td>Micors and Me summary; Micors and Me Images</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.15.17</td>
<td>Elaine, Jane, Rac WHS, Zoom</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td></td>
<td>Brainstorm of strategies highlighted; student survey item(s) practical measures google doc</td>
<td>Research option 1: Cultural Probes; Research option 2: Accountable Task</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>4.12.17</td>
<td>Elaine, Jane, Rac WHS</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td></td>
<td>Images (opening routine); Survey Item Revisions chart</td>
<td>Design for Opening Routine Draft #2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4.4.17</td>
<td>Elaine, Jane, Rac WHS</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td></td>
<td>Design for Opening Routine Draft #3</td>
<td>Design for Opening Routine Draft #4; Survey Data Comparison - Elaine; Survey Data Comparison - Rachel; Survey Data Comparison - Jane; Group Survey Data Round 2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5.8.17</td>
<td>Elaine, Jane, Rac WHS</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td></td>
<td>Headlines (opening routine); Person - Rachel, Person - Elaine, Person - Jane (all updated); Survey Item Revisions chart</td>
<td>Survey Data comparison final - Elaine; Survey Data comparison final - Rachel; Survey Data comparison final - Jane; Group Survey Data Round 2</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>5.16.17</td>
<td>Elaine, Jane, Rac WHS</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td>Y/Y</td>
<td></td>
<td>Change Package chart</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix N

Initial Deductive Codebook

<table>
<thead>
<tr>
<th>Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers demonstrate collective agency – teachers influence the design process</td>
<td>When the group searches together for a new form of activity within the design process (i.e. developing a new norm for meetings)</td>
</tr>
<tr>
<td>Teachers demonstrate collective agency – teachers influence what is being designed</td>
<td>When the group searches together for a new form of activity for the design of responsive teaching strategies (i.e. designing a responsive teaching strategy this is not currently part of the COW curriculum, such as involving students in the lesson planning process)</td>
</tr>
<tr>
<td>Teachers do not demonstrate collective agency (example of non-agency)</td>
<td>Teachers went along with what was proposed by researcher or literature either in the design process or the design or teachers did not implement the design</td>
</tr>
<tr>
<td>Dilemma is identified</td>
<td>A tension is surfaced or raised in the design meetings</td>
</tr>
<tr>
<td>Dilemma is discussed or debated</td>
<td>After the initial tension is identified, it is discussed in the meeting</td>
</tr>
<tr>
<td>Dilemma is ignored</td>
<td>After the initial tension is identified, it is not discussed in the meeting</td>
</tr>
<tr>
<td>A possible solution to the dilemma is raised</td>
<td>After the initial tension is identified, a solution is suggested and discussed</td>
</tr>
<tr>
<td>A solution to the dilemma is agreed upon</td>
<td>After the initial tension is identified, a solution is agreed upon, at least temporarily</td>
</tr>
<tr>
<td>Routine or practice in the co-design team is established</td>
<td>The group agrees upon a routine or practice for working together. This could include norm setting, meeting times / dates, structures for participation.</td>
</tr>
<tr>
<td>Facilitator leads the discussion</td>
<td>I lead the conversations in the meetings or propose a topic for discussion.</td>
</tr>
<tr>
<td>Teachers lead the discussion</td>
<td>Teachers lead the conversations in the meetings or propose a topic for discussion.</td>
</tr>
<tr>
<td>Teachers implement responsive teaching strategy developed in design team meeting</td>
<td>Teachers try out the responsive teaching strategy developed during the design meetings in their classroom.</td>
</tr>
<tr>
<td>Teachers talk about changes in practice related to responsive teaching</td>
<td>In meetings and the post-interview, teachers talk about changes in their practice in regards to responsive teaching.</td>
</tr>
<tr>
<td>Multiple perspectives are shared and discussed</td>
<td>When negotiating problems of practice, grappling with dilemmas, designing, or reflecting, multiple perspectives are shared and discussed.</td>
</tr>
<tr>
<td>Activity</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Only one perspective is shared and discussed</td>
<td>When negotiating problems of practice, grappling with dilemmas, designing, or reflecting, only one perspective is shared and discussed.</td>
</tr>
<tr>
<td>Teachers make connections to their personal experiences or expertise</td>
<td>Teachers share their expertise during discussions and planning.</td>
</tr>
<tr>
<td>Teachers make connections to the research literature</td>
<td>Teachers refer to the research literature during discussions and planning.</td>
</tr>
<tr>
<td>Teachers collect practical data measures</td>
<td>After teachers implement the design, they collect student data using the practical measures as part of the PDSA cycle.</td>
</tr>
<tr>
<td>Teachers reflect on responsive teaching practice</td>
<td>Teachers publically reflect on their responsive teaching practices through discussion or meeting notes.</td>
</tr>
<tr>
<td>Teachers develop new insights on responsive teaching practice</td>
<td>Teachers identify new insights, ideas, or conclusions about responsive teaching practices.</td>
</tr>
<tr>
<td>Design team iterates on responsive teaching strategy</td>
<td>The design team revises / refines the responsive teaching strategy based on implementation experience, practical measures data, and collective reflection.</td>
</tr>
</tbody>
</table>
Appendix O

Member Check Interview Protocols

Rachel & Elaine Member Check

Data Chapter:

- Take a look at this table (improvements). Why do you think you showed improvement on these items?

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>1st Survey</th>
<th>3rd Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Today the opening class routine made me feel like I matter in this classroom.</td>
<td>100%</td>
<td>86%</td>
</tr>
<tr>
<td>2. I learned something new about my classmates in the opening routine.*</td>
<td>68%</td>
<td>67%</td>
</tr>
<tr>
<td>3. Learning about my classmates in the opening routine helps me to care about them.</td>
<td>74%</td>
<td>77%</td>
</tr>
<tr>
<td>4. Today my teacher tried to find out what interests me or what is important to me.</td>
<td>74%</td>
<td>63%</td>
</tr>
<tr>
<td><strong>5. Today I worried about sharing something personal about my culture, background, or interests with other students.</strong></td>
<td>32%</td>
<td>13%</td>
</tr>
<tr>
<td>6a. Today my teacher used examples from my culture or background when teaching.***</td>
<td>47%</td>
<td>29%</td>
</tr>
<tr>
<td>6b. Today my teacher used examples of my interests when teaching.***</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>7. Today I can see how sharing something about myself during the opening routine was connected to something we did later in class.</td>
<td>68%</td>
<td>73%</td>
</tr>
</tbody>
</table>

- “While this might not be statistically significant, it mattered to teachers if even one student who had agreed with a statement previously disagreed in the next survey. To a teacher reflecting on her practice, or to the group reflecting on their implementation of Dig Deep, even a small increase or decrease was meaningful and fodder for conversation.”
  - Would you agree or disagree with this statement and why?

- (Rachel) To talk about your data, I compare your first survey to your third, rather than to the baseline survey. Do you think this is correct?
Design Chapter:

- Take a look at this list of our design decisions. Are there any here that you would disagree with? Any that I left out?

**Design Decision**

1. Focusing on the beginning of class
2. Developing prompts inspired by cultural probes
3 & 4: Asking students to share and being intentional about joining a group of students
5: Creating a menu of modes for prompts
6: Asking students to record and keep track of their responses over time
7: Adding a goal focused on students developing relationships with one another
8: Recommitting to being intentional about which students to sit with during Dig Deep
9: Giving students more ownership over the routine

- Take a look at the list of outcomes. Do you think these are the right outcomes (things we were hoping to achieve). To what extent did we make progress on these outcomes?

  **Outcomes:**
  1. Teachers feel they are improving their relationships with students
  2. Students feel they matter in the classroom
  3. All students have an opportunity to share about themselves during class
  4. Students report they learned something new about their classmates
  5. Students feel that learning something new about their classmates helps them care about each other
  6. Students listen to each other and feel listened to

- By the end of the semester, many of the ideas we came up with for Exploration were about giving students more ownership – i.e. asking how they wanted to share, ask students about how to structure the routine. Why do you think that was?
Jane Member Check

Case Study Chapter:
- Your classroom last year had a very different set-up / feel to other classrooms in the building (tables, lamps, cozy, stuff from kids, etc.). Why did you set it up in the way you did? What were you hoping it felt like?

- Several times you said that your approach to building a classroom community is to be more “vulnerable,” to open yourself up more. Can you tell me what you meant by that?
  - Ex: “If I can be kind and vulnerable, I think they’re more likely to follow suit.”

- “I’ve had times … where I … keep trying to be more vulnerable, and more like, ‘I care about you’ … And then I often feel like that gets stomped on, and can’t help but take that personally, and that’s something I’ve got to figure out how to deal with that.” (Jane_Int_05.25.17).
  - Do you have a sense of why students “stomped on it” or why students didn’t respond as you would have hoped?

- Do you are agree / disagree that these were some dilemmas you faced last year?
  - Dilemma 1: Developing a Positive Classroom Community While Balancing Her Co-teacher’s Conflicting Philosophies of Classroom Management
    - What did it feel like to have conflict with Ms. Ervin? Did you have feelings that you could not express to her or to the students?
  - Dilemma 2: Navigating Competing Approaches to Teaching Language Arts While Ensuring Student Success
    - What did it feel like to have those conversations with your colleague? How did it impact your relationship? Did she know that you at times felt frustrated? Questioned your teaching identity?
  - Dilemma 3: Building Relationships With Students While Attending to Her Own Well-being

Data Chapter:
- “Throughout the data discussions, Jane revealed her orientation to accept students’ responses on the practical measure as their truth and reality on that day and potentially help her colleagues reframe their views. Through her specification of her teaching and her conjectures about her students, she communicated a responsibility over the data and understood that improving the data and her relationships with students was within her purview. She did not blame the students for her data, but rather sought to understand their feelings and how her teaching impacted them.”
  - Do you agree with this?

- “While this might not be statistically significant, it mattered to teachers if even one student who had agreed with a statement previously disagreed in the next survey. To a teacher reflecting on her practice, or to the group reflecting on their implementation of Dig Deep, even a small increase or decrease was meaningful and fodder for conversation.”
  - a. Would you agree or disagree with this statement and why?
Appendix P
Initial Design Overview Document

(Re)Design for Classroom Opening Routine
Draft, 3/15/17

*Begin this routine after Spring Break

“Probes are collections of evocative tasks meant to elicit inspirational responses from people—not comprehensive information about them, but fragmentary clues about their lives and thoughts….It’s an approach that values uncertainty, play, exploration, and subjective interpretation as ways of dealing with those limits. ” (Gaver, Boucher, Pennington, & Walker)

Goals:
- Improve relationships with all students in the class, in particular students who we struggle to engage / don’t know well
- Provide an opportunity for all students to share about themselves - their culture, background, interests, home, family, etc.
- Expand on the kinds of topics / things are “okay” to share
- Connect this routine to the project or lesson for the day

Overview: This (re)design draws on the research from the “Cultural Probes” article. At the start of each class, students will have the opportunity to share something about themselves with another student and with the class. The cultural probes should feel different from a typical class prompt or reflection in a journal. They should be a time for students to share something about their culture, background, interests, home, family, etc. As much as possible, cultural probes should be connected to the project or the lesson for the day. This way, the ideas generated and shared by students could be used and referred back to during class as part of the curriculum.

Establishing the routine:
- Introduce the new routine to students
- For the first week or two, give students the cultural probe for the day to model it.
- After students have had a chance to try out and share some cultural probes during the week, ask students to brainstorm ideas for cultural probes that you could then use for the remainder of the project.
- Print and cut out student-generated probes and our list of probes. Place the probes in a bag or box of some sort so that they are ready for each class period.
- At the beginning of class, ask a student to select a probe and read it to the class.
<table>
<thead>
<tr>
<th>Teacher Actions</th>
<th>Student Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduce the cultural probe routine.</td>
<td>One student selects the probe for the day and reads it aloud to the class.</td>
</tr>
<tr>
<td>Work on the cultural probe while students work on theirs.</td>
<td>Students have some quiet time to work on the probe. (think / reflection / find / create / write / compose …)</td>
</tr>
<tr>
<td>After the allotted time, facilitate partner or small group sharing.</td>
<td></td>
</tr>
<tr>
<td>As students share, join a group to share as well. Make it a point to work with a student with whom you want to improve your relationship. This is a powerful way to build relationships with students.</td>
<td>Students share in pairs or small groups. Depending on the probe, they might just share verbally, they might show an artifact, they might read something, etc.</td>
</tr>
<tr>
<td>Facilitate a brief whole class discussion or share-out. You may invite students to place a digital image or artifact on a Padlet and give the class time to view it. You may also ask for a few volunteers to share their idea or their partner’s ideas.</td>
<td>Students share out with the class in some way. Not every student is expected to share out loud with the whole class during this time.</td>
</tr>
</tbody>
</table>

Possible cultural probes:
- Map of school / community- change in the community
- New map of school for next year- change in our school
- Share a photo of something that has changed in your life in the past year
- Pick a crayon color and describe how that
- Find a headline that shouts change to you
- What is a change you’ve made that you are proud of?
- Find a photo that represents a place that you have power (or don’t)
- Map of the neighborhood they live in- Change that is specific to their home community
- What is something you are unhappy with in your community?
- Who in your community creates change? How do they do it?
- What changes would you like to see within your classroom, your school?
- Design a new class for your school
- If you could be doing anything with your time right now, what would it be? Why?
- Map or photo of a place where you feel like youth / teens are heard
- What’s something that you heard today that you wish you could change
- Post it note ideas: grab a name and write a compliment
- Post it note idea: favorite line of a song
- What is one thing about YOU that you would not change
- Maybe a probe around perspective