THE COMMUNITY CREATIVITY COLLECTIVE: INTRODUCING AND REFINING A COMMUNITY-BASED MODEL FOR CREATIVE CURRICULUM DEVELOPMENT

by

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DISSERTATION ABSTRACT

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Title: The Community Creativity Collective: Introducing and Refining a Community-Based Model for Creative Curriculum Development

Calls for more creative teaching and learning in classrooms are often matched by increasingly stringent accountability measures. Negotiating the creativity/accountability paradox is difficult for teachers, who are often isolated as they interpret, design, and deliver curriculum in their classrooms. This dissertation introduces and refines a 7-stage process called the Community Creative Collective (3-C) designed to generate solutions to three problems that derive from this paradox. First, narrowing of curriculum inhibits the ability of teachers to generate creative teaching and learning. Second, factors, including time constraints and teacher training, limit teachers' ability to develop the creative habit. Third, inclusion of family and community members as co-creators of curriculum provides a potential source of creative curriculum development.

Three research questions guide the exploration of the process:

1. How does the 3-C process allow teachers and community members to collaboratively generate creative teaching and learning opportunities for their students?
2. What are the distinguishing features of this collaborative curricular process?

3. How does such a process impact teachers' interpretations of their role as interpreters, designers and deliverers of curriculum?

Using a Design Based approach, these questions investigate the process as it was implemented in a 5th-grade classroom. The first question uses a case study methodology to trace the development of the 3-C process as it was developed and implemented. Findings demonstrated that communication at multiple stages impacted the generation of creative ideas. The second question uses qualitative data from documents, interviews, audio and video recordings and observations to extrapolate some of the distinguishing feature of the process. Key features included the Ideational Speed Dating (ISD) process for idea-generation, the 3-C process as a peak flow experience and the impact of parent and community expertise to generate creative classroom content. The third question uses interviews with the participating teacher to examine the impact of the 3-C process on her interpretation of her role in the classroom. The process influenced her view on family and community involvement, providing space through which tensions can be resolved and creative engagement can flourish. Finally refinements for future iterations are discussed in addition to implications for future research.

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CHAPTER I

INTRODUCTION

Innovations result from novel combinations of ideas, processes and materials (Costello & Keane, 2000). Early alchemists mixed elements into potions that they hoped would create gold; artists throughout history have pushed the boundaries of their media in ways that combine images to create new ways to view the world; toddlers discover that mixing dirt and water in the right amounts are all that you need for a parent-pleasing mud pie. The propensity to create, imagine, combine, and innovate is one of the most profound of human abilities; it is both an inherent trait, driven by human curiosity, and a learned skill, founded in the use of knowledge and experience to solve, enhance and transform (Dewey, 1922). Our creative abilities to adjust and resolve, to adapt and innovate, drive our progress. Creativity also has the potential to enhance teaching and learning by providing a richer and broader experience of the curriculum (Beghetto, 2013; Bleedorn, 2003; Sternberg, 2010). Unfortunately, this potential is not always realized.

The basic structures of teaching and classrooms have changed little since the advent of compulsory education in the mid-1800's (Tyack, 1974). Educational approaches that focus on convergent teaching and learning strategies have dominated (Hartman, 2008) and as a result, teachers and their practices have proven very difficult to change (Lortie, 1975). However, leaders from the economic, political, and business fields are calling for changes to the k-12 curriculum to match the move from a more industrial to a more idea-based economy (Dwyer, Knight Foundation., & United States. President's Committee on the Arts and the Humanities., 2011; Florida, 2002; 2012). For students to compete in this idea-based economy, so it is argued (e.g. Florida, 2002), they must

develop critical, creative problem solving skills. Although such market-based motives have been called into question (Craft, 2011) – including the moral implications of such initiatives (Moran, 2010) -- the underlying argument that cultivating creative thinking represents a key instructional goal is generally agreed upon by researchers in the field of creativity studies (Beghetto, 2013; Craft, 2011; K. Sawyer, 2010). Calls for creativity are concurrent with demands for accountability (Baer & Garrett, 2010). Indeed, the success or failure of educational reforms is measured by the outputs of large scale, high-stakes evaluations, without having the important discussion of either the inputs or their application and processing. Consequently, teachers may find themselves in a paradoxical position, caught between a desire to promote creative thinking, yet being pressured to conform to external curricular demands (Beghetto, 2007).

The details of the paradox are difficult for teachers to manage. Teachers, for instance, are largely removed from the design of policy guiding the reform process, yet they still act as a conduit, an interpreter and a performer of the curriculum. When outcomes fail to match the intent of the curricular reform, the teacher is often blamed (Kumashiro, 2012). Under such pressure, creativity and difference may be discouraged (both implicitly and explicitly).

Even if these external pressures were eliminated, creativity is something that many people find to be mysterious. One reason is because it is difficult to define and surrounded by myths (Plucker, Beghetto, & Dow, 2004) and stereotypes, such as creativity being associated with extracurricular activities and negative, deviant behavior (Aljughaiman & Mowrer-Reynolds, 2005). Moreover, there are few models of creative teaching that teachers can learn from (Schacter, Thum, & Zifkin, 2006). These

conceptual challenges make it difficult for teachers to develop the kinds of positive creative habits advocated by researchers (such as Sternberg, 2010).

As a result, teachers face complex internal and external paradoxes. Internally, many teachers want to cultivate their students' creativity, yet harbor concerns about the kinds of deviant student behaviors that have been associated with creativity. Externally, teachers face a creativity-accountability paradox that can be difficult to bridge -- even for the most dedicated teachers. Teachers find themselves in a middle ground (Aoki, 2005) between curricular standards -- created by educational experts somewhere far away from their classroom -- and finding ways to make those standards relevant for themselves and for the lives of their students. The responsibility for negotiating this paradoxical position is often left to individual teachers who are given freedom (and little support) to interpret, design, and deliver prescribed content. This leads to three assumptions that help to frame the work in this dissertation. First, teachers may benefit from help to interpret, design, and deliver classroom content (Baer & Garrett, 2010; Beghetto, 2013). Second, other factors, including time constraints and teacher training, limit teachers' ability to develop the creative habit (Sternberg, 2010). Third, the inclusion of family and community members as co-creators of curriculum provides a potential source for creativity in the curriculum development process.

Teachers might find a way out of this paradox by partnering with members of their surrounding communities. Indeed, researchers studying the difference between parental involvement and parental engagement (Hong, 2011; McCaleb, 2013) have recognized the power of meaningful partnerships with communities and families. Extending beyond traditional forms of parental involvement, true engagement means a

restructuring of value systems that have often been at odds. Promising, engaging practices have been shown to increase student literacy (Delgado-Gaitan, 1990; Gaitan, 2012) and the cultural and linguistic relevance of curriculum (Buck & Sylvester, 2005; Gonzalez, Moll, & Amanti, 2005; Moll, 1990). However, little research has attempted to infuse the knowledge and experiences of families and community members directly in the process of helping teachers interpret, design, and deliver lessons in the classroom. Creative pedagogy, meaningful student learning experiences, and community engagement hold subordinate roles to efficiency and standardization (Anderson, 1998; Delgado-Gaitan, 1990; Shirley, 1997). The space in-between the curriculum as it is planned and how teachers and students experience it is a space of possibility (Aoki, 2005; Beghetto & Kaufman, 2011). It is a space in which the constraints of the educational milieu can be examined, planned for, subverted, incorporated, acquiesced to, and adjusted.

Purpose

This dissertation explores the connection between these ideas by introducing and empirically testing a community-based model of creative lesson planning. This model, herein called the *Community Creativity Collective* (3-C), represents an intervention designed to help teachers negotiate the creativity-accountability paradox. This model builds on existing creative problem solving models and provides a new, collaborative way of infusing creativity into lesson planning.

Research Questions

The following three questions guide this dissertation.

4. How does the 3-C process allow teachers and community members to collaboratively generate creative teaching and learning opportunities for their students?
5. What are the distinguishing features of this collaborative curricular process?
6. How does such a process impact teacher's interpretations of their role as interpreters, designers, and deliverers of curriculum?

The first question has the goal of exploring the process of implementation of the 3-C process. This research explores a framework for collaborative and creative curriculum design and starts with the seven-stage process outlined in Chapter III. In order to answer the first research question, the process will be implemented in a fifth grade classroom in collaboration with the teacher and a group made up of parents of children in the class and other community members. The implementation of the process allows researchers and collaborators to examine the seven stages, gather empirical data, and make inferences regarding the effectiveness of each stage.

The second question will examine the unique attributes of the 3-C process and examine to what extent the stages functioned together to generate emergent curricular ideas. The 3-C process represents a practical application of a creativity-generating framework. Uncovering the key features of the process allows it to be examined and refined based on the data generated during each stage. Furthermore, investigating the

things that lead to, or inhibit, success at each stage can inform the theoretical model as well.

The third question explores the experience of the collaborating teacher and the degree to which the process has an impact on her perceptions of her role as interpreter, designer and deliverer of curriculum. This collaborative effort is an attempt to apply theory to practice and use it to potentially inform new approaches to curriculum development. The experience of the collaborating teacher is key to understanding the degree to which the process is a viable alternative to the traditional roles teachers are asked to play.

Taken together, these three questions will structure the inquiry into a theory-driven approach to creative curriculum development. There is a growing call to increase the relevance of research that informs the policy and practice of teaching, learning and assessment (Barab, 2006; Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006). In the current educational field, with its growing focus on developing the creative capacities of students, research that demonstrates mechanisms to produce such creativity in classrooms is both timely and appropriate.

Significance

The model introduced and refined here will make contributions to theory and research on teacher practice. As mentioned, teachers face the daunting task of interpreting, designing and delivering curriculum. They are often asked to do so without support. Developing theory-based and empirically tested practices that transcend more traditional teaching practices increases the tools available for teachers. The theoretical

foundations of creativity have grown significantly over the last 65 years. Bridging that theory into practice has not progressed apace. The increasing calls for creative approaches in education to prepare students with 21st century skills (P21, 2012) are not concurrently paired with attempts to revitalize teacher preparation or in-service training. The 3-C process model provides both a theoretical framework and a trainable skill set that practitioners can use to develop creativity that is formed through the collaboration with family and community members.

Additionally, this research seeks to inform the educational creativity literature by developing a theoretical model of group creative development. Much research has been done to demonstrate the effectiveness of groups in creative ideation (Paulus, 2000; Paulus & Brown, 2003; R. K. Sawyer & DeZutter, 2009) and creative process models continue to grow in both complexity and importance (Mumford, Medeiros, & Partlow, 2012). Educational researchers are providing broader accounts of the conditions necessary for creativity in the classroom (Beghetto & Kaufman, 2014) and educational practices that lead to, or inhibit, creativity (Beghetto, 2013).

It is also clear that creativity is a learnable and trainable skill. The 3-C Model has a goal of developing a creative habit amongst teachers when it comes to their interpretation, design, and delivery of academic content. Creative habit, in this context, is derived by Dewey's (1922) assertion that human habits, not a disembodied mind, are what allow us to interact in the world in meaningful ways. Challenging both the internal drives and behaviorist principles of the psychology of his day, Dewey argued that,

> …the reason a baby can know little and an experienced adult know much when confronting the same things is not because the latter has a 'mind' which the

> former has not, but because one has already formed habits which the other still has to acquire (p.182).

During a similar time period and half a world away, Lev Vygotsky posited a similar statement on the building of creative habit based on experience and repeated practice.

> In addition to its function of storing previous experience, the brain has another, no less important function. Aside from reproductive activity, we can readily observe another type of activity in human behavior, what can be called combinatorial or creative activity…. The brain is not only the organ that stores and retrieves our previous experience, it is also the organ that combines and creatively reworks elements of this past experience and uses them to generate new propositions and new behavior. (Vygotsky, 2004 p. 9)

In the context of the 3-C Model, Dewey's cognitive instrumentalism is useful in that it challenges ethereal notions of creativity as something that just materializes in the creative person's mind. Creative thought is a habit, a tool that can be called on within certain contexts to solve problems. Vygotsky (2004) compares the imprint of experience on the brain to a crease in paper or a rut in a dirt road. Strong and repeated experience creates new imprints that become habit. Sternberg (2010) supports this idea. He explains,

> Like any habit, creativity can either be encouraged or discouraged. The main things that promote the habit are (1) opportunities to engage in it, (2) encouragement when people avail themselves of these opportunities, and (3) rewards when people respond to such encouragement and think and behave creatively. (p. 394).

Highly standardized, teacher-centered pedagogical approaches limit the opportunities for teachers to develop a habit of creative teaching and learning (Beghetto, 2013). Convergent assessments where there is one right answer to every question may not encourage further curiosity and exploration. In an educational system that often

discourages free thinking and creativity, there seems to be little room for teachers and teacher educators to develop habits of collaborative creative thought and action. Indeed, they need opportunities to be creative and to be rewarded and encouraged to do so.

Kelly (2012) outlined an approach to creativity-based teacher education and recognized that, "When it comes to understanding creative development, the optimal way of developing practical understanding is to engage in first-hand sustained creative practice over an extended period of time." (p. 24). This is also reflected in Kaufman and Beghetto's (2009) distinctive challenge to traditional notions of eminent (Big-C) vs. non-eminent (little-c) creativity. In their model of creativity, they challenge the traditional dichotomy of Big-C/little-c creativity by demonstrating the power of experience, both at its initial stages (mini-c) and at its professional (Pro-c) levels. This more nuanced model highlights the transformative creative potential of practice and domain specific knowledge as a creator develops from personally meaningful creativity to ideas with broader social applications.

It is not sufficient to say, "Teachers should just be more creative." Creativity is a learnable habit that requires a distinct and purposeful set of skills and training. Much like other aspects of teaching (e.g., lesson planning, classroom management), teachers need to have the opportunity to develop their creative capacity through guided learning experiences. The 3-C model provides an opportunity for helping teachers develop the habit of creative teaching.

The 3-C provides a theoretical framework for creative ideation that opens doors to the exploration of how creativity is distributed across communities, how disparate knowledge and experience bases can be combined to generate creativity, and how

teachers interact with and interpret a community-based process of creative curriculum development.

The results of this study will also open up space in the creativity literature for understanding activities purposefully designed to generate creative ideas. Intentional creativity is a hallmark of business literature (Kelley & Littman, 2001; Seelig, 2012) where innovation is a necessary factor in growth and development. Businesses often have entire teams of people dedicated to coming up with the next big idea. Teachers receive no such support. What does intentional creativity designed to innovate educational practices look like and how can schools build creativity teams designed to innovate curriculum? This dissertation will address these questions.

Finally, the relationship between schools and their communities can often be tenuous and is always fraught with power dynamics (Lareau & Horvat, 1999; Wells & Serna, 1996). Schools often include families and communities only to the extent that they serve the goals of the school. The 3-C presents a family and community engagement strategy that captures locally and culturally relevant knowledge and activates it in the classroom, providing schools a mechanism for inclusion that extends beyond traditional approaches while simultaneously meeting the needs of both the school and the community.

CHAPTER II

SOCIOCULTURAL CREATIVITY, FAMILY/COMMUNITY INVOLVEMENT AND CURRICULUM DEVELOPMENT

The purpose of this chapter is to examine historical approaches to creativity with a specific focus on the way that recent research has conceptualized sociocognitive and sociocultural approaches to group-based creativity. I will examine the contextual factors that frame discussions of family and community involvement in schools and the ways that creative approaches might generate more opportunities for active engagement, rather than mere involvement in the classroom. Lastly, I look at curriculum design and how an emerging methodological approach (Design-Based Research) has been used to implement and assess innovative instructional approaches through collaboration between researchers, teachers, and others.

Theoretical Antecedents

Creativity is the central concept of the 3-C process; a clear definition of creativity, therefore, is important to understanding the model. Although creativity is a very commonly used concept in education, it is often misunderstood and plagued by many stereotypes and misconceptions (Plucker, Beghetto, & Dow, 2004). Believing that creativity is solely associated with negative deviance is an example of one of those stereotypes. Equating creativity with unconstrained originality is an example of a common misconception (Beghetto, 2013).

Early research on creativity focused on the cognitive processes of individuals as they created and articulated new mental combinations, whereas more recent conceptions

focus on the broader social, cultural, and historical aspects of creativity (Sawyer, 2010). Although there is no definitive conception of creativity, most creativity researchers generally agree on a few key attributes. Plucker et al. (2004) synthesized various published definitions of creativity with the goal of providing a definition that takes into account those common attributes. The following represents the resulting definition:

> Creativity is the interaction among *aptitude, process, and environment* by which an individual or group produces a *perceptible product* that is both *novel and useful* as defined within a *social context.* (Emphasis in original, p. 90)

This definition is both compelling and appropriate for the 3-C process which attempts to combine diverse *aptitudes* through a collaborative *process* in an educational *environment* in which various participants (teachers, students, and community members) produce *perceptible products* (learning, teaching, and assessment tools) that are *novel and useful* within the current constraints of the educational *social context.*

Early Creativity Models

The 3-C model represents an elaboration on existing theoretical structures for creative processing. Graham Wallas (1926) developed one of the earliest process models. He proposed a four-stage framework for creative thought consisting of *preparation, incubation, illumination, and verification*. Preparation refers to the conscious work done to analyze and define a problem. During incubation, the problem is set aside and subconscious processes continue to mull the problem over. Illumination occurs when a potential solution to the problem is uncovered and a verification stage follows in which the solution is evaluated and refined. This four-stage model provides the foundation on which much contemporary creative research is based (Lubart, 2000).

Rhodes (1961) synthesized existing definitions and generated a four-stage model he called the four P's of creativity. The four P's are person, product, process, and press. Roughly stated, the creative process begins with a person who generates a creative product as part of a process that she then shares in the broader community (here termed "press"). The four P's created a theoretical backbone that also structured many subsequent creativity investigations (Lubart, 2000).

While attractive as an organizing heuristic for creativity studies, the four stage models of both Rhodes and Wallas have been expanded into more complex stage based models (Mumford et al., 2012; K. Sawyer, 2010) and challenged by alternative and more integrative approaches (Amabile, 1996; Csikszentmihalyi & Wolfe, 2000; Dewey, 1997). The history of multiple approaches to the view of creativity provides the rich context that this research seeks to inform. In the following section the sociocultural context of creativity is explored.

A Sociocultural View of Creativity

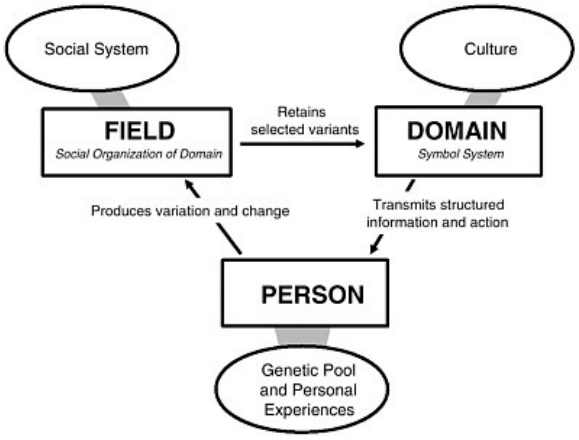
Sawyer (2010) delineated three waves of creativity research. The first wave was characterized by studies of eminent personalities and attempted to describe the personal processes of creative people as they generated emergent products and ideas. The second wave examined the cognitive processes of individuals as they engaged in creative activity. The third wave began to investigate the environmental, cultural and social influences that led an individual to generate a creative idea. The individual became inseparable from the context in which they created, and their ideas and products could

only be deemed creative as they were accepted by the field and incorporated into the domain (Amabile, 1996; Csikszentmihalyi & Wolfe, 2000).

Researchers who have focused on sociocultural creativity have highlighted how context plays a key role in the generation of creative outcomes. Csikszentmihalyi (1993), for example, describes a *Systems Model of Creativity*, which posits creativity as a more sociocultural (rather than solely individual) process. Specifically, he describes creativity as a social process made up of knowledge, experience, deliberation and action. Arguing against the idea of creativity as something randomly occurring, Csikszentmihalyi posited that the resulting creative outcomes derive from *deliberate* actions taken by experienced individuals. Deliberate, in this sense, does not always indicate intent or predictability -- many creative outcomes are unpredicted and accidental -- but according to this view all creative outcomes occur within the context of deliberate work in the field. As shown in Figure 1 the deliberate work of an individual can only be deemed creative when their contributions are recognized by the field of experienced participants as both novel and useful within the current constructs of that field.

Figure 1

Csikszentmihalyi's Systems Model of Creativity



These contributions then become accepted as part of the larger cultural domain, which, in turn, influences individuals to innovate and begin the cycle anew. Thus, creativity emerges from the relationship between an individual, the participants in the field who serve as gatekeepers and the larger cultural conditions that influence, guide, and structure work in the field. Individual cognitive and personality-focused conceptions of creativity are limited in that they fail to recognize the social, environmental, and historical ways that individuals generate creative ideas (Glaveanu, 2010).

Moving from cognitive models of creativity into a more sociocultural understanding of the creative process required a reformulation of the components of creative ideation. Glăveanu (2010) called for such a reformulation with his Five A's Framework. Using Rhodes' (1961) Four P's framework for comparison, Glăveanu provides an alliterative alternative that recognizes the contingent aspects of the components of creativity. According to Rhodes, the Four P's could be studied discreetly, that is the stages of creativity, person, product, process, and press could be studied independently. For Glăveanu, this ignored the sociocultural aspects of the creative process as it is co-constructed by actors in relationships with their environments. The Five A's: Actor, Action, Artifact, Audience, and Affordances were not an attempt to revise the more cognitive step models of creativity. Rather, the Five A's posits a new paradigm through which sociocultural creativity can be viewed. This approach to creativity allowed researchers to investigate the actions of creators within a particular situated and embedded context. Calling on other situated methodologies and approaches (for example, John-Steiner, 2000; (Dewey, 1896) Glăveanu recognized the inextricability

of components of creative action. Creativity developed as a relationship between actors, actions, artifacts, audiences, and affordances.

Early researchers in the sociocultural turn in creativity studies (for example, Csiksentmihalyi, 1997 and Amabile, 1983) focused on the cultural and social context in which an individual generated a creative idea and how that idea was uploaded by the field and into the relevant domain. Glăveanu (2011) referred to such processes as *sociocognitive approaches* to creativity studies. Sociocognitive studies maintained an epistemological position wherein the social aspects of creativity existed outside of the embedded individual whose creative process still transpired cognitively. Glăveanu (2011) contrasted this with a sociocultural approach that relied on Vygotskian (2004) theoretical foundations of social embeddedness to explain the active co-creation of creativity as individuals interact with each other within contexts.

The sociocognitive and sociocultural approaches represent different paradigms of creativity studies, which Glăveanu (2011) suggests can inform each other.

> To some extent, the differences between the two paradigms relate to their somewhat different *aims*. While sociocognitivists generally investigate episodic instances of collaboration and the value of their end-product, socioculturalists are primarily interested in long term collaborations and their broader link to developmental and social processes. For the former the definition of the situation is given, while for the latter it is constructed through the interaction. Understood in this light, the two approaches *complement* and do not oppose each other. Could it be possible, therefore, to "reunite" two such different perspectives as the cognitive and the cultural one and, first of all, *should* the "gap" be bridged? (p. 18)

The sociocultural view of creativity recognizes how creativity, like cognition (Cole & Engeström, 1993; Lave, 1988), is not held in the minds of individuals, but rather, is

distributed across communities (V. P. Glăveanu, 2014; R. K. Sawyer & DeZutter, 2009). In following sections a series of sociocognitive and sociocultural elements of creativity are explored in their relation to how they inform the 3-C model and how they may communicate in ways that inform practice.

Elements of a Sociocultural View of Creativity

There are a number of elements that lead to creativity, whether it is the sociocognitive components of situated individuals or the process oriented examination of sociocultural creativity. The following sections examine multiple aspects, processes and collaborative designs that lead to group creativity. First, the idea of collaborative emergence looks at various conceptions of how ideas emerge from groups. Secondly, I examine the research on group brainstorming processes. Lastly, I look at the idea of conceptual combination, a key component of cognitive and sociocognitive creativity that serves as a cornerstone of the 3-C process, and how it might be moved into the sociocultural field of creativity studies.

Collaborative Emergence. Collaborative approaches to group creativity are used often in business settings where new products and approaches are required for businesses to grow and develop (Kelley & Littman, 2001; Seelig, 2012). The group creative processes common in the business sector are less visible in education. However, improvisational (Sawyer, 2011) and collaborative (Burnard, 2011) spaces recognize the socially situated nature of creativity in the classroom.

This creative potential of groups is enhanced under certain conditions. The importance of diversity for creativity generation is supported by Nemeth and Nemeth-Brown (2003) and Milliken, Bartel and Kurtzberg (2003) who demonstrated that multiple

perspectives help creative groups overcome many pitfalls of group work including groupthink and a lack of motivation.

Creative outcomes that emerge in collaboration with others often result from a process that has been called *collaborative emergence* (Sawyer & DeZutter, 2009). Collaborative emergence is defined as relatively unconstrained collaborative processes that may lead to unanticipated outcomes (Sawyer & DeZutter, 2009). Sawyer and DeZutter outlined the following four conditions of collaborative emergence:

- The activity has an unpredictable outcome, rather than a scripted, known endpoint;
- There is moment-to-moment contingency: each person's action depends on the one just before;
- The interactional effect of any given action can be changed by the subsequent actions of other participants; and
- The process is collaborative, with each participant contributing equally. (p. 82)

The 3-C model is in alignment with this more collaborative and emergent approach to the creative process – involving teachers, families, and community members in a possibility thinking activity (Craft, 2011). Possibility thinking is an imaginative and playful cognitive task that seeks to uncover new potentials within the constraints of extant concepts. The 3-C process is designed to alternate between possibility thinking and making critical judgments about what will be both feasible and effective. There are many decision points that address the main questions outlined in the introduction, mainly, what should be taught? Who should teach it? How should it be taught? And how should it be assessed? Creative decision making requires a reciprocal relationship between imagining what could be, brainstorming potential approaches and solutions to problems and

critically analyzing and converging on a potential solution (Fairweather & Cramond, 2010).

Idea Generation & Group Brainstorming. Idea generation is a key component of most models of creative development, as it is for the 3-C process. Originally coined by Osborn (1957), brainstorming as a creative idea generation tool is a widely used and sometimes misunderstood and misused process. Brainstorming is a structured process designed to have groups come together to generate ideas. One of the goals of the 3-C model is to generate a variety of ideas for curricular development based on the combined knowledge and experience of a locally sourced group of participants. It assumes (as have other brainstorming researchers) that the group will be able to generate more and better ideas than individuals. Osborn originally asserted that groups would be twice as productive as individuals generating ideas on their own. Many researchers have challenged this assertion and demonstrated that, in fact, the structure of brainstorming sessions plays a key role in how creative ideas develop. Individuals generating ideas on their own, then combining them, can generate more ideas than a group generating ideas together (Paulus & Brown, 2003). However, quantity of ideas is not the only marker of creative idea development. The definition of creativity outlined above (Plucker et al. 2004) instructs that in order to be creative, an idea must be both original and useful within a particular context. Sociocultural conditions and contextual factors constrain both the originality and the usefulness of new ideas. Sawyer (2007), for example, explained that groups who were primed to generate both *unique and valuable* ideas might not generate as many ideas as individuals charged with the same task, but their ideas will be

more useful in the contexts in which they are implemented. Introducing instructions to be creative can also have an impact of creative ideation (Harrington, 1975).

Creativity process models all contain a stage in which an idea is developed and combined with the extant knowledge and experiences of either groups or individuals. Early models of creativity development (Wallas, 1926; Lubart, 2000) called the process incubation. During incubation the subject participated in conscious and sub-conscious combination and recombination of knowledge in reaction to a new problem. Mumford et al. (2012) treated the incubation phase with more detail outlining the important role that conceptual combination played in generating creative ideas. In Mumford's model, subjects return to prior stages based on failures to progress linearly through the creative process.

In an intentional creative process, in which the goal is the development of emergent ideas, there is movement between divergence and convergence as the group works together to combine their knowledge and experience with that of their colleagues in the service of generating an emergent product. This requires an active and collaborative communication process that includes the contributions of all members. Kelley & Littman (2001) defined a process for creative group development at IDEO, a famous design and development firm. Termed "hot groups", Kelley shares an example of a team tasked with innovating the shopping cart and provides 6 attributes shared by many hot groups at IDEO.

> First, they were totally dedicated to achieving the end result. No one doubted that shopping carts could use some improvement, and everyone was enthusiastic. Second, they faced down a slightly ridiculous deadline. When the hurdle is high, there's a tremendous sense of achievement in getting *anything* done by the

> deadline. Third, the group was irreverent and non hierarchical. Despite the deadline, they joked and played around – like brainstorming up a sports utility shopping cart – to let off steam. Fourth, the team was well rounded and respectful of its diversity. Though the team was drawn from widely different disciplines, they had tremendous respect for their fellow members…. Fifth, they worked in an open eclectic space optimal for flexibility, group work and brainstorming…. Finally, the group felt empowered to go get whatever else it needed. Hot teams connect to the outside world. They know that answers don't lie within. To design a better shopping cart, they sought out grocery stores and shoppers and industry experts. (p. 71)

These six facets of innovative "hot groups" add depth to the discussion of emergent group ideation. In addition to the four components of collaborative emergence (R. K. Sawyer & DeZutter, 2009) Kelley adds dimensions of diversity, physical space, time constraints, and an ability to reach outside of the group for more ideas and resources.

Conceptual Combination. Original ideas often emerge when two disparate concepts are combined to create something new. Called c*onceptual combination,* it has been shown to be a key aspect of emergent ideas. Scott, Lonergan and Mumford (2005) defined conceptual combination as, "the creation of new knowledge structures through the integration of previously distinct concepts or, alternatively the rearrangement of elements within an existing concept." (p. 80). Studies have demonstrated the cognitive power of combinations in individual creative processes (Hampton, 1997; Shoben & Gagne, 1997) as well as group creative processes (Mumford et al., 2012; K. Sawyer, 2007; R. K. Sawyer & DeZutter, 2009; Scott, Lonergan, & Mumford, 2005). Conceptual combination activities have been show to be successful precursors to creative problem

solving tasks (Kohn, Paulus, & Korde, 2011)**.** The 3-C process centers conceptual combination as the key strategy for the generation of creative curricular and instructional approaches.

This section highlights a process of conceptual combination called *Ideational Speed Dating* (ISD) used in the 3-C process to generate emergent curricular approaches. Using this definition within the sociocultural context of creativity research allows us to examine how a group of individuals charged with generating creative lessons can combine their knowledge and experience bases to generate emergent ideas. Scott et al. (2005) differentiate two forms of conceptual combination, analogical and case-based, in a study that asked undergraduate students to generate creative curricular approaches in a high school. Analogical conceptual combination involved the mapping of key features or properties of one concept onto another in order to generate a novel creation (Baughman and Mumford, 1995). Case-based conceptual combination involves the use of prior knowledge and experience activated in order to solve a problem within a complex socio-technical system (Scott et al., 2005). Their findings demonstrated that both analogous and case-based approaches to conceptual combination correlated with emergent curricular approaches when certain heuristic principles were applied. They hypothesized five heuristic stages for case-based conceptual combination.

> First, characteristics of the problem situation would be reviewed to identify operative goals as well as relevant causes, contingencies, resources and restrictions. Second, available prior cases would be reviewed to identify their strengths and weaknesses with respect to the attainment of different goals and outcomes. Third, causes, contingencies, resources and restrictions identified in prior cases would be used to construct an initial model solution. Fourth, this model solution would be used to forecast action outcomes. Fifth, and finally,

> these forecasted outcomes would then be used for (sic) formulate a revised solution (Scott et al, 2005, p. 81).

The application of these heuristics within a creative curriculum generation task did in fact lead to more creative educational approaches, giving some credence to the use of heuristic frameworks to generate emergent curricular approaches using conceptual combination.

A similar approach is used in the 3-C process to generate creative curriculum, however the group-based approach requires a different set of heuristics. For the 3-C process the heuristics at play are first, the creation of the Design Team; second, the collection and articulation of concepts available to be combined based on prior knowledge and experience; third, the use of ISD to combine knowledge and experience towards a particular goal; fourth, the selection and implementation of at least one of the ideas; and fifth, the evaluation of the implementation based on various metrics of success.

The use of ISD in studies of conceptual combination has a benefit for the study of creativity. Placing cognitive processes in a group context allowed for the processes to become visible, as participants must verbalize their contributions in collaboration with partners (Sawyer & DeZutter, 2009). This allows researchers to examine the processes between people and their environment that led to novel and useful combinations that would be impossible outside of a collaborative design. It is through this process that the idea of conceptual combination is placed in the sociocultural field, providing an example of sociocultural creativity in action.

Family and Community Engagement

The 3-C model aims to provide a vehicle for more expansive engagement of community members in the curricular and instructional decision-making process. Schools often ignore the complex identities of their students, deciding instead to decree what information is appropriate and necessary for students to learn. This can lead to a disenfranchisement that excludes the cultural epistemologies of low-income students and students of color (and their families) (Anderson, 1998; Olivos, 2006; Olivos, Jimenez-Castellanos, & Monroy Ochoa, 2011).

Differential power dynamics in schools often value certain modes of communication and participation (Lareau, 2011). Students and families with high levels of social and cultural capital often have the power to advocate for their own children, sometimes at the expense of other students (Wells & Serna, 1996) and in ways that reinforce inequitable practices (Oakes, 2005).

What results is a schism between the formal education system and the learning that students do when they leave the school building. Children do not stop learning when the school bell rings. Yet what they learn in informal settings rarely finds its way into the classroom (Lareau, 2011). Schools, working from, and responsible to standards dictated to them by state and federal mandates, tend to view their roles as purely educative, often ignoring the economic and social needs of children and families from low-income communities. Additionally, the narrowing of curriculum requires schools to define student success and teacher effectiveness by the scores on tests. This single-minded metric reduces the roles of teachers, limits the potential of students, and stymies parents

and family members' ability to participate outside of contributions that may raise test scores.

Family and community engagement in schools occurs when teachers and administrators recognize the leadership and collaborative potential that exists within their communities and actively develops opportunities to involve families and community members in collaborative projects. Shirley (1997), for instance, examined the difference between traditional forms of parental involvement and more progressive and inclusive forms of family engagement. He advocates a paradigm shift both for school officials and community members that moves education into a more political realm. His exploration of the Texas IAF, a community organization focusing on building leadership for activism among community members, advocates a threefold change in the culture of public schools.

> First, schools must abandon the model of the 'mass-production assembly line' approach to education which has dominated urban public schools for most of the twentieth century…Second, schools must free themselves from the top-down directives…which mandated a pernicious uniformity in instruction, curriculum and assessment in public schools…Third, schools must cease to ignore the crisis confronting American families and design innovative strategies which make the school a resource for families and a cultural center of the community. (p. 71)

In doing this, he argues, schools can revolutionize their practice by engaging in more critical and collaborative efforts. Schools must also decentralize their practice and move towards more horizontal leadership structures, and they must develop the political and educational leadership of the community members interested in school reform.

The 3-C process relies on an expansion of the acceptable forms of social capital (Coleman, 2000; Parcel & Dufur, 2001; Stanton-Salazar, 1997) within a school and the building of trust and reciprocity within the school-community partnership,

> Social capital theory suggests that if reformers seek to improve urban schools, they need to cultivate generalized reciprocity and social trust in such a manner that virtuous circles replace vicious ones. In addition…*they must abandon purely internal reforms within the school and emphasize the many potential relationships that can be built (and rebuilt) between the school and its community.* Those relationships must engage parents…but they should extend beyond those family members who are immediately concerned with children's learning to reach out to congregations, the business community and public officials. (Shirley, 1997 p. 27 italics in original)

Portes (1998) explained two distinct forms of social capital, bonding and bridging. Bonding social capital refers to the capital held by people who exist within a common social group. For the purposes of the 3-C process, the Design Team represents a bonded social group united towards a common goal. Alternatively, bridging social capital represents the many links that members of a bonded group have to people outside of that community who may be able to provide a benefit for members of the bonded group (Portes & Mooney, 2002).

In traditional forms of family and community involvement, the school is seen as separate from the community. Conversely, engagement requires that the school envision itself as the center of the community with other local stakeholders playing important roles that capture and increase the social capital of children and families. In this way the shared social capital of the school diversifies and enhances what is possible within the school

walls. The activation of social capital has been shown to increase student achievement for both rural (Israel, Beaulieu, & Hartless, 2001) and urban (Stanton-Salazar, 1997) settings. Delgado-Gaitan's (1990) collaborative systems model of parental involvement demonstrates that schools can involve parents in meaningful ways. In her model parents can play six different roles, that of "volunteer, paid employee, teacher at home, audience, decision-maker, adult learner" (p. 54). Failing to do so, she argues, has potentially drastic effects, especially on low-income immigrant families who already face social and economic isolation. When schools expand the type of engagement that is possible, they broaden the impact they can have within the community.

Osterling and Garza (2004) recognized five roles that community based organizations and schools could work to foster to increase Latino family engagement in the schools. Their work derives from the National Council of La Raza and advocates for parents to serve in roles as leaders, collaborators, teachers, supporters, and parents. When parents serve in these roles, school reform efforts become collaborate and relevant to the communities that the schools serve.

Imperative in these and other models of community and family engagement is the view of school outsiders as complex participants with multifaceted roles to play. Participation in schools cannot simply occur at the discretion and by the dictates of school officials. Rather, collaboration requires that schools adjust and adapt in ways that illuminate the social capital of families and the community and reactivate them in ways that serve the educational mission of the school. Engagement in schools happens when parents are encouraged to act as advocates for their children in ways that often challenge traditional educational paradigms of inclusion (Lareau, 2011). This involves viewing

parents and community members, who seek more active advocacy roles within schools, as partners rather than as troublemakers as is typically the case with active parents, particularly if they have low incomes or are people of color (Lareau & Horvat, 1999).

Family and community engagement also requires that educators recognize what Gonzalez et al. (2005) termed the "funds of knowledge" that exist in the community,

> Our position is that public schools often ignore the strategic and cultural resources, which we have termed *funds of knowledge,* that households contain. We argue that these funds not only provide the basis for understanding the cultural systems from which U.S.-Mexican children emerge, but that they are also important and useful assets in the classroom. (p. 47)

The 3-C model aims to activate these funds of knowledge by providing a forum in which teachers and schools can partner with their local community in meaningful ways. The results of this collaboration can and should be used to generate curriculum that recognizes the value of localized knowledge. Additionally, this elevates families and community members as holders of important information and places them in leadership roles (not tokenized additions) within the school. The resulting curricular possibilities can be place-based and designed to address problems within the community (Gruenewald, 2010; Gruenewald & Smith, 2008; Theobald & Siskar, 2010).

The purpose of ISD is to activate the collective knowledge and experience of participants and co-construct them to generate creative learning and teaching opportunities. It is an idea generation tool that relies on the creative prowess that is distributed across communities. The ISD process follows the guidelines for collaborative emergence highlighted above (R. K. Sawyer & DeZutter, 2009) and adds a few more. There is a notion of collaborative reliance. As shared knowledge and experience begins to

merge, the final solution is reliant on a combination of expertise. It requires collaboration in order to design and implement. Co-constructed creativity capitalizes on the social, cultural, and human capital within a community and opens the possibilities to new partnerships, new networks and thus, increased social capital for all involved. As Craft (2011) says,

> With changing social capital comes new and powerful opportunities and responsibilities for making collective action. Recognizing and welcoming the co-construction of knowledge, it reflects shifts in how change happens and enables dynamism in learning systems. Possible educational futures in which education both reflects and generates social capital could be characterized by opening up who is involved in schools in social responsibility, innovation and choice making" (p. 133).

Examining, incorporating and constructing the social capital inherent in all communities requires that schools view families and community members as potential assets. One of the barriers to community and family involvement (especially in schools with low socioeconomic status, high numbers of students of color, and with high immigrant populations) is the deficit-based view of families (Gonzalez et al., 2005; Hong, 2011). This deficit view of families often relegates them to the periphery of the school, involved only to the extent that the school will allow.

> As described earlier, under the more traditional models practiced by schools… parent engagement is viewed primarily as a school-centered, activity-based, and individualistic enterprise. Programs and activities are primarily designed by school staff, who may or may not understand the value the experiences of families. Opportunities to interact with families, consequently, may not be planned in a manner that is amenable to the lives of families. By focusing on these planned events and activities, parents may gain a limited view into school culture,

> but are relegated to view only those situations that have been planned and orchestrated by schools (Hong, 2011 p. 25-26)

Hong goes on to describe an alternative, the ecological model of family engagement,

> In contrast, with an ecological perspective on parent engagement, schools design processes for parent participation that actively *center around parents* rather than limiting them to roles in the periphery. From this central view, parents gain a broader perspective into the life and culture of schools…They have opportunities to be part of decision-making meetings where conversations and discussions unfold, to be part of everyday classroom interactions, and to build relationships with adults and children beyond their own child's classroom. In this way, parents have a *perspective-opening* experience where they come to understand and influence school culture. (p. 26)

An ecological model of family engagement does more than simply include families' funds of knowledge in that classroom. Students benefit because they are able to call on the knowledge and experience of their families to support their own learning. Their families, and the specific cultural and historical worldviews that they hold, are valued as assets within the classroom community. This idea is supported by Yeager and Cordova (2010). Their study examined the roles of families' and community members' funds of knowledge and how teachers can activate them as resources in the classroom.

> One challenge presented to teachers, then, is not only how to understand how to learn from family funds of knowledge themselves, and how to afford students opportunities to work with and learn from family members in a variety of ways…. It is also how to discursively shape with students a *view of* family members, and their funds of knowledge and lived experience, as *relevant* to and potential resource for, accessing and engaging in and with academic disciplines— how to 'talk,' as well as 'act,' family members as well as their funds of knowledge, into

being as academic resources and part of the everyday life of classrooms. (Yeager & Cordova, 2010 p. 220)

The active engagement of community and family members' funds of knowledge in the curriculum and pedagogy of the classroom thus provides a benefit to children's education that extends beyond mere participation. Their familial and cultural ways of knowing are supported and respected within the classroom and serve as vital resources that students can call on across subject matter.

For the purposes of the 3-C process, this active inclusion of family and community members increases the number of concepts available to be combined during the idea-generation stages of the model. It centers the knowledge and experience of participants in ways that might lead to conceptual combinations that are co-created and can be developed into emergent curricular approaches.

Curriculum Development and Instructional Design

The end goal of the 3-C process is the creation of curricular and instructional approaches that are novel and useful for practitioners in classrooms. Examining the literature on curriculum theory, curriculum development and/or instructional design is a daunting task. Diverse perspectives and contentious debate characterize the field (Van den Akker, 2003). This section will focus on both curriculum development and instructional design, both having distinct literature bases but informing the work in this project. Curriculum development has often dealt with discussions regarding what should be taught, while instructional design has focused on how it is taught (Petrina, 2007). This dissertation uses these simple definitions to focus on both the *what* and the *how* and also

adds in *who* should be, or could be teaching it. The section begins with a discussion of the early roots of curriculum and instructional design. It then provides a more focused examination of where creativity has, and does, fit into the process. It will close by examining the contributions to the field of Design-Based Research as it relates to curriculum and instructional design.

Generating emergent curricular approaches requires an examination of what exactly is being emerged from. Curriculum development is a highly debated and historically situated subject in education studies. From the advent of compulsory education, educators have sought methods and tools that would lead to student learning. The dominant model of curriculum development derives from the work of Tyler (2009) who argued for a linear model of curriculum development consisting of a four question rationale:

1. What educational purposes should the school seek to attain?
2. What educational experiences can be provided that are likely to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can we determine whether these purposes are being attained? (Tyler, 2009, p. 69)

Tyler's approach to curriculum development as a linear progression through these four questions relied on the earlier work of Franklin Bobbit (2009) who argued for a foundational approach to curriculum making that would prepare students for performance of socially structured activities. The focus of curriculum makers was to discover the skills and activities that students would need and then structure education around these predetermined ends. The Tyler rationale provided structure to Bobbit's approach and has

since served as a commonly accepted template for lesson planning and curricular development (John, 2006; Slattery, 2012).

The work of Bobbit and Tyler is often heralded as the beginning of the formal study of curriculum development (Hlebowitsh, 2009). Their theories informed the development of instructional approaches (notably, (Gagné, 1970) that focused on behaviorist principles of learning and instruction that started with explicit learning objectives and progressed through a series of learning approaches designed to meet them. Designing instruction became systematic and premised on a stage-based model.

> These stages included 1) the system level, comprised of the a) analysis of needs, goals and priorities and b) the analysis of resources, constraints and alternative delivery systems, and the determinations of scope and sequence of curriculum; 2) the course level, in which each course structure and sequence are determined course objectives analyzed; 3) the lesson level, wherein performance objectives are defined, lesson plans or "modules" are prepared, materials are developed and/or selected and students are assessed; and 4) the system level most broadly speaking, including attention to teacher preparation, formative evaluation, field testing, summative evaluation …and installation and diffusion. (Pinar, 1995 p. 167)

This highly behaviorist approach to instructional design placed assessment and evaluation at the core of the educational processes. Something that John (2006) recognized could "de-emphasize the elements of teaching and learning that are not endorsed by the assessment structure" (p. 485).

Further studies of the field began to challenge the strict instrumentalist approach to curriculum. The reconceptualization of the field, led by Pinar (1988) and others exposed the ties between the Tyler rationale and models of education focused on social efficiency.

> Reconceptualists, notably Pinar, believed that Tyler's rationale was the quintessential social efficiency achievement. Not much more than a management device designed to stifle teacher creativity and to close the discretionary space for teacher judgment in the classroom. (Hlebowitsh, 2009, p. 276)

Thus, the dominant approaches to curriculum development and instructional planning often served to squelch the creative potential of teachers. Scholars and educators of the time raised criticisms of the outcomes-based approach to education. Dewey (2013) levied a critique of outcome-based education describing it as a dehumanizing practice that placed the subject matter before the needs of the learner.

> Subdivide each topic into studies; each study into lessons; each lesson into specific facts and formulae. Let the child proceed step by step to master each one of these separate parts, and at last he will have covered the entire ground…Thus emphasis is put upon the logical subdivisions and consecutions of the subject-matter. Problems of instruction are problems of procuring texts giving logical parts and sequences, and of presenting these portions in class in a similar definite and graded way. Subject-matter furnishes the end and it determines the method. The child is simply the immature being who is to be matured; he is the superficial being who is to be deepened; his narrow experience which is to be widened. It is his to receive, to accept. His part is fulfilled when he is ductile and docile (Dewey, 2013/1902, p. 8).

In addition to dehumanizing the learner, the behaviorist approach to curriculum development often disconnected the learner from the community. Curriculum became something that could be instrumentalized in service of societal need, that need being determined by credentialed professionals often located outside of the communities where their work would be applied. Doll (2004) advocated for a more relational approach to

curriculum development. Focusing not on elements of competition and control, but rather on the rich cultural ecosystems that make up communities.

> Only now, in the past decade or so, are we beginning to develop a cosmic understanding and interrelational consciousness. The challenge of such recognition is twofold: on the one hand, to honor the localness of our perceptions and, on the other hand, to realize that our local perspectives integrate into a larger cultural, ecological, cosmic matrix. Our progress and our existence—as individuals, as communities, as a race, as a species, as a life form—depend on our ability to bring these two perspectives into complementary harmony. (Doll, 2004, p. 272)

Similar criticisms have surrounded more modern approaches to curriculum development and instructional planning (Baer & Garrett, 2010; Beghetto, 2013; Berliner, 2012). Teachers face the paradox mentioned in the opening chapter of this dissertation. They are often caught between a desire to generate creative learning and teaching opportunities and the dictates of outcome-based educational approaches that predetermine both objectives and methods. For Aoki (2005) teachers live and perform curriculum in the space between the curriculum-as-plan, often designed by administrators or outside curriculum developers, and the curriculum-as-lived. The space between is interpretive as teachers imagine, reform, and create the curriculum in ways that humanize the content for both themselves and their students. The space between the curriculum-as-plan and curriculum-as-lived is a creative space (Baer & Garrett, 2010; Beghetto, 2013; Beghetto & Kaufman, 2011) in which the interactions between teacher, student, and content combine to generate moments of novelty. However, this need not occur through happenstance. Beghetto & Kaufman (2011) and Sawyer (2011) offer that teaching for creativity can occur through the intentional creation and use of improvisational spaces.

While improvisation and the intentional recognition and use of creative micro-moments (Beghetto, 2013) provide one bridge between the planned curriculum and the lived curriculum, the 3-C process attempts to create a more purposeful and intentional planning space in which teachers might generate creative learning and teaching opportunities with the help of family and community members. Scott et al. (2005) demonstrated that creative potential of conceptual combination can be used to generate novel curriculum approaches. However, their study was conceptual in design. Their object of inquiry was not the viability or potential success of the designed curriculum. Rather, they were examining the extent to which people (acting as theoretical school administrators) could combine concepts from their experience to generate emergent curricular ideas. While Scott et al.'s work diverges from the 3-C project, it validates the methodological choice to examine the role of conceptual combination as a potential creativity-generating tool in curriculum and instructional design.

As argued in Chapter I, creativity is an often misunderstood and misapplied concept in classrooms. Teachers receive little formal training with regards to creativity studies and are often left to their own interpretations of what creativity looks like in their classrooms. The 3-C model provides a potential roadmap for understanding and interpreting creativity as it applies to the interpretation, development, and delivery of curriculum and instruction. Meyer & Land (2013) discuss the impact of "threshold concepts"

> A threshold concept can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress. As a consequence of comprehending a

> threshold concept there may thus be a transformed internal view of subject matter, subject landscape, or even worldview. This transformation may be sudden or it may be protracted over a considerable period of time, with the transition to understanding proving troublesome. (P. xv)

Threshold concepts are "pedagogically fertile" (Meyer & Land, 2005, p. 374) in that they create a conceptual foundation on which learning can grow. Could the 3-C model create access to such a portal through which teachers might change their understanding of both creativity and the affordances available within the community to create it? Would its intentional application as a curriculum development tool transform traditional approaches to classroom practice in ways that would help teachers bridge the divide between the curriculum-as-planned and curriculum-as-lived? Meyer and Land (2005) argue that the space between a transition from one conceptual understanding to another is a liminal space. The idea of liminality stems from anthropological studies of ritual rites of passage. Such rituals are transformative in that participants acquire new knowledge and new identities that can often be troubling or problematic and often result in participants oscillating between identities as they bridge the divide. If viewed as an educational ritual, the 3-C process might serve as such a transformative space as traditional identities of teachers, families, and community members are challenged, combined, and reconstituted toward a creative end.

This dissertation uses a design-based research (DBR) methodology. DBR represents an umbrella under which a series of research methods can be applied in ways that explore the connections between research and practice in real time across a series of iterations. Ann Brown and Allan Collins are often credited as the progenitors of DBR. Their early work sought to take literacy education out of the laboratory and place it in

naturalistic settings where the implementation of different theoretical principles could be observed and adjusted during the process (Peterson & Herrington, 2005; Reinking & Bradley, 2008). DBR methodologies begin with a framework that theorizes interactions between actors and content. The framework is then implemented with researchers often collaborating with practitioners to reflect on the process, make adjustments and re-implement for future iterations (Barab, 2006). This process is fundamentally different from more behaviorist approaches to curriculum and instructional design in that the theorized outcomes are treated tentatively as both the process and the product are units of analysis, and are treated as inseparable parts of an integrated system.

This approach to teaching and learning research has shown great promise for curriculum and instructional design. In fact, instructional interventions are often the focus of DBR projects. Reinking and Bradley (2008) define instructional interventions in three ways:

1) a single, well-defined instructional activity, usually implemented during a specific time in the school day,
2) a change in the physical or organizational environment of the classroom, or
3) a coherent collection of instructional activities aimed at accomplishing a specific instructional goal (p.100).

DBR is well suited for exploring the potential of educational innovations (Barab & Squire, 2004). Squire, MaKinster, Barnett, Luehmann, and Barab (2003) used DBR to examine the implementation of a technology driven, project-based science curriculum (called ActiveInk) across four classrooms. Their findings demonstrated the importance of classroom contexts during the interactions between teachers, technology, student understanding, and curricular content. They found that, regardless of classroom, teachers

found ways to interpret the curriculum and deliver it in ways that met the unique needs of their students and classrooms.

> It is entirely possible that as teachers use the ActiveInk curriculum over several instantiations, they might refine an approach (or approaches) that they find effective. However, the results of this study point equally to the possibility that locating and exploiting opportunities for driving questions and challenges is a dynamic process that will always be rooted in the particularities of a given learning context. Therefore, regardless of how well designed a curriculum is, good teachers will always transform the curriculum into one that is consistent with their personal pedagogical beliefs, classroom culture, and students' interests and past experiences; that is, every classroom environment is unique and it is the primary role of the teacher to locally contextualize curricular materials to support their students' learning (Squire et al., 2003, p. 486).

Due to the distance between the curriculum as it is often planned by outsiders and curriculum as it is interpreted and delivered in the classroom, teachers must adapt the curricular approaches as written in ways that take into account classroom culture, existing knowledge and experience of the students, and learning goals that exist outside of those expressed in the formal curriculum (Davis, Beyer, Forbes, & Stevens, 2011).

The theoretical foundations and main focus of many DBR projects is in innovating teaching and learning opportunities in classrooms. However, the link between design studies and creativity was also made by Tanggaard (2014) who used a case study of artistic product design to examine the sociocultural implications of the process and the outcomes of a creative task. She examined the process of an artist engaged in a project to re-design the artwork of a famous Danish artist. Doing this required an understanding of the historical context of the existing work and the creative process of interpreting and re-

creating it for use on modern products. Tanggaard's goal was to explain the socio-materiality of creative processes, or the way that a creator interacts with artifacts and environments in ways that generate both novelty and usefulness. In her findings she suggests

> …that creativity research is in fact *the study of the materialized coming into being of things*. Methodologically and theoretically this implies that the researcher should focus on the movements, relations, associations and re-associations constituting the creative process in the chosen area of interest. (Tanggaard, 2014 p.122 emphasis in original)

This approach to creativity research and specifically in studying the design of curricular and instructional approaches requires an ecological perspective that incorporates the actors, the artifacts, and the environment in which the creative process takes place. This becomes a natural meeting place for many of the concepts in this dissertation. Studying the creative potential of the 3-C process requires a holistic examination of teachers, family and community members, researchers, and students as they interact with each other, the content, and the environment of the classroom. It also requires an understanding of history, including theoretical antecedents of both creativity and curriculum development, and cultural and social inclusion and exclusion of family and community members with regard to participation in schools.

CHAPTER III

TESTING THE MODEL

This dissertation has the goal of testing and refining a model of curriculum development (i.e., the 3-C model) designed to include the knowledge and experience of family and community members. In order to accomplish this goal, I use a designed-based approach. As was previously discussed, DBR projects attempt to address a complex problem in a real context in collaboration with practitioners and community members (Brown, 1992; Collins, 1992; Herrington & Oliver, 2000). DBR projects start by developing a solution to the identified problem, testing and refining that solution, and reflecting on what design principles, refinements, and theoretical implications can be derived from engaging in the process. The goal of such projects is to develop insights and interventions that can be used to address similar problems in the future or in other contexts. In the case of this dissertation, I also hope to address the following three interrelated questions:

1. How does the 3-C process allow teachers and community members to collaboratively generate creative teaching and learning opportunities for their students?
2. What are the distinguishing features of this collaborative curricular process?
3. How does such a process impact teacher's interpretations of their role as interpreters, designers, and deliverers of curriculum?

The purpose of this chapter is to report on the initial implementation of the 3-C model. More specifically, this chapter reports on how, and in what context, the model was implemented. This initial implementation also serves to address the first research question of this study, *How does the 3-C process allow teachers and community members*

to collaboratively generate creative teaching and learning opportunities for their students?

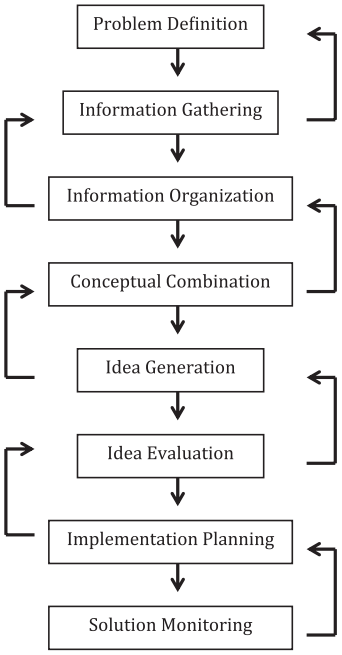
The chapter opens with the theoretical foundations of the model. It proceeds with a discussion of the procedure and data sources for testing the model. Next, I describe the context in which the model was implemented. Then, I describe how each phase of the model was implemented and the insights gleaned from that implementation. The chapter closes with a brief summary of those insights in relation to the first research question of this study. All names used throughout this dissertation are pseudonyms in order to protect the anonymity of the participants.

Influence of Previous Creative Process Models

As mentioned in Chapter II, contemporary creativity process models have expanded beyond the four-stage models of Wallas and Rhodes. One example is an eight-stage model described by Mumford, Medeiros, and Partlow (2012). The stages of that model are presented in Figure 2. The model represented in Figure 2 is based on three assumptions: (a) all creativity is based on knowledge and experience; (b) conceptual combination serves as the creativity engine; and (c) there is an evaluative stage in which ideas are assessed and crafted towards a practical use (Mumford et al., 2012). The second assumption -- conceptual combination serves as a main creativity generator -- is largely missing from the earlier four-stage models of creative development. The incubation phase, often understood as putting the problem aside while the subconscious continues to work is largely mysterious.

Figure 2

Stages of Mumford's (2012) Creative Process Model



The broad strokes ascribed by the four-stage model glossed over many of the sub-processes involved in creative development (Lubart, 2000). It also focuses on individual cognitive processes and in so doing, fails to examine how creativity works in groups as multiple knowledge bases and experiences provide a greater diversity of potential combinations.

Central to the 3-C model is a more collaborative process than what is typically represented in more individually or cognitively focused models. Although there are fewer models that explore the processes of group-generated creativity, several researchers have put forth theoretical models and concepts that inform the collaborative nature of the 3-C model.

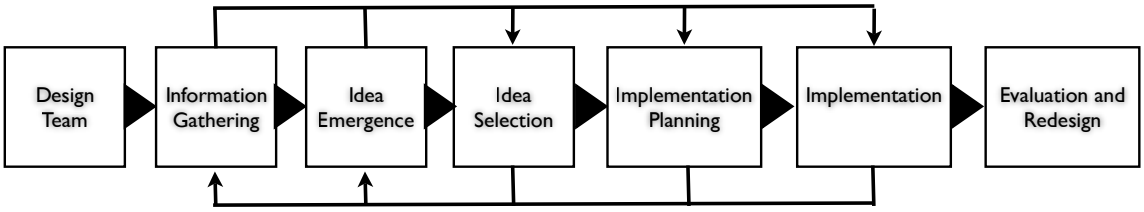
Introducing the 3-C Model

As discussed, the 3-C model is informed by long line of creative process models in the field of creativity studies. In particular, the 3-C model represents a modification of the eight stage models (Mumford et al., 2012) that typically describe the cognitive processes of creative thought and attempts to elaborate on those ideas to describe a model of collaborative emergence. This section explains the seven stages of the model and provides a theoretical grounding for each. The next section will provide an explanation of the process as it was implemented in a 5th grade classroom.

As shown in Figure 3, the model has seven stages. Those stages include: *Design team, Information gathering, Idea emergence, Idea selection, Implementation planning, Implementation and Evaluation* and *redesign*. Each stage will be discussed in the sections that follow.

Figure 3

Stages of the 3-C Model



Stage 1: Design Team Formation

The first stage of the process involves the creation of a diverse team of people tasked with generating and designing creative curriculum. In order to capture the existing knowledge and experience of the community surrounding a school, constructing the Design Team with local people with a concern in the school is imperative. The team

should be made up of the participating teacher (and in this case the researcher), parents and family members of students in the class, business owners and other members of the immediate community, and possible outsiders with unique contributions. Because everyone has both knowledge and experience, all members of the local school community are potential team members.

For the purposes of this research the team was limited to 8-10 participants. Limiting the group in this way allows for ease of scheduling and for research purposes, however, it is hypothesized that larger (and smaller) groups might use this process successfully. Family members can be recruited through the teacher by letter, or in person during pick up and drop off times before and after school. Community members can be recruited either through existing partnerships with the school or through more grassroots efforts at recruitment. Internet searches and mapping programs (like Google Maps) provide valuable information about the types of businesses and organizations that immediately surround the school.

As mentioned, diversity is a key component of group creativity exercises (Milliken, Bartel, & Kurtzberg, 2003; Nemeth & Nemeth-Brown, 2003; Theobald & Siskar, 2010). Diversity in this regard is multifaceted. Diversity of experience, knowledge, and expertise provides the most fertile ground for combined concepts. Cultural and linguistic diversity increase the potential for creating unique educational experiences that are relevant to the lived experiences of students in the class. Populating the Design Team to maximize facets of diversity broadens the scope of possible epistemological, cultural, and linguistic approaches in the classroom.

Stage 2: Information Gathering

The information gathering stage of the 3-C process is designed to establish the assets, limitations, and constraints that frame the potential for the creative curriculum. All communities have assets that contribute to the sociocultural health of its residents that can be activated specifically in support of children's education (Bartsch, 2010; Gruenewald, 2010; Gruenewald & Smith, 2008; Theobald & Siskar, 2010). A local focus on the assets of place can make education more relevant, closer to the community, and give students a role in community vitalization. A thorough list of physical, environmental, human, and institutional assets provide a starting place for an asset map that catalogs potential people, places, and spaces that can be used to generate creative ideas. Assets may include the professional and personal knowledge of the students, teachers, family, and community members of people engaged in the 3-C process. It might also include the physical space around the school including gardens, parks, local businesses, and access to transportation. Assets are also access to materials such as technology, supplies, and finances that can facilitate implementation of ideas.

The information gathering stage also establishes limitations and constraints of the classroom and community. For example, many urban schools lack green spaces to explore or play on. Other limitations include the diversity within the school and community that may limit the range of voices available to provide input, the time constraints of the school day, the pressure that testing places on educational innovations, and access to materials. The 3-C process works to counter some of these limitations in ways that serve the students and the community by creating a network of support that captures the social capital of a community and activates it in service of the classroom.

Working with the participating teacher, the Design Team will also establish the time and curricular constraints that the teacher is working with. Many school curricula are mandated and sometimes even scripted. While complete departure from such mandates is often impossible under current conditions, constraints can prove to be beneficial in generating creative ideas (Baer & Garrett, 2010; Stokes, 2010). Helping mainstream public school teachers generate creative curriculum requires recognition of current political, pedagogical, and curricular constraints under which they work. Thus, constraints may include the time available for a lesson or a unit, the educational outcomes, learning goals and standards that teachers are accountable to, the prior knowledge that students bring in to the classroom, the languages spoken by students in the room etc. It is important to note that constraints should not be framed negatively. Rather, they are the guiding forces that provide the space in which emergent practices can occur (Stokes, 2010).

Additionally, the information gathering stage includes the exploration of concepts available within the Design Team. This is accomplished using a questionnaire that probes Design Team members for information about what they do, or have done, professionally, what their hobbies and other interests are, what their favorite subjects in school were, what they liked to do when they were children, and who they know in the community that also might be willing to help in the classroom. This list of assets stimulates participants to think about their full range of skills, knowledge, and experiences, broadening the conception of what they might offer within the classroom.

Stage 3: Idea Generation

The idea generation stage is designed to collaboratively generate ideas that can be planned and implemented in the classroom. As mentioned in Stage 1, the Design Team is assembled with a purposeful eye towards a diverse set of knowledge and experiences that can work in combination to formulate emergent ideas. These knowledge bases and experiences serve as the foundational elements of the 3-C process. Additionally, the community asset map will provide further possibilities for concepts available to be combined. Thus, all assets, whether human, physical, or environmental become grist for the creative mill. The methods of combination will rely on a process that I developed called *Ideational Speed Dating* (ISD) (Breslow, 2011). In the 3-C model, ISD is an idea-generating activity in which members of the committee partner up in 5-minute "speed dates." Participants are asked to write down three things that they could teach right away if they were given a classroom full of students and an hour to teach. This question uncovers the areas of their deepest content knowledge in the context of what they would feel comfortable teaching. The second question asks participants what skills, hobbies, or interests they have that, with minimal to moderate planning, they would be able to teach. This list presents more concepts with variable levels of expertise but that could work given proper planning time. The third and fourth questions ask for favorite subjects to study in school and hobbies or interests that they had as children but may not do anymore. These questions reach into the past to uncover positive past experiences in education and in activities in the community. For example, a participant who danced for 15 years as a child, but who doesn't dance anymore, may be able to call on that knowledge during a speed date.

During the speed date itself, participants are asked to combine a concept off of their list with a concept from their partners. If, for example, one member of the team is a fire fighter and the other used to make finger puppets as a child, they may combine their concepts to form a class that teachers fire safety using finger puppets. The generated ideas are a combination of the content knowledge generated during the information gathering stage. Their ideas are recorded and reported to the group.

After the initial speed date, the members partner with someone else and repeat the process. The first two speed dates are done without constraints. Any concept can be combined with any other to generate a creative curricular idea. During the third and fourth speed dates, the teacher will introduce a subject area to focus on. For example, the teacher may have an upcoming lesson on Homer's The Odyssey. The group would then attempt to combine concepts from their lists in a manner that could lead to exploration of The Odyssey. Participants might combine experience in carpentry and a love of obstacle courses to build obstacle courses that recreate Odysseus' journey home from the Trojan War.

The 5-minute time limit constrains what is possible during the speed date. Participants are asked only to generate an initial idea and then provide a creative name for the class. The creative name serves as a sort of advertisement for their class. Creative names, such as Fire Puppets or Obstacle Odyssey are written on the board and then shared out with the whole group.

This activity attends to the recommendations set forth by Paulus and Brown (2003) for successful group brainstorming activities. All individuals are responsible for generating their share of ideas; there are high expectations for group performance; there

are both individual and group brainstorming aspects; group members have complementary and heterogeneous content knowledge; there are specific guidelines that frame the activity. Additionally, the contingent, improvised, and interactional design of the speed dating activity demonstrate the characteristics that Sawyer and DeZutter (2009) contend lead to collaborative emergence in group processes. ISD is a form of *possibility thinking* (Craft, 2011) a playful and collaborative form of interaction that leads to imaginative answers to difficult questions.

Stage 4: Idea Selection

In the idea selection stage of the process, the participating teacher, along with the Design Team select an idea for implementation from the brainstormed ideas of the prior stage. It is important here that the teacher be comfortable with the approach to be undertaken in their classroom. Multiple strategies may be used to select an idea. After the multitude of ideas is reduced to a few deemed most viable, the Design Team may engage in role plays, simulations and draft lesson plans to expand on proposed ideas. As these ideas come into focus, a final decision will be made using a consensus approach. Ideas that are not chosen will be recorded for possible later use. Additionally, the idea selection stage may require a return to the information gathering stage to make sure that the design of the chosen approach matches with the potential assets, limitations, and constraints of the classroom, school, and community.

Stage 5: Resource Development and Implementation Planning

In the resource development stage of the process, the community asset list is again activated to see who in the community may be willing or able to assist in the implementation of the plan. This stage relies on the accumulation and activation of community social capital. In this stage the lead researcher, in collaboration with the Design Team, attempts to amass the human, physical, economic, and environmental resources necessary for project implementation. This happens concurrently with implementation planning because the project may change as new information is gathered, new potential partners are revealed, and roadblocks are encountered.

The implementation planning stage includes planning sessions with collaborators to make curricular and pedagogical decisions about implementation. Key in this process will be the exploration of content knowledge, pedagogical approaches, and ways to support healthy collaboration.

Stage 6: Project Implementation

When resources are gathered and a plan is in place, the Participating Teacher will lead the project in the classroom. The contextual nature of the chosen idea limits the ability to discuss implementation in detail, however, a process for daily reflection is necessary as the experimental and improvisational nature of the project may require revisions as the project progresses. Sawyer (2011) calls for a balance of structure and improvisation for creative teaching. This requires the negotiation of the space created between the curriculum-as-planned and curriculum-as-lived (Aoki, 2005; Beghetto & Kaufman, 2011). Due to the collaborative nature of the 3-C process, the in-process

reflection of implementation should be equally collaborative. Led by the Participating Teacher and the Lead Researcher, a process will be developed based on the projected scope and sequence of the project and the lived experiences of all participants during implementation.

Stage 7: Evaluation

When the project is finished, it will be evaluated on a number of levels. Educational outcomes, based on previously established constraints, will demonstrate the extent to which the project served its academic goals. Qualitative interviews with community collaborators and participating teachers will provide data regarding how participants experienced the process from start to finish and make recommendations for future iterations of the class and of the process itself. Student artifacts and the classroom teacher's professional expertise will be used to assess the degree to which students met the learning goals of the chosen lesson.

Methodological Approach

The methodology used in this dissertation follows a designed-based approach to research (Collective, 2003). Designed-Based Research (DBR) represents a series of approaches (Barab & Squire, 2004; Herrington & Oliver, 2000) with various labels (e.g., design research, formative research, developmental research) and varying timescales (e.g., a dissertation study examining an initial iteration, a multi-year project going through multiple iterations of testing and improvement). Common to these approaches, however, is that they are iterative, collaborative, and aim to develop solutions to

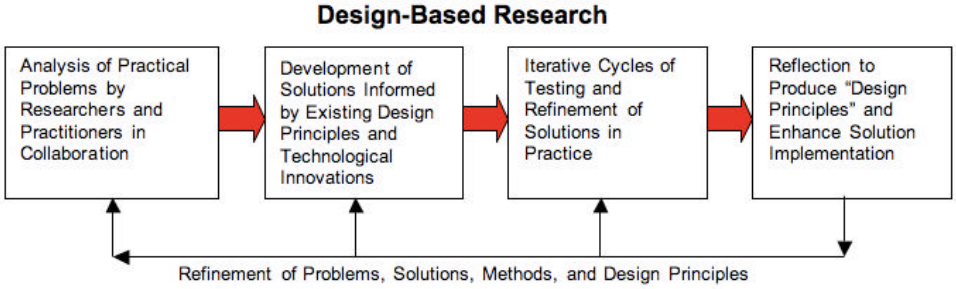
complex, practical problems (Brown, 1992; Collins, 1992; Herrington & Oliver, 2000; Reeves, 2006).

A design-based approach starts with a complex problem faced by practitioners (Figure 4). It then cycles through a process of developing a solution to that problem, testing and refining that solution, and reflecting on what design principles and refinements can be derived from engaging in the process that, in turn, can be used to address similar problems in the future or in other contexts. In the case of this dissertation, design-based principles were used to guide the development, testing, and refinement of the 3-C model.

Typically, design-based research cycles through several iterations of testing and refinement of a solution. The time scales of these iterations vary by project and context. In some cases, they can be relatively brief and in other cases they can span many years or even decades. Regardless of how many iterations are used for testing and refining a particular solution, all design-based research must start somewhere. This dissertation represents the initial testing and refinement of the 3-C model.

Figure 4

Stages of Design-Based Research (Herrington, McKenney, Reeves, & Oliver, 2007)



DBR employs multiple methods to gather and analyze data. Wood and Bilsborow (2014) used a mixed-methods approach to examine implementation of a creative problem-solving framework in an undergraduate classroom. Buell (2011) used a case study methodology to investigate the iterative implementation of an innovative science curriculum. Squire et al. (2003) used a multi-case study to examine the differences in implementation of an innovative science curriculum across four sites. Thus, the methodological dexterity of DBR allows for a theoretical and empirical approach that utilizes a variety of data points to analyze complex learning environments in naturalistic settings.

The complex nature of the 3-C process will undoubtedly yield a variety of data. Primary data sources include audio and video recordings of all meetings and interactions. In order to capture both small and large group discussions, we will use versatile video cameras that can be mounted on participants' heads. Gopro cameras allowed for a more dynamic experience designed to capture interactions both visually and audibly (Kindt, 2011). Glaveanu (2014) also recognized the impact that body-mounted cameras could have for creativity research. By placing cameras on individual creators, researchers can observe and record the moment-to-moment iterations with other actors and artifacts that lead to the formation of creative ideas. Other data sources include the packets developed to facilitate the first Design Team meeting, student work samples from the implemented lesson observations, and pre and post participant interviews with the classroom teacher and other participants.

As is characteristic of all design-based projects, this dissertation will focus on addressing a complex problem in a real context in collaboration with practitioners and

community members (Brown, 1992; Collins, 1992; Herrington & Oliver, 2000). Specifically, this dissertation aims to address the problem of teachers planning, designing, and delivering creative lessons. The model will be tested in the real context of a 5th grade teacher's planning of a lesson on fractions.

Role of the Researcher

Design-Based Research is an applied methodological approach that requires collaboration between the researcher and practitioners. This places the researcher in a precarious position as someone intimately involved with the implementation and responsible for extracting theoretical and practical implications. This places added responsibility on the researcher as a *participant-observer* (Yin, 2003) to engage in reflexive practice that can both capitalize on and mitigate researcher bias. As the researcher, I was placed in the position of both collaborator and investigator. I had developed the 3-C process based on my history with community organizing in educational settings, and years of research in the field of creativity studies. I have not been a licensed teacher however, so the process of generating curricular approaches that could meet the unique needs of the classroom teacher and the inclusion of community members as holders of important knowledge and experience allowed our shared expertise to co-construct the process in ways that may have been difficult for any of us on our own.

Participant-observation can provide many benefits within a design-based study. It gives the researcher first hand experience with the project. As mentioned, the purpose of the research is to introduce and empirically refine a framework that I had developed. Actively participating in the implementation of the process provided both access and

rigor to the process that would have been more difficult if I had written a protocol for implementation and then asked a teacher to implement it on his or her own. Participation allowed me to manipulate the process in action. The implementation of the project occurred in stages across time and active participation allowed me to collaboratively adjust the process in response to findings from prior stages.

However, participant-observation carries with it certain risks. Yin (2003) recognized four major risks to participant-observation.

> First, the investigator has less ability to work as an external observer and may, at times, have to assume positions or advocacy roles contrary to the interests of good social science practice. Second, the participant-observer is likely to follow a commonly known phenomenon and become a supporter of the group or organization being studied, if such support did not already exist. Third, the participant role may simply require too much attention relative to the observer role. Thus, the participant-observer may not have sufficient time to take notes or to raise questions about events from different perspectives, as a good observer might. Fourth, if the organization or social-group being studied is physically dispersed, the participant-observer may find it difficult to be in the right place at the right time, either to participate or to observe important events. (p.112-113)

Mitigating these risks required a number of analytical tools and methodological approaches. All of the interactions between participants and between participants and me were either audio or video recorded to allow for observation and analysis after the collaborative meetings. During certain processes in which partners generated ideas together, head-mounted cameras allowed for the recording of the dialogues. These recordings could then be coded for themes and triangulated using post-implementation interviews with participants and member checking to ensure accuracy (Creswell, 2009).

Model Testing Procedure & Data Sources

The 3-C model was tested by means of implementing it the lesson planning process of a 5th grade teacher. The duration of the implementation lasted a total of three months starting in late February and continuing through June. During that time frame, I collected data six times using a variety of methods. I conducted an initial observation of the classroom in April 2014. Data sources included field notes that were used to create a description of the school, the teacher, and the classroom culture. I conducted two interviews with the classroom teacher, Ms. Szenes, before implementation and after implementation of the project and one post-implementation interview with the participating parent, Paul. Those interviews were recorded and transcribed. The Design Team meeting occurred in April. Data from that meeting included head mounted video recordings, audio recordings, observations and documents. All of the video and audio recordings were again transcribed for analysis. I independently coded each of the transcripts of the speed dates using *process coding*, a grounded approach using gerunds such as *finding commonality,* and *showing interest* (Saldana, 2009). Second and third iterations of the coding led to the creation of themes. Detailed coding sheets with definitions are provided in Appendix A. I then shared these coding definitions with colleagues and had them independently code the transcripts. All discrepancies were reconciled through discussion that sought consensus. For the section on implementation planning, I used a hypothesis coding approach (Appendix B). Hypothesis coding is useful when a researcher is applying predetermined codes to assess ideas based on initial hypotheses. I developed codes and definitions based on the stages of the model to view how they interacted during discussion to generate emergent ideas. These coding schemes

were also shared with colleagues and reconciled through consensus. Within this chapter I draw on those various data sources to report on the implementation of the 3-C model.

Context

The 3-C framework is a highly contextual process designed to activate the human, social, and cultural capital in and around a school. The following section begins with a deep description of the school and the community where it is located. It then explores the qualities of the participating teacher and the culture of her classroom. The section closes with an explanation of the potential implications of contextual influences on the 3-C process.

The School

Carver Elementary School is located in a suburban city of about 140,000 people. It is part of a residential neighborhood situated mere blocks from a large state university. The school was established in 1926 and is one of the oldest schools in the city. The brick facade stretches the length of a city block and faces a residential neighborhood with moderately sized houses. A small hill rises from the western side of the school with large houses, a bed and breakfast, and fraternity and sorority houses from the university. The neighborhood has historically housed families that are involved in the university, whether they are professors, administrators, or other support staff. Thus, it is a relatively affluent and well-educated community. There are a number of pockets of small, local businesses that surround the neighborhood including restaurants, an organic grocery store, and a small bookstore.

During the 2012-13 school year there were 355 students enrolled. According to the school's report card, less than 5% of the students are English Language Learners,

28% are economically disadvantaged, and 13% are students with disabilities. Racial demographics are as follows: 75% White, 8% Multi-Racial, 8% Asian, 7% Latino, 1% African American, and 1% American Indian/Alaskan Native. Nine different languages are spoken at the school. The school report card also states that Carver falls into the top 10% of all schools statewide in 2012-13 based on standardized test data and is above average compared to schools with similar student demographics based on the same metrics during the same time period.

Carver was chosen as a site for this research due to relationships that I had with the Principal and a 5th grade teacher at the school. The principal had recently taken over the administration of the school after several successful years running an alternative high school in a neighboring town. At the high school, he had implemented a number of innovative educational approaches that focused on project and problem-based learning. The 5th grade teacher is also a recent transfer, moving from a bilingual Spanish immersion elementary school where she had implemented a program with her students focused on critical thinking, equity, and social justice. Additionally, the teacher is a Ph.D. student in my program. We have spent time together discussing education and innovation for much of the last five years. Both the principal and the teacher have proven themselves receptive to innovative and creative approaches to education.

The Teacher

Ms. Szenes, the participating teacher, has been a teacher for 15 years. She entered the profession after many years working in the healthcare field. When asked about her teaching style, Ms. Szenes responded,

> I would say it is non-dominant…so I like to watch ideas pile on top of each other and play on top of each other and then see where kids go with that and follow that. So I'm not very good with following curriculum that goes here, and we need to follow it that way. Because if the kids take this curriculum and they tease it apart that's where I want to follow their ideas and go with it. *(Pre-implementation interview, Ms. Szenes, March 22, 2014)*

Her student-centered approach and collaborative focus is demonstrated and reinforced by a poem she has her students memorize at the beginning of each school year. The poem derives from Mayan culture and is used by other educators (notably, Curtis Acosta and Luiz Valdez) to begin class. Titled *In Lak'ech* the poem states,

> *Tú eres mi otro yo.*
> You are my other me.
> *Si te hago daño a ti,*
> If I do harm to you,
> *Me hago daño a mi mismo.*
> I do harm to myself.
> *Si te amo y respeto,*
> If I love and respect you,
> *Me amo y respeto yo.*
> I love and respect myself. *(Pre-implementation interview, Ms. Szenes, March 22, 2014)*

Ms. Szenes explains the role of In Lak'ech in the formation of her educational philosophy, a role that includes the way she physically constructs learning in her classroom,

> Well, what you're going to see if you walked into my classroom won't be what you see if you walk into my teaching partner's classroom. I have round tables first of all. The kids aren't sitting at their own desk they're around tables. See, you have to share that space to begin with. So first, it's that shared space it makes it a

> lot noisier in my classroom. My classroom isn't going to be as quiet as other classrooms, it's not going to look as studious, classically studious. So first, why are there round tables? We start the conversation by asking why are there round tables? Why don't we have desks? "You don't want us sticking things into the desk." [say the students]. Well, that's a possibility.
>
> We start the conversation by saying knowledge is co-constructed. Knowledge doesn't exist outside of people creating it, as far as I am concerned, so you are going to be talking with each other about ideas. There'll be times when you need to work on your own, but a lot of time you going to need to talk to each other about these ideas. So it starts out there. (*Pre-implementation interview, Ms. Szenes, March 22, 2014)*

The physical and philosophical approach to teaching and learning in the classroom is based on a critical thinking approach that asks students to co-create educational opportunities with the teacher and with each other. In my initial observations of her classroom (April 1, 2014), I observed this approach in action. On the day of my observation, the students were working on posters that described various amendments of the Bill of Rights. Students worked individually or in pairs to generate graphic representations and interpretations of the Bill of Rights that demonstrated both historical and contemporary understanding of the role that the first ten amendments have played in American history. Students were sitting at round tables engaged in conversation. The noise from their conversations was only halted by the ringing of a Tibetan bowl that Ms. Szenes used to capture their attention in order to make class-wide announcements, to highlight unique contributions or interesting questions from students, or to offer suggestions or clarifications. These interruptions were often short and purposeful, offering only enough information to contribute to the work students were doing in their

small groups. Students would get up from their tables and move around the classroom freely, often to gather supplies for the projects they are working on. Their posters were part of a larger project that Ms. Szenes was planning in collaboration with a University professor who has done work on democratic classrooms.

The governance structure of the school gives teachers freedom to experiment and Ms. Szenes has a history of forming content standards to her instruction and not the opposite. Thus, the academic and cultural constraints that are faced in one school may be starkly different in another. For example, a teacher in probationary status at a failing school who is being evaluated mainly on his ability to raise his students' test scores may be much more hesitant to veer from school sanctioned curriculum. Ms. Szenes related her experience in the context of stringent school requirements

> Jay: What you're saying I think, is this idea of not sitting well into a lesson plan is running headlong into the way education has been structured for most of the last 30 years. And even before that. As we've become more and more accountability based and standards-based, How, as a teacher, do you negotiate the space in between what's expected of you over here and what you're teaching style is?
>
> Ms. Szenes: I had a really great principle for a number of years who said, "If you want to pull that shit off, you better be able to justify it." I don't care what you do, the whole PBS stuff, I wouldn't do. And he said, "I know you don't do it but just be quiet about it and justify what you can do." And the woman who would do PBS for the whole District would come into my room and she would back up what I did because it worked. So what I could do is I could say, "I agree with PBS that I want kids to be heard. I don't agree with filling out cards. And I don't agree with giving green slips and red slips. I agree with positive reinforcement and listening to stories and paying attention to what I see on the kids' face. I didn't

learn that in school I learned that from my sons, but it works. I've now learned that I can align all of that stuff to Common Core standards. I could find Oregon standards if you went through them and play with the words enough. I could say, "this aligns to the standard and so this is what I'm doing." And that's how I get by doing what I do.

Jay: So the standards as they are written are broad enough to allow you to, manipulate is a strong word but I think that's what you're saying.

Ms. Szenes: Oh it's absolutely manipulating. I don't believe in the Common Core standards, the state standards were worse, they were more specific. Even then you could twist it. You could take stuff and bend it. You could stretch it and apply it. It takes some time to do that but after enough years you can do it. My management style has been under assault before. My teaching style has been under assault before. *(Pre-implementation interview, Ms. Szenes, March 22, 2014)*

Ms. Szenes' orientation to the standards indicated that she paid attention to them insofar as she could use them to insulate herself from her lack of fidelity to mandated educational approaches from school officials.

Implications of Contextual Factors

Carver Elementary is in the top ten percent of schools with similar demographics in the state based on standardized test scores. The principal of Carver has a history of using creative educational approaches to engage students and Ms. Szenes is a creative and collaborative teacher with a history of engaging and critical lessons that she implements in spite of calls for more standards based approaches to education. Additionally, the classroom culture that she has established is based on students'

exploration of class content and the critical and collaborative approach outlined in the description of the school and classroom. All of these conditions come together to form an environment rich for an exploratory and experimental process like 3-C.

Phases of the 3–C Model

3-C process was implemented from February to June 2014 in the 5th grade classroom of Ms. Szenes at Carver Elementary School. I introduced the model to her and we worked collaboratively to strategize how we might implement the model in her teaching. In what follows, I discuss each of the seven stages of implementing the 3-C process. Data gathered from each phase varied according to the specific activities of each phase and include: participant interviews, video and audio recordings, observations, and documents.

Stage 1: Design Team Formation

The first stage of the 3-C framework involves the assembling of a Design Team made up of a diverse set of people to help the teacher generate creative curriculum ideas. As mentioned in Chapter II, assembling a diverse set of knowledge and experiences is vital to the group creative process (Milliken et al., 2003). Initial attempts to recruit participants focused on the community around Carver Elementary, and specifically the assets that existed within Ms. Szenes' classroom. After consulting with Ms. Szenes, an announcement went out to all family members of children in the classroom seeking their participation. The announcement spoke to the purpose of the project and outlined a

preliminary schedule for participation. Unfortunately the recruitment letter received no response.

Next, I began to actively recruit parents during the time when they were picking their children up from school. In these personal conversations I was better able to inform parents about the project and what their participation would entail. This personal approach was more successful and led to the recruitment of three parents onto the Design Team.

Additionally, I wanted to recruit community members from the surrounding areas that would be willing to participate. I started by using Google Maps to view the local businesses in the immediate vicinity of the school. Google Maps allows viewers to see even home-based businesses that may not have a visible storefront, or much signage. One such business was an architectural firm run out of the garage of the owner. I called the firm and informed them over the phone about the project. They invited me to come in and meet with them to discuss further details. After this meeting, the owner of the firm agreed to participate.

Recruitment of Design Team members also occurred in a more serendipitous fashion. One participant (who was a grassroots community organizer), for example, was someone I met after a presentation I gave at the University. He participated in a truncated version of the ISD and came up after the presentation to talk to me about our experiences in community organizing. His interest in the ISD process and his work organizing in the community led to an invitation for him to participate in a more formal iteration of ISD.

Ideally, other educators would be invited to participate in the Design Team to help take the various ideas and help turn them into something that would work in a classroom. In this case, Ms. Szenes partner teacher (she taught the other 5th grade class) was invited to participate, but declined. Given the importance of including other educators, I recruited other teachers. A local middle school social studies teacher expressed interest in participating, as did a professor from the local university. The last member of our team was also included serendipitously. I had recruited her to come and provide childcare for the first meeting in case any of the participants needed it. When no children were present, she participated as an active member of the Design Team.

Thus, the Design Team was made up of three parents, four education professionals (including the participating teacher and me) and three community members. Six of the members were male and 4 female. Eight of the participants were white and two were people of color and 2 had immigrated to the United States from other countries. Building the Design Team in this way led to a number of insights. Active recruitment done in person was far more successful than passive recruitment through letters, emails, or social media. Parents were far more receptive to the project when they were approached directly and appealed to in person.

As mentioned in Chapter II, parents and community members are often only asked to participate in schools insofar as it serves the needs of the school's goals. Parents and community members serve in traditional roles of donating goods or services, monitoring students as chaperones, coordinating extracurricular experiences, or serving school fundraising efforts. One of the strengths of the 3-C framework is the inclusion of families and community members in more complex ways that capture their unique funds

of knowledge. Conversations with families and community members focused on the idea that I was not asking them to donate anything other than their time and their knowledge. I asked them to bring their ideas and experiences into an environment where they would be combined with those of others in order to generate more creative lessons for the children in their local school. This approach to recruitment was incredibly successful. Nearly all of the people who received this recruiting strategy agreed to participate. As mentioned in Chapter II, *expansive engagement* refers to teachers and administrators recognizing the leadership and collaborative potential that exist within their communities and actively developing opportunities to involve families and students in collaborative projects. Paul, one of the parent members of the Design Team echoes this idea when he spoke about his prior involvement in his children's classrooms,

> In the school? I have, over 6 years, since Lou was a kindergartner and all the way up through, I have volunteered as a chaperone for field trips, reading volunteering a couple years back, working with kids on doing reading, that's about the extent of it I guess. Little stuff here and there. *(Post-implementation interview, Paul, June 2, 2014)*

He later relates that he chooses specific opportunities to volunteer when he might have something important to contribute.

> I have always enjoyed going on field trips because the ones that I tend to volunteer for are ones where I have something to offer, you know, given my background in natural resources and wetlands and plants and conservation work and so, you know, I have always enjoyed piping up when something interesting is…when there is a teachable moment for kids. *(Post-implementation interview, Paul, June 2, 2014)*

The potential for the 3-C model as a viable tool to use in classrooms is embodied in this statement from Paul. He is an actively engaged parent whose participation in his children's classrooms has been limited to chaperoning and volunteering for reading groups. Both of these are activities that fit predetermined needs of the school. He recognizes and enjoys opportunities to share his expertise with students. Schools and teachers have the ability to recruit parents for deeper and more meaningful participation but it requires a reorganization of priorities and a strategy for gathering information, planning and implementation.

Stage 2: Information Gathering

As explained in Chapter II the information gathering stage of the process is designed to establish the assets, limitations and constraints that exist in the targeted communities. The 3-C process is predicated on the combination of knowledge and experience that exists within a classroom community. In this regard, "classroom community" has a purposefully broad definition. The classroom begins with the students, teachers, and other educational professionals that interact within a classroom. It then extends out through circles of reciprocity, a term that Shirley (1997) uses to speak to the social capital that surrounds everyone. Each person in the immediate classroom community is connected to others through familial, social, athletic, religious, technological, and community links. The following section begins by specifying the problem to be creatively solved then cataloguing the assets, limitations, and constraints that support, guide, and structure the work.

Problem Specificity. All models of creativity development (both individual and group) contain a problem posing/definition stage. For the purposes of this research the underlying problem is already defined. The 3-C model starts from an assumption of three problems: First, the narrow scope of curricular design and pedagogical practice does not lead to creative teaching or creative learning. Second, teachers generally do not have the time or the training to develop creative teaching practices on their own. Third, families and community members are excluded from daily curricular and pedagogical decisions in the classroom. From this premise, the model engages in practices designed to solve these problems. During its practical application the problem posing stage requires more specificity. The group is not just coming together to solve these problems generally. The teacher must propose a problem that they face in their classroom that requires a creative solution. Ms. Szenes offered the following,

> Fractions. Kids notoriously are absolutely petrified by the "f" word. As I was telling Jay, fracking scares me and fractions scare them. I've thought of all different ways of teaching it and I haven't come up with a way that, for the kids who still have their walls up, for it to go around the side and really get them excited about it. So, I want to work on fractions. How do we help kids have fun with parts to wholes and pieces of things and what those pieces do, those kinds of things. *(Design Team meeting, April 21, 2014)*

Assets. The first step in information gathering is to envision the assets and possible reciprocal relationships that can be activated within the classroom. The structure of the Design Team is based on this idea. All of the people on the Design Team had links to the classroom community, either directly (e.g. the participating teacher and parents with children in the classroom) or indirectly (e.g. members of the surrounding

community, or participants recruited by the researcher for more diversity). At the beginning of the meeting all participants were given a packet (Appendix C). The packet included pages designed to structure the exploration of personal assets including personal knowledge and experience and community connections. The initial stages of the first Design Team meeting asked participants to begin to think about the unique assets that they brought into the space. The personal asset list included questions such as:

1. What do you do and/or what have you done professionally?
2. What other skills/hobbies/activities do you have expertise in?
3. What are some other activities that you enjoy (but are not necessarily an expert)?
4. What were your favorite things to do as a kid?

From this premise, information can be gathered that seeks answers to each of these problems in the context of helping Ms. Szenes teach fractions.

The purpose of this line of questions was to prime participants to think about the variety of skills and experiences they brought with them into the room. However, all individuals are the collection of knowledge and skills across a lifetime. As Paul mentioned in the prior quote he liked being a part of experiences where he had something to offer. What someone has to offer can be an extensive list of knowledge and experiences. Table 1 is a list of all of the answers to the personal asset questions.

Table 1

List of personal assets

	Professional	Expertise	Interest	History
Sissy (Community Member)	Hair dresser/ barber Sales rep Sushi roller	Bodybuilding Make-up artist Server Art	Furniture refinishing Painting Interior Design	Drawing Fishing
Ari (Community member/local business owner)	Designing buildings, graphics, costumes and landscape Constructing homes, furniture, yard structures	Farming/ gardening Running Outdoors	Hiking/Camping Climbing trees & rocks Singing/ performing	Reading Eating Crafting Singing in a group Camping Traveling
Malik (Community Member/organizer/activist)	Cultural Synergy Youth Empowerment Drum Circle Facilitator Spoken Word Performing arts	Drumming Dancing Group facilitation Chanting Observing	Singing Drawing Poetry	Playing in the woods Performing Football Making music
Jay (Lead researcher)	Teacher Community organizer Whitewater rafting guide	Boxing Soccer player/coach	Sculpting Woodworking Puppet making Salsa Dancing	Baseball Woodworking
Steve (Classroom parent)	Fiction writer Real estate Prison Work	Basketball Frisbee Running Men's work	Movies Music General father stuff	Hang out in the streets of NYC/Bronx

Sam (University professor)	Internal Auditor Management Auditor Educator/faculty	Coaching track and field Showing Dogs Art	Landscaping and gardening	Running and field hockey
Paul (Classroom Parent)	Conservation real estate Environmental education Landscape Architecture	Canoeing/ fishing Plant/bird watching Coaching Lacrosse Technical writing	Painting Cooking Furniture making Creative writing	Being in the woods General mischief Making stuff Playing games
Nancy (Classroom Parent)	Registered dietician Research assistant	Running Cooking Fitness	Gardening	Biking Playing outside Cooking
Daisy (Middle school teacher)	Teacher Baker Waitress/cook Faucet factory worker Office work	Crafting Knitting Crocheting Sewing Embroidery Planning theme parties	Freshwater Swimming Making cupcakes that don't look like food, algebra	Fiction writing Dungeons and dragons Tree climbing
Ms. Szenes (Participating teacher)	Modern dancer Teacher Day Trader Structural intergration Therapist Day Care/art instructor Mom	Literature/ poetry Sewing Mediation Health	Gardening Drawing/ sketching Hiking Cooking	Tree Climbing Art Sculpture Singing Negotiating

Participants offered well over 100 unique skills, interests and knowledge bases that represent potential concepts to be combined during the idea generation stage.

The second information gathering activity involved making lists of people that Design Team members knew personally that might be willing to help out with a project if they were asked. This was also a page in the packet that placed the participant at the center of a diagram and asked them to identify up to four people who they knew who are creative or have interesting and potentially useful knowledge. Table 2 represents the information gathered during this stage with 46 people and 77 concepts listed.

Table 2
List of known community assets

Friend's name	Skill(s)
Dahlia	Singing
Marie	Math, Gardening, Explaining
Leslie	Beading, thinking
Babs	Parenting, crafting, computers
Bob	Counseling
Ritchie	Musician, Lyricist, Performer

Louise	Activist, Writer, Musician
Claire	Writer, Performer, Counselor, Energizer [motivator]
Mason	Visionary, Teacher
Barney	Builder, Artist
Terry	Gardening, Landscape
Susie	Salsa Instructor
Max	Pilot
Joe	Alligator Farming
Ben	Baking, Art, Picture Framing
Brian	Welding, Cooking Drawing
Matthew	Farming, Sustainability, Building community
Harry	Medicine, Cooking, Woodworking, Glass blowing
Julia	Master Gardener, Spirit Worker

Bill	Muscles, Anatomy, Music
Malachai	Environment, Impacting public perception, Grant research
Dirk	Math, Community productivity
Revac	Writing, Games

These first stages of the information-gathering phase represent an attempt to illuminate the social capital held by Design Team participants.

Helping teachers reconceptualize themselves and their role as actors within both bonding and bridging networks (Portes & Mooney, 2002) can be a useful tool in changing the relationship between classrooms and communities toward a more actively engaged partnership. This echoes Shirley's (1997) call for the cultivation and activation of social capital within the school.

Using the personal and community asset lists generated during the information gathering stage establishes networks of connections that participants can call on to activate social capital within the classroom. This network is based on reciprocal relationships and relies on the assumption that people are willing to help if they are asked and if they are able to use their expertise in valuable ways. This highlights the difference between passive participation and active engagement in the schools. Many community members are willing to help in schools, however they may not be willing to help if the help needed does not fit within their expertise or skill level. For example, a local

mechanic may not be willing to help organize a field trip or a fundraiser, however, if they are asked to help students understand the physics of motion, or to explain the intricacies of combustion engines, they may be more willing to share that expertise. From this premise, all members of a community become potential assets within the process.

The next level of asset development involves looking at the community and seeing the physical and social assets that exist in and around the community. Based on the research done online and by driving and walking around the Carver community, I compiled a list of local businesses who were contacted in person, informed about the 3-C process, and asked if they might be willing to participate. Some of the businesses included a bicycle shop, a bakery, an organic grocery store, a florist, a coffee shop, and a comic book/fantasy gaming store. As will be demonstrated in future stages, this pre-existing list of potential partners became integral in the implementation planning and implementation stages of the process. In the Design Team stage of the process, the use of Google Maps to find Design Team members was highlighted. Not all people contacted using Google Maps were willing to participate as members of the Design Team. However, many were willing to provide goods and services that would support the process.

Physical assets also become important in that spaces near schools (such as parks, rivers, trees, and other natural resources can be used in a variety of ways to generate emergent curricular ideas. Carver Elementary, like many elementary schools, has a large grassy area for the children to play. There was an existing community garden. There were a variety of play structures, basketball courts, and paved areas on the school property. In the immediate vicinity of the school existed three parks. Two parks were relatively small

(the size of a city block) and the other was large (encompassing many acres). A large university was located within blocks of the school as was a small Christian liberal arts college. Many religious organizations were close including churches, a synagogue, and a Quaker meeting house.

Each of these spaces, organizations, and individuals, when placed within the network of the school community, become potential assets. However, assets need to be developed and relationships need to be built prior to requests for service. Social capital is based on systems of reciprocity (Portes, 1998). Thus, schools need to develop and become a part of the network they wish to engage in, and offer something in return. The development of the community networks requires people to access and facilitate the relationships prior to needing them. In order to address this need, I visited a number of local businesses prior to the Design Team meeting to introduce himself and the project. During the visits, I would introduce myself and let them know about the project I was working on. I would tell them that I was not asking for anything specifically at that time. Rather, I was introducing myself in the case that we thought about a way they could help and asking if they would be willing to be asked for something in the future. In this way, a relationship (albeit a brief one) is established that can be called on later for support.

Limitations. As mentioned in the section on the school description, one of the main limitations for this project was the racial and ethnic diversity of the students and families at Carver. The school, and its teaching staff, are predominantly white and middle to upper middle class. While there were other forms of diversity present, such as diversity of knowledge and experience, many of the potential participants in both the school and

the community shared a common racial and ethnic makeup. In order to address this issue with the Design Team, I reached out to colleagues and acquaintances of color that were willing to participate.

Another major limitation for this project was the timeline. The initial Design Team meeting was held in April, leaving a short amount of school days left to initiate and follow through on a new, experimental curricular approach. This was complicated by the inclusion of various professionals on the Design Team. Special care had to be taken to ensure participation. For example, in recruiting family members to participate, it may have been necessary to include childcare during Design Team meetings. Ultimately it was not necessary and our childcare provider participated as a member of the Design Team.

Scheduling meetings with multiple busy community members with sufficient time to properly plan for project implementation proved to be a major limitation of the process.

Constraints. Constraints provide the professional, curricular, financial, and pedagogical boundaries that frame the possibility of the 3-C process. Constraints may include the learning goals as dictated by external standards, the personal parameters set by the teacher based on identified need, availability of funds, prior knowledge of the students, available materials and resources, etc.

Ms. Szenes orientation to the standards indicated that she paid attention to them insofar as she could use them to insulate herself from her lack of fidelity to mandated educational approaches from school officials. For the purposes of 3-C, this orientation led

to a loose collection of constraints. While we paid attention to the 5th grade standards for fractions, they were not at the forefront of our discussions nor our planning. With just a cursory examination of the Common Core Standards, we felt confident that ideas generated in the next phase of the process could be justified by a number of the standards.

Other elements constrained our efforts. Most notably was the timing of the implementation for the process. The initial Design Team meeting was put off until after State Testing. Once testing was completed, students were also working on two other major projects. The first was a Bill of Rights project done in conjunction with a University professor. The second was the school's annual Ocean Week, an interdisciplinary, weeklong exploration of oceans including a field trip to the coast. Planning and implementing the project placed a notable amount of stress for the teacher.

A generous research award from the university allowed for the availability of funding to cover some expenses related to implementation. I applied for and received an $1800 dissertation research award. That money was spent on the video cameras, food for Design Team and planning meetings, and money for resources and supplies for program implementation.

Stage 3: Idea Generation

Ideational Speed Dating (ISD) is a group process designed to capture the knowledge and experience of participants and combine them with other knowledge and experiences to generate emergent curricular and pedagogical approaches in the classroom. In the 3-C process, ISD is used as the main tool for idea generation. After priming the 10 participants during the information gathering stage with the spectrum of

their collected experience, participants are asked to make another list. This list consists of answers to 4 prompts:

> 1) Please write down 3 things that you could walk into this class and teach (or help teach) right now.
> 2) Please write down three things that you could teach (or help teach) if you had some time to prepare.
> 3) Please write down your 3 favorite subjects to study in school.
> 4) Please write down some things you liked to do as a kid but don't do anymore.

Table 3 shows an example from 3 of the participants. The numbers correspond to participants 1-3 in the personal assets table from the previous section. The prompts are designed to capture levels of content knowledge and expertise. The first two prompts demonstrate the highest levels of content knowledge, or things that the team members would feel most comfortable teaching in a classroom. The third prompt asks for broader content knowledge in academic subject areas and the fourth asks for general interests and experiences from childhood.

Table 3

Examples of Ideational Speed Dating concept lists.

	Sissy	Ari	Malik
1) Please write down 3 things that you could walk into this class and teach (or help teach) right now.	1. Basic Haircuts 2. Basic drawing 3. Kombucha Brewing	1. Design a house 2. Build a simple toy 3. Very basic Hebrew language	1. Drumming 2. Biology 3. Psychology 4. Politics 5. Conceptual Drawing

2) Please write down three things that you could teach (or help teach) if you had some time to prepare.	1.Painting 2.Pottery 3.P.E.	1. Gardening work 2. Basic Jewelry 3. Build a shed/fort	1. Mysticism 2. Producing Music 3. Jewelry making
3) Please write down your 3 favorite subjects to study in school.	1.Art 2.Astronomy 3.French	1. Math/physics 2. Art-painting, clay 3. Literature 4. Geography	1. Psychology 2. Systems Theory 3. Spirituality
4) Please write down some things you liked to do as a kid but don't do anymore.	1. Dancing 2. Theater	1. Ceramics-pottery 2. Community singing 3. Climb trees	1. Saturday morning cartoons

Once these lists are completed (or almost completed as you can see from the table) the speed dating rounds commence. Team members then partner with one another (5 groups total) in a five-minute speed date to generate an idea and a name for a class that combines something off of each list. At the end of five minutes, participants write the name for their class on the board. The round culminated with each group describing their class and their unique combination. In all, four speed-dating rounds were held. In the first round there were no instructions other than those mentioned above. Round one classes included: 1) Amigurumi Live!: a class combining journalism with crocheted figurines called Amigurumi to create an animated news magazine; 2) You Can't Eat That With That Beak Silly Bird!: a class combining pottery and bird ecology in which students would sculpt different bird beaks and examine their functionality in eating different food; 3) Dancing with my Baby: combining dog training and dance to explore different social

issues; 4) You Are What You Eat, From Dirt, to Plate, to You: combining nutrition and gardening to plan a garden based on the nutritional value of the food; and Drumming Your Story: combining drumming, meditation and mysticism to lead a class through an introspective writing and performing activity set to a rhythm.

In the second round, team members were tasked with attempting to include a member from the community asset list, or enlist the help of others from the community. Not all classes in round 2 used community assets but two notable exceptions were Hairy Science, a class combining hair cutting with science that enlisted the help of local hairdressers to cut hair and use the trimmings to examine the scientific foundations of hair. Crafting Community Gems combined jewelry making and community activism designed to have students make a piece of jewelry commemorating their experiences in a number of community service activities in collaboration with local community activists.

Prior to the third and fourth rounds, the participating teacher was asked to present the subject material that would become the focus of the speed dates. As mentioned in the previous section, Ms. Szenes chose fractions due to the challenges fractions posed to many of the students in her class. For the third and fourth rounds, partners were tasked with using their concepts to generate creative ways to teach fractions. The ten ideas for fraction lessons are listed in table 4.

Table 4

List of class names and descriptions

Name of Class	Description
Mindcraft	Combining psychology with fractions to study the brain, its layers and hemispheres and how it is used.

Mullet Fractions	Students learn fractions by cutting wigs into Mullets and examining factors such as how much hair was cut and ratios of "business in the front vs. party in the back."
Collage Busting	Students combine art and fractions to create a giant classroom collage then extrapolating fractional data based on a number of potential categories.
Pietraction Fractions	Students would combine cooking and fractions to bake pies using recipes then cutting and eating the pies.
Put me in Coach	Combining Coaching with fractions to have students design an optimal training program for their favorite sport or activity and examining the fractions of time needed to cover all necessary skills.
A World of Fractions	Combining house design and geography with fractions, students design their perfect house to create a model that examines the amount of space taken up by each member of the household then using that model to explore the world around them.
Fractional Fables	Uses fiction writing to have students create fables using a fractional formula.
The TV Times	Students examine and record their screen watching time and create a newspaper that uses fractional data from their research to argue for and against more screen time.
I Like to Move It!	Student combine activities they love with fractions by teaching the activities to the rest of the class. Then, they record their activities during the week and gather fractional data from their findings.
Fractional Gardens	Students dissect flowers to understand the numbers that are inherent in botany, then design a garden using different plant families and create reports using fractions.

Stage 4: Idea Selection

In the generation and implementation of a creative lesson plan, the period of divergence, conducted during the Ideational Speed Dating activity generated a number of viable options for implementation. The process needed to then focus on a convergent process wherein an idea was selected for implementation. In choosing an activity for implementation, certain conditions had to be met. First, the participating teacher had to be comfortable and willing to implement the idea. Second, the resource development necessary for implementation could not be overly onerous. Third, the idea had to conform to the constraints faced by the students and the teacher. Much is written about the power of divergent thinking in creativity development. Less is known and written about how and why ideas are selected for implementation.

Creative group development often focuses on the improvisational nature of creative groups. Jazz musicians and improvisational acting troupes leave open possibilities for each other and capitalize on certain shifts and even mistakes as new avenues for development. Eventually, however, the component parts of the group come to a consensus that allows the performance to become cohesive and not deteriorate into a chaotic display of individual actors. How are these convergent decisions made and how does 3-C support or challenge the research on group creative ideation?

The 3-C process is not improvisational in the way that jazz musicians or improv groups work. It is a focused process designed to lead to a creative idea. The ISD activity led to the creation of ten viable creative lesson ideas. The initial plan for idea selection was to have Ms. Szenes choose her favorite three ideas, thus satisfying conditions one and three. After she chose her top three, we would have the rest of the Design Team vote

on their favorite idea using colored stickers. Ms. Szenes voiced her opposition to the plan. She did not want to be responsible for narrowing the list to three. The public nature of the way this was presented may have made the social pressure of those choices uncomfortable. Time constraints also limited the possibility of exploring other options for idea selection.

After the meeting, I discussed with Ms. Szenes a process for idea selection. She told me that during the meeting, Paul, one of the Design Team members, who also had a child in the class, had expressed interest in teaching one of the ideas that he had brainstormed. During one speed date he had worked with a partner to develop the idea of fractional gardening using plant anatomy and the numerical properties of plant families to teach fractions. After the pair shared this idea, there was an audible and unique reaction. Other Design Team members expressed admiration for the idea and relayed their support for its implementation. Ms. Szenes and I decided that, due to the uniqueness of the idea and the father's eagerness to be part of the implementation, it made sense to go forward with the idea of Flowering Fractions as a lesson. In an evaluation interview after implementation, Paul discussed why he felt so strongly about implementing his plan,

> Yeah, at the end, or maybe it was the next day, I think it was actually the next day where it just occurred to me that there is absolutely no reason why we couldn't do this, you know, use flowers as a vehicle to help kids think about numbers and portions of numbers using something that is really tactile, that they can really get their hands on and also teach them something about their world. *(Post-implementation interview, Paul, June 2, 2014)*

Another idea for idea selection was also brought up during the closing stages of the Design Team meeting. A Design Team member suggested giving the menu of

creative class ideas to the students and allowing them to vote on the ways that they would like to learn fractions. I typed up a menu of the classes with enticing descriptions and presented them to the students the next week. Students were asked to rank the ideas from 1-9 (the 10th was Flowering Fractions and was removed from the menu due to the decision we had made to implement it already) based on which class they thought would allow them to learn most creatively. When I compiled student rankings they ranked Mindcraft, a class that combined brain science with fractions as the class with the most creative potential. Mindcraft narrowly defeated Pietraction Fractions and Mullet Fractions in student rankings.

Stage 5: Implementation Planning

Once the two ideas were decided upon, the resource development and implementation-planning phase of the process began. The focus on community engagement in the 3-C process requires the exploration of concepts of social, cultural, and human capital and ways that they can be activated in the classroom. The prior information gathering stage informs resource development as it acts as a database of potential participants that can be called on to support the implementation plan. During the Information Gathering stage, many of the community members who were contacted were unable or unwilling to participate in the Design Team itself but were willing to potentially donate goods or services to ideas generated by the team. For example, an owner of a local grocery store was unable to participate, however, he offered to donate food for the initial Design Team meeting. One concept needing further exploration is the

impact of the groundwork laid prior to the resource development stage and if that early community building leads to greater willingness to participate.

In order to gather the resources (human, physical, and economic) participants had to first decide on a more detailed description of the idea. For Flowering Fractions, this involved a planning session with Ms. Szenes, Paul, the father who came up with the idea, and me. The following section will describe that meeting in detail and examine the cyclical process of idea generation, idea selection, and planning that led to the final plan for the class. For Mindcraft, the process developed somewhat differently and it was ultimately decided that time constraints would not permit implementation in the classroom.

Flowering Fractions. The idea for Flowering Fractions came about through the combination of Paul and Malik. Paul works in environmental conservation and has expertise in landscape architecture as well. He works for local non-profit negotiating contracts that help with conservation efforts in the region around Carver. He has two children at Carver and, as mentioned earlier, he is active in the lives and educations of his children. I recruited him to participate after school and he was excited to take part in something like the 3-C. During the Design Team meeting, he expressed his interest in teaching the Flowering Fractions class to Ms. Szenes, regardless of whether it was chosen to be part of this research. One week after the Design Team meeting, we met to plan for the implementation of the class.

Paul's extensive knowledge base in plants created the opportunity to use the numerical attributes of plants and flowers,

> So let me just explain what I think the utility of this flower dissection has in general… So I'll just use one example, I brought three families with me today. This is the bean family the aster family and the mustard family. These are the easiest to work with the morphological structure, and so, each family, as I said in the meeting we had, each family has certain characteristics around the flower. The characteristics are consistently consistent from a numerical perspective so mustards always have multiples of four, rose family plants always have multiples of five, lilies are always three. In the case of this mustard flower there are four petals, four sepals, sepals are the greenish petals, and then on the inside there are again, the same numbers are present. So what I think would be helpful is just to give at least the chance to pull these apart and just explore them because we have a bunch of flowers here. So they are just pulling them apart and just literally, okay put all the common parts in piles and count how many of each you have. And I can go over in just a couple of minutes the different parts of the flower so they know what they are looking at. *(Implementation planning meeting, May 15th, 2014)*

As he spoke about the mathematical characteristics of different families, Ms. Szenes and I were able to ask pedagogical questions that helped to organize the conversation and guide it towards the creation of a coherent lesson. After the quote above, Ms. Szenes asked, "So would you want them to, should we have a table made up so we can fill this in?" This pattern of content possibilities followed by pedagogical approaches carried through the entire meeting, as illustrated below.

> Paul: Yeah but I think maybe we'll leave mint off and then bean would be a better one because I can get lupine flowers that really demonstrate that biomechanical thing pretty nicely and in that case there is not as much math involved, you've got

two of everything and you cut it in half. Basically all these families have different numbers associated with them, four, many, three, five, and two.

Ms. Szenes: When they are doing their observations this becomes math and science work samples, which they need to do.

Paul: Cool, great. So anyway you get them to pull apart and count how many parts there are. In the case of the mustards it gets interesting because there aren't actually four stamens, so stamens are the male flower part that bear the pollen, there's actually six, four that are long and then two that are short. So what's the ratio of long to short, what's the ratio of them to sepals, in this case 1/1. I don't know exactly how to bring the fraction piece of it in, but I just know that we have these great tools in front of us that have all these numbers that…

Ms. Szenes: What you can do, we can do more ratios, this could be more about ratios than talking about fractions but it is similar.

Paul: Yeah, you can relate fractions to ratios.

Ms. Szenes: The way you can do it, is you can do both actually, because you could be doing the ratio of one part to how many parts in the whole. But you could do what fraction of the total pieces are…

Paul: Right, or you could say, it would look something like where you have petal, petal, petal, petal, sepal, sepal, sepal ok, now everybody color in one of your sepals, so they are having to determine which ones are the sepal. Okay, now cover in two of you petals, okay what fraction of the petals have you colored in, what fraction of the sepals have you colored in. You've got four short stamens and two long ones. What's the ratio, or the fraction; express the ratio of long stamens to short stamens in a fraction.

Ms. Szenes: That works!

Paul: OK so obviously we are one half, or two fourths. Then we move on to the rose family where there is five of everything and you can kind of repeat some of that observation but working with different numbers.

Ms. Szenes: Well this is fun, this is the fun part.

Jay: So now that we have this idea of what you are working on, how do we teach these things. So one of them [Common Core Standards] is story problems. So maybe we could come up with a story problem about wanting to plant a garden, plant a flower garden using families of flowers, you want 2/3 of your garden to be filled with mustard family and 1/5…what if that's what we did at the end so they plant a garden? *(Implementation planning meeting, May 15th, 2014)*

In this exchange we see a good example of transitions between content knowledge and pedagogical approach. As we share our expertise, the ideas come into focus. This leads to a pivot in the exchange where the idea changes from simply dissecting flowers and using their properties to teach fractions to placing them in the larger context of an entire garden.

As the discussion progressed, the original idea of flower dissections grew and changed through a series of creative pivots driven by conceptual combinations. The pivot above is inspired by the combination of flower dissections and story problems. These pivots, and the innovations that create them, act as microcosms of creativity development and exemplify the constructive aspect of creativity. The group does not always accept these pivots as ideas are suggested, explored, and then either accepted or let go. For example, early in the conversation, Ms. Szenes indicated her desire to have the students generate their own story problems for the rest of the class based on their own experiences

with the flowers. There was no point in which the group explicitly decided not to follow this idea to fruition. The idea was expressed and the group moved on. This pattern of divergence and convergence resembles the process of improvisational theater groups.

The final idea, to have the students design a garden plot using graph paper and examine the fractions based on the shaded areas, is common to other, more traditional fraction lessons. When this point was broached, we began a discussion about how our ideas diverged from more traditional approaches to box shading for fraction instruction. The following extended excerpt in Table 5 (*Implementation Planning Meeting, May 15, 2014)* represents a clear example of how information gathering, idea generation, implementation planning, and idea selection work in a non-linear, conversational way that introduces ideas, refines them, and ultimately leads to a group based creative project. For the purposes of this excerpt, I used a hypothesis coding technique (Saldana, 2009) based on the type of information being presented. If the questions being asked or the information being shared contributed to the knowledge of the group, it was coded as information gathering. If the statement represented a new idea being suggested for implementation, it was coded as idea generation. If a statement centered on how information and ideas could be used as part of the lesson, it was coded as implementation planning. Lastly, and possibly most difficult to define, were the idea selection statements. There were few places where group agreement was clearly articulated. The idea selection code was applied in statements where a general agreement was reached and the idea was incorporated into the implementation planning that occurred immediately after. After I initially coded this interaction, I had a colleague independently code the excerpt using the definitions provided above. Our codes matched at a 60% agreement rate. During a follow

up discussion, we found that the majority of the discrepancies occurred when she coded a statement as idea generation and I had coded it as implementation planning. This was reconciled by discussing whether discrepant statements were generating a new idea that added to the content knowledge of the class or whether they were using existing discussions to plan the implementation of the class. We were able to reconcile the statements until we reached consensus on all of them.

Table 5

Extended excerpt of non-linear discussion of 3-C stages

Ms. Szenes: Yeah, so then we will give them the dimensions of the garden so they are familiar with that.	Idea Generation
Jay: And then the actual teaching of the fractions is actually kind of traditional, you know shade in boxes.	
Ms. Szenes: That's what I'm wondering. Does it have to be?	Information Gathering
Jay: That idea of partitioning of a big space into smaller spaces is how fractions are normally taught, right? How much pizza does each person get etc.	Information Gathering
Ms. Szenes: So if you had the graph paper, the Chicago method was if you had the graph paper, a 4x5 so, first you divide it into halves, so you've got half and you shade in that, and then you ask, what is half of a half. So it is coloring it off and figuring out ways, and the kids could do a half this way and then a fourth that way and then half of a fourth. If you get into mixing the fourths and the fifths that when it gets really interesting and how are they going to figure that out. What I would like to do is not to tell them how to do it. I'd like them to get messy with it so that it isn't about me saying this is how you do it and it wont make sense. It like, how would you make sense of this?	Information Gathering Idea Generation
Paul: So it seems like they could either, they could make their own decisions about what fractions of each family they want to plug in and then show it, so they have to write it down and show it. Or we could provide them with some information, like you need to have 1/5 of this and ¼ of that, or 1/5 of 3/5 of that. Then they have to do the math on it…	Implementation Planning Idea Generation

Jay: It could be things like one quarter of your garden has to be from the mustard family and 1/3 of the mustard family has to be edible.	Idea Generation
Ms. Szenes: Oh that's cool!	Idea Selection
Paul: Yeah, I like that idea a lot.	Idea Selection
Jay: And so we could give them a formula but then they have to figure out how …	Idea Generation
Paul: Take the list of fractions that they are given…	
Jay: But then are they learning fractions if we are giving them the fractions?	Information Gathering
Ms. Szenes: Oh yeah, so if you're saying how many will that be? So if you've got a fourth and you want a third of that to be this how many will be each one. Well, it depends on if we are giving them a number of plants. So we're not going to give them…it gets into other things such as how much space does each plant require.	Information Gathering
Paul: That might be a little complicated. Maybe its just space allocated for each and then you don't have to worry about which plants it is, its more like just an area. They're figuring out the area. And then you could mention that, like, some plants like to be at least 2 feet apart.	Idea Generation
Jay: What would be our categories? We'd have vegetables, fruits and vegetables, we could have flowers, what else could we have in there? Herbs and?	Information Gathering
Paul: You could have a certain number of them have to be orchard trees, that will bring in the rose family.	Idea Generation
Jay: Trees, that's probably not all trees.	Information Gathering
Paul: Well we say orchard trees. So, they'll be provided with a list of plants that are pretty much in the rose family like cherry and almond and apple.	Idea Generation Implementation Planning
Ms. Szenes: So what they could do, is if you didn't give them, if we said, they could choose what amount to put in what. This is what you have to have in it. And after they come up with their list they would have to figure out what fraction of it.	Implementation Planning

Jay: So give me an example, give me the instructions for that assignment.	Information Gathering
Ms. Szenes: I'm trying to think about it right now, What I'm thinking, and I don't know if this is going to work and I don't want to take this away from you by the way,	
Paul: No, go with it.	
Ms. Szenes: If you say, "you've got to include orchard plants, vegetables, flowers and…	Idea Generation
Paul: You could do something where you are trying to grow seeds, like sunflower seeds,	Idea Generation
Ms. Szenes: OK growing seeds.	
Paul: I do like the the idea of there being orchard trees, like you have to have it at least 5% of the garden be orchard.	Idea Selection
Ms. Szenes: So right there, when they started doing that they would have to say what fraction. You could say 5% and they would have to figure that out. We can mix that up because they have gone over percents, we've gone over fractions and we're…	Implementation Planning
Jay: And that's one of the questions, what about fractions do you need them to learn right now?	Information Gathering
Ms. Szenes: They need to learn everything. Some kids, they need to learn everything about fractions, which is a huge, huge subject. I think this might be the most fun way. If they came up with, we wanted this much fruits or this much vegetables or we want this many roses and I had no idea that roses were almonds or that orchard trees were roses,	Information Gathering Idea Generation
Paul: Well that almond trees are in the rose family.	Information Gathering
Ms. Szenes: Well I had no idea that almonds were in the rose family, you know rose hips yes, but almonds I would have never connected to the rose family so I am learning so much right now. My head is kind of spinning. They could figure out what fraction it is so that would be one way for it to go. For them to figure out some fraction of a whole. They other way to go would be to give them a fraction and they have to figure out how many of the plants will that be.	Implementation Planning

Jay: To know what kind of plants that will be,	
Ms. Szenes: So I'm not being specific enough.	
Jay: So let me synthesize back to you and you can tell me if I am right. So one way to do it would be to give them fractions, 1/5 of your garden needs to be orchard trees, and then they get to plan out a garden with all of these…then we're asking them to deal spatially, right because we are giving them a structure of their garden on the graph paper and then they have to figure out what 1/5 of that is right?	Information Gathering Implementation Planning
Ms. Szenes: Right.	
Jay: Now, within that what they are going to be able to do, we're giving them a broad category, which is orchard. Within orchard they may have apple trees, they have to be specific about which plants are going into that space.	Information Gathering Implementation Planning
Ms. Szenes: So if they had 1/5 some of them would choose to break this up into 5 blocks, some of them will choose to figure out 1/5 going around the edge, what would that look like. Or a fifth coming through so you are going to get the fractions looking all different ways. But they would still be working with fractions and demonstrating them and representing them.	Information Gathering
Paul: That is the key I think, is representing the fractions.	Idea Selection
Ms. Szenes: They key is representing the fractions here. That's what we want to do.	Idea Selection
Jay: Great so if we give them the percentages, it seems like…so 1/5 fifth needs to be orchard, 1/5 needs to be vegetables, 1/5 needs to be fruit, 1/5 needs to be flowers and	Implementation Planning
Paul: Is that too easy though?	Information Gathering
Ms. Szenes: That's too easy. Because then you have 5 things.	Information Gathering
Jay: Well, we could do different.	
Paul: I think mixing it up would be good. Because then you could also bring in the ratio thing, say, your ratio of flowers to seeds has to be 3 to 1, flower plants to seed plants.	Idea Generation
Jay: Well we would be able to make the argument for	Idea Generation

making the broad categories easy would be they are going to choose more than one orchard tree to go in there.	
Ms. Szenes: Oh, good point.	
Jay: So it will be easy enough to split it into equal groups of 5 or equal groups of 4 and then they start to pull the fractions out of what percentage of your orchard, what percentage of that $1/5^{th}$ or what fraction of that $1/5^{th}$ is apple trees. So then we are getting into more complex ideas but it starts out really simple, with really simple fractions.	Implementation Planning
Paul: Right, so they have the framework set for them more easily,	Idea Selection
Ms. Szenes: Here's what I like about that: The kids who are more comfortable with going ahead can push the boundaries of what they want to do with that and set goals for what they want to include in it for the $1/3^{rd}$ or whatever. But the kids who are still trying to master the whole concept of fractions are engaged in it, they are still involved in the exact same concept but they can put it in a way that they can make sense of. It is in easier chunks that they can start building on. It would be immediately being able to be accessed by all the students. I like that.	Idea Selection
Paul: So here is what I would suggest. Lets break out vegetables from fruit, the distinction being not an anatomical one but just taste.	Implementation Planning
Ms. Szenes: Oh, nice!	Idea Selection
Paul: So you know a strawberry and a tomato are both fruits technically. But we are going to call a strawberry a fruit today and we're going to call a tomato a vegetable so that way we have 5 groups because I am seeing vegetables, fruits, flowers, seeds and oils, so in that case you've got sunflowers you've got radish oil, mustard oil, you could. Oh you could do bulbs, you could do seeds, you could do vegetables and bulbs, so that would include things in the lily family like camas	Information Gathering Idea Generation
Ms. Szenes: Or onions	
Paul: Onions.	
Jay: And then are tubers different?	Information Gathering

Paul: Yes they are. They are in another family that we are not going to get into, that can go into the tobacco family.	Information Gathering
Jay: Okay so our 5 groups would be seeds and oils, flowers, fruits, vegetables, and orchard trees.	Idea Selection
Paul: Vegetables and bulbs, fruits, flowers, seeds and oils and orchard trees.	Idea Selection
Jay: So what we would need from you is that list of all of the things that fit within those 5 categories.	Implementation Planning
Paul: I would do a matrix where it is like vegetables, fruits, flowers, seeds and oils, and orchard trees and then I would have the four families, 5 families on this side, then I'd put the names of the plants in each box.	Idea generation

The original idea for Flowering Fractions was generated during a 5-minute ideational speed date and consisted only of a short conversation between two participants. As the 3-C theoretical model developed, it was anticipated that after the initial idea was generated, the implementation planning stage would require a return to the information gathering, idea generation, and idea selection phases in order to further develop the lesson idea. The cyclical design is represented in the theoretical model with the arrows returning from implementation planning to the preceding stages of the model.

In the implementation planning phase of the process, the ability to cycle back into earlier stages of the model was not based on failure in progressing linearly as in Mumford et al. (2012), rather the cycles back represent a necessary component of a hot team (Kelley & Littman, 2001). The three-person team was dedicated and enthusiastic, we were working under both deadlines and time restrictions, the conversational style was non-hierarchical, and diverse in experience. Ms. Szenes' room is eclectic and open with both space and visual inspiration. Lastly, as can be seen in the following examples, we

found ways to explore contributions from others outside of our small team. In the first example, Paul and Ms. Szenes discuss including another parent from the class who was also a landscape architect.

> Paul: You know what you could do too, is if you wanted to bring another student's Mom who is an architect and actually does landscape architecture, unlike me, I'm just a hack. She could show, "Oh this is how we actually lay out gardens when we draw them." And then have them label things like this.
>
> Ms. Szenes: That's a great idea we could ask her to come in.
>
> Paul: And then they would kind of see…
>
> Ms. Szenes: She said she wanted to figure out how she could help.
>
> Paul: Because I think it would be good for them to take that garden and then have the information, have a pretty clear information piece of it that lays out what plants are where and is this clear enough because you could just say…I mean if they are just coloring in stuff that would be one way to do it, you know blue is one plant but they are going to have potentially a bunch of different plants and colors so maybe doing something like this where they are, a plant name is there and they are just putting a number in a circle like this. *(Implementation planning meeting, May 15, 2014)*

While we ultimately did not reach out to the other parent, the discussion of her participation led to the idea of a color-coded key, similar to something used by real landscape architects that the students could use to design their gardens.

In the second example, we partnered with a local florist. I talked to the florist

prior to our meeting about getting some flowers donated. The florist throws away a lot of flowers each week that do not sell and they agreed to give me their discarded flowers at no cost. Paul also shared his willingness to collect examples from his garden and from other plants in his neighborhood.

Key to the creation of our educational hot team was the nonhierarchical nature of our discussion. To analyze the discussion, I applied codes to discussions based on whether the statement indicated information gathering, idea generation, idea selection, and implementation planning. The speaker was also coded. Table 6 represents the co-occurring codes by speaker and the purpose of the statement. The table demonstrates that each participant in the discussion participated equally in each of the categories. This was not a planned or facilitated part of the meeting. While it may have been necessary to do so, the flow of the meeting resulted in equal contributions from each of the participants. This might indicate a feeling of equality and reciprocity among participants. The diversity of our knowledge and expertise required an open and shared communication style where individual contributions were subsumed into a collective ideational process.

Table 6
Co-occurring codes by speaker during implementation planning

	Information Gathering	Idea Generation	Idea Selection	Implementation Planning
Ms. Szenes	17	22	2	32
Paul	19	20	2	28
Jay	21	22	2	37

The following excerpt is an example of this process at work. Paul brings up the idea of including orchard trees in the plant families, Ms. Szenes expands on the idea, and I ask a clarifying question. Ms. Szenes then responds, with care not to speak over the idea that Paul originally proposed, and Paul encourages her to continue developing her thought.

> Paul: Well we say orchard trees. So, they'll be provided with a list of plants that are pretty much in the rose family like cherry and almond and apple...
>
> Ms. Szenes: So what they could do, is if you didn't give them, if we said, they could choose what amount to put in what. This is what you have to have in it. And after they come up with their list they would have to figure out what fraction of it…
>
> Jay: So give me an example, give me the instructions for that assignment.
>
> Ms. Szenes: I'm trying to think about it right now. What I'm thinking, and I don't know if this is going to work and I don't want to take this away from you by the way,
>
> Paul: No, keep going. *(Implementation planning meeting, May 15, 2014)*

Paulus and Brown (2003) noted that dysfunction in brainstorming groups can occur due to fear of evaluation from other group members, a lack of accountability to the final outcome, and the competition for speaking time. Each of these factors was mitigated in our group, not due to intention, but through a group dynamic developed by all three of us. This represents a potential pitfall in the 3-C process as personal agendas or an unwillingness to work with part of the group could become concerns.

As the discussion continued, we came to some conclusions. Ms. Szenes had dedicated 90 minutes to the first lesson. We decided to split the class into two distinct activities. In the first, the students would dissect flowers and begin to understand the mathematical attributes of the flowers they dissected. In the second, the students would use their knowledge of flower families to design a garden on a piece of graph paper that they could then use to extract fractional data from their garden designs. In the second stage of the lesson, we provided a taxonomy of plants that showed what plant families they belonged to and what type of plant they were (fruit, vegetable, flower, orchard tree, or seed/oil). The students would be able to design a garden using any plants that they wanted and then prepare a report on their garden based on fractions of plant families and plant type. The materials that we would develop included a classification chart for their dissected flowers, a chart representing types of plants that fit into the five families and the five types, and a garden sheet with a 10x10 plot that would serve as their garden design sheet.

Stage 6: Implementation

The implementation stage of the process occurred across two class days. While the original idea was for the class to occur in one 90-minute session it quickly became apparent that more time was needed. Leading up to the implementation I gathered a few dozen roses and some assorted other flowers from the local florist. At Paul's request, I bought two boxes of strawberries from the local grocery store and some children's magnifying glasses and plastic tweezers from science kits from the local dollar store. Ms. Szenes provided other magnifying glasses and made copies of all of the necessary materials. Paul supplied the rest of the flowers to be dissected. The original plan was for

Paul to facilitate the first 45 minutes dissecting and classifying the parts of the flowers: petals, sepals, stamen, and style. Ms. Szenes and I would serve as assistants, handing out the flowers and other materials and helping students with questions.

As mentioned in the description of the classroom, the students sit at round tables in groups of four. For the purposes of this lesson, the students were paired and each pair had a magnifying glass and tweezers. Students began by dissecting a strawberry flower (from the rose family), then a lily, a lupine (from the bean family), and a yellow mustard flower. For each flower, the pairs were given a classification sheet on which they could place the parts of the flower. Examples of the classification sheets can be seen below (Figure 5). Observations during the flower dissections indicated that the students were thoroughly engaged in the dissecting of the flowers. They stayed on task and asked questions that clarified content and deepened their understanding of plant families. Questions included, "What is the purpose of the parts of the flower?", "Why are flowers colorful and does the color matter?", and "Why are there so many parts to the aster family compared to the others?" These probing questions allowed Paul to share his expertise of plant biology and the relation that plants have to their local environments, including the role that birds and insects play in pollinating plants and flowers. This engagement is echoed in the reflections that Paul gave after the class.

> It was pretty chaotic. I had never done it with a group that big before. There were some that were really into it and on it and they wanted to, some of them were just trying to think about what they were supposed to do next, am I supposed to tape all of these flower petals onto the sheet? Some kids were totally disengaged and weren't actually, well one kid didn't seem to be doing anything. I guess that's just the spectrum of the kids. Then there were kids that were like, "Wow this is cool, this is interesting. I'm seeing a daisy flower in a way that I've never done before.

> Oh, it's a bouquet of flowers, its not just a flower its actually hundreds of flowers." And you could see the wheels turning in their brains a little bit. As a teacher that's always really exciting when the kids are having those "aha" moments. *(Post-implementation interview, Paul, June 2, 2014)*

Figure 5

Examples Of Flower Classification Sheets

Ms. Szenes has a very relaxed classroom in which she encourages her students to talk and work with each other during lessons. The classroom culture is not conducive to children sitting quietly and listening to a lecture. During our evaluation interview, Paul used words like "chaotic" and "frantic" and expressed the wish that we could have slowed down a bit. While he was trying to teach students about the plants, he often tried to get them to quiet down. Students were excited about the flowers and engaged in the dissections and it was often difficult for Paul to be heard over the din of their voices. Ms.

Szenes stepped in on three occasions with a bell that she rings that indicates her desire for them to quiet down. The mix of the expertise of Paul and the classroom management of Ms. Szenes represents a possible need during the implementation planning stage of the model. Not all potential community of family members will be comfortable leading a discussion, especially when their expectations for behavior may clash with the norms of the classroom.

The flower dissection activity took 60 of the 90 minutes that were allotted to the activity, leaving little time for the second step of the process. After the students had dissected flowers from each of the families, Paul introduced the plant matrix (shown in Appendix D). Ms. Szenes then began to introduce the next activity. As she was describing the activity she began to struggle with the instructions. Although we had discussed the approach to the assignment, I had developed the worksheet and the accompanying instructions. She asked me if I would explain the instructions and so I took over. This represents another potential pitfall in the implementation stage of the project. Co-teaching requires an extensive amount of planning time, especially when the co-teachers are at different levels of knowledge of classroom culture and pedagogical approaches. We had only met for one hour and spent most of that time concurrently generating ideas and planning implementation.

I had developed the 10x10 grid (shown in Appendix E) with the accompanying key that would help students organize their gardens. The first grid the students were given would serve as their rough draft for their final garden so they could experiment with the numbers and the types of flowers they chose to include. The key had a line for the name of the flower, a corresponding color and/or design, and a line for the total acreage taken

up by the plants in their garden. Students were told that they could plant any plants they wanted, however they wanted to organize them, but they had to have equal parts fruits, vegetables, seeds/oils, flowers, and orchard trees. This meant that we dictated that 1/5 of their garden had to be dedicated to each of the plant categories. This served as one possible fraction based activity for them to figure out. We told the students that each of the squares of the grid was equal to ¼ acre of land. We then asked the students to figure out how many total acres made up the grid. We asked them what they would have to do to figure out the answer, and students took turns explaining how they figured out the correct answer.

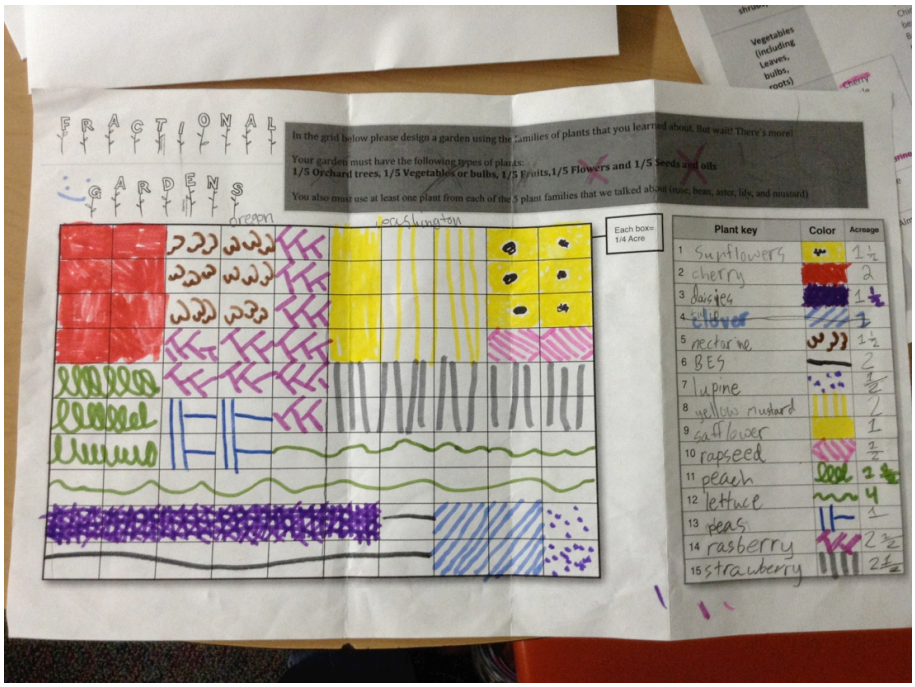
In their pairs, the students began to design their gardens. They used colors and symbols (such as diagonal lines, dots etc.) to indicate the types of plants in each square of the grid. They did this for the final 30 minutes of the class period and were told that they could continue during choice time or wait for the next math lesson to finish.

I returned to the class the next week to continue the lesson. During this lesson, students finished their rough drafts and then moved on to their final drafts. An example of a final draft can be seen below (Figure 6). Using their completed drafts, students were then asked to create reports based on the fractions of plants represented in the gardens. Questions included:

- What fraction of the vegetables in your garden is from the rose family?
- How much acreage in your garden is dedicated to plants from the aster family?
- If you added the fruits from the bean family and the rose family what fraction of the total garden would they be?

Figure 6

Student Work Sample Of A Final Draft Of The Flowering Fractions Sheet



The shaded areas of the garden and the key with color and acreage information allowed the students to represent the contents of their garden in fraction form. The students remained engaged in the activity and seemed excited to extract the statistical information from their garden designs.

Stage 7: Evaluation

The evaluation stage of the process took part during post-implementation interviews. I met separately with Paul and Ms. Szenes to inquire about the strengths, areas for improvement, and ideas if we were to teach the class again. I also followed up with further questions after the initial interviews. Answers were coded for themes and

then compared with each other to find areas of agreement and unique themes within each interview. The evaluation stage includes insights into all of the stages of the 3-C process from the Design Team to implementation. The following section will discuss the findings of this evaluation stage. First various strengths will be discussed, followed by areas for improvement and lastly, ideas for if we were to teach the class again.

Strengths. One of the strengths of the process, recognized by both Paul and Ms. Szenes, was the Ideational Speed Dating exercise. Both reported feeling excited and inspired by their participation as part of the group that generated unique combinations that would not have been possible without all of the people in the room.

For Ms. Szenes, the opportunity to work with others to plan curricular approaches meant a change to her traditional role as an educator. She reported feeling as though she got to step outside of the professional role she was normally in and participate as a member of a group. The importance of group cohesion is also found in the quote from Paul when he relates the equal levels of engagement from all of the participants.

Both also talk about the exploration of possibilities. Craft (2011) called such exploration *possibility thinking* and recognized it as a foundational aspect of everyday creativity. Possibility thinking involves the seemingly simple approach of recognizing what is and then imagining what could be. The ISD process embodied this for both Ms. Szenes and Paul and resulted in a playful environment where ideas could take root and grow with the help of others.

During the implementation of the Flowering Fractions lesson, both participants talked about the ability of students to make connections that extended beyond fractions.

Not surprisingly the connections that each recognized had to do with their content expertise rather than the resulting outcomes of the particular lesson. Paul talked about helping make connections between flowers and plants and the broader world that exists outside of the classroom.

> The recognition, the process of them being able to have that recognition, that they are seeing a pattern, that's brain development. That's two things firing together that maybe didn't before. I think that can translate into other things in their lives. Such as emotions, "oh man I was feeling sad in another time in my life, how come?" and they begin to recognize patterns throughout the whole experience, not just in the physical world. *(Post-implementation interview, Paul, June 2, 2014)*

Ms. Szenes recognized that students' understanding of fractions could translate into broader conceptions.

> So I think that what they learned was that fractions aren't a threat. Fractions are part of planning, and thinking, and doing things, and describing things that they would want to see somewhere. So fractions became useful. What was exciting is that they wanted to be able to use the fractions when they got creative -- like Beatrice with that weird drawing. She was spending hours trying to figure out the parts of squares and how she could use them to create her fractions and create a whole picture with it. So she was doing it. She was creating a problem and she had an investment in solving it. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

Making practical connections within and between subject matter is a cornerstone of constructivist educational techniques (Moll, 1990). The combination of botany and fractions allowed the students to make interdisciplinary connections that may not have been possible using more traditional methods of fraction learning such as number lines, worksheets etc.

Areas and Ideas for Improvement. Choosing an idea for implementation presented a challenge. As discussed earlier in the chapter, the plan for idea selection was to have Ms. Szenes choose three ideas that she felt comfortable with then having the group vote on their favorite. During the meeting, I felt incredibly uncomfortable even asking her to do this. The energy in the room was very positive. When I broached the idea to have her pick, I felt an immediate discomfort. Part of the positive energy around the ISD process resulted from the lack of any evaluation of the meeting. Research on brainstorming demonstrates that one of the biggest inhibitors to creative ideation in teams is the fear of evaluation (Paulus, 2000; Paulus & Brown, 2003). Placing Ms. Szenes in the position as the sole evaluator of the ideas in front of all of the participants felt forced and uncomfortable, feelings that she echoed during the interview.

> Jay: When we talk about idea selection. My plan when we started was to have you pick your three favorites because it is important that teacher be comfortable with an idea. We couldn't just leave it up to random democracy.
>
> Ms. Szenes: No you couldn't.
>
> Jay: It had to be something that you felt good about.
>
> Ms. Szenes: That I could teach.
>
> Jay: And I didn't know how to do that. What would be the most effective?
>
> Ms. Szenes: Well this is actually what teachers do all the time. You have all these ideas and you say that the kids are going to choose but you are actually giving them 3 choices that you are comfortable with.

Jay: Right but I remember a moment in the meeting and it happened right at the end. We were running out of time. We actually didn't have enough time to do the activity that I was going to do to actually select an idea, which involved stickers and people voting. The ideas were so good it felt like such a loss to pare them down and the way that I had conceived of it would have had you pick people's ideas in front of them.

Ms. Szenes: And that would have been horrible. I would have never done that. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

To address this, we talked about ways to select ideas from the generated lists. We ended up with Flowering Fractions because Paul expressed interest in doing it. What would happen, though, if the teacher was not comfortable either with the parent or with the material?

Jay: And so we ended up, we chose in two ways. First, Paul chose us. And he said, "I really want to do that." And we said great, lets do it. And then we had the students vote where they picked Mindcraft. As you think about idea selection, how would you do it?

Ms. Szenes: I liked it that way actually.

Jay: So lets say that there was an idea that you didn't feel really good about. Something about dog training for example. If that was something that you were hesitant about, but that person was really excited saying, "I really want to do this."

Ms. Szenes: So, that's really interesting thought because, now I know with most teachers that's going to be a nix right there. Most teachers want to control things

> but I am kind of weird. So there is something in me that says that, if I really don't want to do something, I hear my father's voice saying to me, "If you really don't want to do it, and its not going to hurt you, it's probably something that you ought to be doing." So it seems like if I really didn't want to do it, I kind of wonder why I didn't want to do it. If someone really wanted to do it I would probably figure out a way to make it happen because there would be something in there that I would learn and the class would learn. Unless it was, in that case, if it was about animal abuse, I'd say no, I really don't want to do that. But the Mindcraft, that still is fascinating. That still would be really fascinating and getting the Brain Lab in there. I would love to do that. I don't know what the hell I'd be doing. Does it scare the crap out of me? Of course it does. What the heck, that is what learning is about. And then I am connecting with my kids. Teaching all last year, teaching marine science. I don't know marine science. This is my first year in a school teaching marine science. The kids would say, "do you know this?" and I'd say, "No, I don't know, I've never taught this before. We have to go find out." So we would all go out and start researching it. Right? So I don't know. I like the fact that the parent really wanted to do it and then we made it work. I also like the idea of the kids choosing. They were so excited about that. The funny part is, when we did the garden one, even though they knew that they didn't choose it, they were excited by it. They loved it. I think it was the fact that it was so off the wall. It got them like, "Yeah! Lets do it." *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

Negotiating the pedagogical approaches in the classroom was a primary concern for both participants. During the implementation-planning meeting, we spent the majority of the time imagining and planning ways to merge botany with fractions. We spent far less time planning the pedagogical approaches that we felt comfortable with. Although we did discuss who would take the lead on different activities, we did not discuss ways that we could support each other or support the content. Ms. Szenes explained,

> I wasn't clear about my role about how to support Paul and I got better at it once I saw you doing it. I didn't know where I would be stepping on his toes or undermining him. So I think that would be a piece to talk about before I would teach it again with a parent. Just to run it by them. Okay, here's what happens when you teach. Kids don't listen. You know I am going to run around and do stuff to support you. Is it ok if I interrupt or I raise my hand? That kind of a thing. Can we co-teach? What would that look like to you. Would that insult you? Do you want me just to sit in the back? I didn't know that would be an issue. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

Paul felt similarly, reporting that the class felt "frantic" and "chaotic" at times. Some of that feeling may have come from a lack of knowledge about the classroom culture (described in Chapter III) in Ms. Szenes' class. Describing the students in the class, Paul stated,

> There were some that were really into it and on it and they wanted to, some of them were just trying to think about what they were supposed to do next, am I supposed to tape all of these flower petals onto the sheet? Some kids were totally disengaged and weren't actually, well one kid didn't seem to be doing anything. *(Post-implementation interview, Paul, June 2, 2014)*

The same student that Paul described as doing nothing also came up in Ms. Szenes interview, but with a very different perspective.

> He has the attachment reactive disorder so if he's doing something that someone wants him to do, that means he is not in control. But then he wants to do it [the flowering lesson]. So he was caught. It was really fun to watch him in that conundrum. So he had to walk out of the classroom. OK, walk out of the classroom. "Well, I'm not going to finish it." OK, don't finish it. "Well I'm going to finish it." OK finish it. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

The difference in perspective regarding the student provides a very clear pitfall in the planning stage. Ms. Szenes has a deep understanding of her students, of ways to motivate and manage them, and explanations of their behavior. To Paul, the student seemed disengaged to the point of doing nothing. To Ms. Szenes, the student was engaged and she actually enjoyed watching his level of participation. The danger is in not sharing this knowledge. Had Paul known about what to expect when he entered the room, he would not wonder, or take personally when a child sat and did nothing during his instruction. While a teacher could not and should not share particular diagnoses with outsiders, they could provide a clear picture about what to expect in the classroom and share pedagogical strategies based on their knowledge of the students. Ms. Szenes agreed,

> So I would tell a parent, so here is my management style. Here are things that I do. Here are things you need to know about this group. This is a really chatty group, they all like each other and they never stop talking. Sometimes it's on task, sometimes it's not. Our job is to try to herd the cats and get them back on the topic so they can learn something besides just doing their mutual jaw exercises. So, just having that kind of a conversation. So you are going to see me do these types of things and I'm going to put up my hand and say, "OK time earned." And they'll know they can earn time or "Time owed." [Management tools that Ms. Szenes uses in her class] That will help bring them back. I may take out my Tibetan bowl and you're going to hear this hum and they are going to try to bring themselves back down and we are going to try to, its going to be random. But when it gets too loud for me or I see that we are getting too far off task, that is the way I want to do it. So I would let them know my management style and then I would ask them, "OK so what is your comfort? What is your comfort level with noise in the classroom?" *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

The experimental nature of both the content and the pedagogical approach presented unique challenges. We discussed timing during the planning meeting but quickly found out that we had not allotted enough time for the flower dissection. This raises an important issue with regards to implementing creative teaching and learning. School days are generally very structured. Ms. Szenes places a schedule on the board every morning letting the students know what they can expect during the day. The day was partitioned into various subject areas, break times, special classes, and lunch. As it was planned, the lesson was to take up 90 minutes of the day. When that became impossible, the lesson was changed, impacting the fluidity with which we had planned the transition from flower dissections to garden design. As Paul noticed,

> You know, Ms. Szenes and I were just talking this morning that it would have been ideal to slow that all down a little bit. It was a little frantic. We were trying to cover a lot in a small period of time. We were trying to have a logical progression of pieces but I think we did a reasonable job of integrating different pieces and moving from the scale of an individual flower to a garden that creates something. I think we did the best that we could but I think, ideally, we would have separated it into 3 separate lessons that would have made it a little deeper level of understanding of how one piece was building to the next. Just taking, I think more time would have enabled us to settle in a little bit more, maybe taking that flower pieces lesson and integrating it more meaningfully. *(Post-implementation interview, Paul, June 2, 2014)*

Ideas for addressing this issue could include creating more flexibility in the schedule to allow for activities to run over their allotted time or generating more than one plan for implementation in case one section takes longer that anticipated.

While there were similarities in the feedback given by Paul and Ms. Szenes, suggestions for future implementations varied. Paul tended to focus on content-based areas for improvement

> Yeah, it was fun, it was, I think, different from what kids typically do, it could have brought it other elements about how plants invest resources for dedicated growth and reproductive growth and basically the point of being a plant is to re-seed. We could have looked across a wide spectrum of plants and seen how plants do that. Some seeds are wind dispersed and others are dispersed by animals. Why is it advantageous for some seeds to float or for fruits to float? Getting to biogeography, how organisms move around in the world, then really zooming out and seeing how different species are grouped all over the globe and how people, in some ways, are a vehicle for plants to do that. Then, we have spread plants all over the place and the plants are really the winners because plants are now places they've never been before we started moving them around, meaning to or not. So you can zoom out to talk about globalization and really get into other concepts that are really interesting. You can keep growing it outward from a seed. So I think, in another iteration of that lesson, you could really bring in other concepts that would help round it out and put flowers and seeds in a larger context for kids that would make it more relevant to their experience and how they think about the world they live in, that they are a little seed in this giant jungle of plants out there. *(Post-implementation interview, Paul, June 2, 2014)*

Alternatively, Ms. Szenes' advice tended to focus on pedagogical strategies and more effective ways to prepare her class for the visitor.

> So probably prepare them [students] that you've got this really smart person coming in who knows a whole lot about this stuff. So they are coming in and they want to know how you think about it and they want to be able to share with you what they are thinking. So we would do a teacher talk. But we would also brainstorm how can we make this person feel welcome and like their time is well spent. I would do one of those kinds of conversations. You know, how can we

> make this person feel included in our classroom community because they are just coming for one day. I didn't do any of that. I would do that. And that would make me feel a little relaxed too. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

The evaluation stage of the process proved to be very valuable. Participants were insightful and honest and provided feedback that would serve to strengthen the next iteration of the lesson. Missing from the evaluation stage is the voice of the students. I would like to know how they experienced the lesson. What was most effective? What was it like having a parent of another student in the classroom? What did they learn about plants and/or fractions? How would they change the lesson to make it more effective in the future?

Summary of Insights Related to Research Question One

The initial implementation of the 3-C model yielded several key insights into research question one, *How does the 3-C process allow teachers and community members to collaboratively generate creative teaching and learning opportunities for their students?* Many of these insights were discussed in the above section; in what follows I briefly summarize several of these insights.

One of the key assertions of the 3-C model is that collaborative community-based participation can yield creative learning and teaching strategies. The implementation provides evidence that certain approaches to idea generation phase assisted in this process. Demonstrating interest in a partners experience (concept affinity) and finding common interest (concept symmetry) were strategies used by participants during their speed dates. Ignoring the contributions of a partner hindered creative ideation (concept

dismissal). However, these strategies did not always lead to the combination of disparate concepts (concept disunity).

Another assertion of the model is that family and community members can assist teachers in generating curricular ideas that are viable alternatives to more traditional approaches. The partnership between Paul and Ms. Szenes demonstrates that combined knowledge and experience can lead to novel and useful curricular approaches in a traditional classroom context. Certain conditions might improve this partnership, namely the sharing of the specifics of classroom culture that are unique to the students and teachers in each classroom.

Conclusion

This chapter explored the seven stages of the model as they were developed and implemented in Ms. Szenes 5th grade classroom at Carver Elementary School. Within each stage there is rich data grown from the contextual complexities inherent during innovative approaches to education. As the first iteration of the project, the information gathered provides fertile soil from which refinements can grow. In subsequent sections those opportunities for refinement will be explored and developed for future iterations.

CHAPTER IV

DISTINGUISHING FEATURES AND TEACHER INTERPRETATIONS

This dissertation had the goal of using a designed-based approach to examining how the 3-C model can help address the problem of solitary teaching practices. Along these lines, once an intervention (such as the 3-C model) has been implemented, researchers, in collaboration with practitioners, reflect on insights gleaned from the process. In Chapter II, I reported on the initial implementation of the model and the implementation informed research question one of this dissertation (i.e., *How does the 3-C process allow teachers and community members to collaboratively generate creative teaching and learning opportunities for their students?* In this chapter, I turn my attention to addressing research question two (i.e., *What are the distinguishing features of this collaborative curricular process?*) and research question three (i.e., *How does such a process impact teachers' interpretations of their role as interpreters, designers, and delivers of the curricula?*). The chapter opens with a discussion of the emergent qualities of the Ideational Speed Dating activity in the context of other models of creative ideation. The second section uses Sawyer's (2007) ten conditions for generating a group flow experience to investigate the ways in which the 3-C process leads to what Csikszentmihalyi (Csikszentmihalyi, 1997; Csikszentmihalyi & Csikszentmihalyi, 1988) calls *peak flow*. Then the emergent properties of active engagement in the 3-C model are explored to examine the extent to which family and community participation in 3-C is different from other forms of family and community involvement. The chapter then closes with a discussion of the impacts that the process had on Ms. Szenes in her role as interpreter, designer, and deliver of curriculum.

Distinguishing Features of the 3-C Process

As was discussed in the previous chapters, there are several features of the 3-C approach that distinguish it from traditional solitary teaching practices. Three distinguishing features are the ISD process, the 3-C process as an example of a peak flow experience, and the active engagement of family and community members. The following section examines these three features in more detail.

Ideational Speed Dating

With respect to interpreting and designing the curriculum, one key distinguishing feature that stood out for Ms. Szenes was the Ideational Speed Dating (ISD) activity. Ms. Szenes, for example, expressed feelings of great excitement during the meeting:

> I worked solo so often. Especially with the way that I teach and what I am teaching and the isolation that I feel, I just become a loner. So when I get to have these ideas and I talk to people who are open to, "What about this?" and "What if we…?" and not being too constricted. They gave themselves permission and you gave us permission and direction to be creative. The excitement was that it wasn't random. It was constructive, it was directed, it was useful and it was totally out there. That's what was exciting. Stuff I never would have thought of on my own in a million years, and that was exciting. It was like I got to be the student there as well as the professional. I wasn't leading it, I wasn't planning it. You did all of that. And I got to be a part of it. That was exciting. *(Post-implementation interview, Ms. Szenes, August, 2014)*

Paul, the parent who participated in implementing the idea related similar feelings of excitement.

> Yeah, well it was really humbling to be in a room with people who are, I mean it was a really diverse group of folks in terms of professional background. I was impressed with people's ability to think really quickly on their feet and come up with stuff in rapid-fire kinds of ways. I think some of the best ideas are generated that way. I think it is a really powerful way to get at a collective cornucopia of possibilities that no individual on their own could possibly come up with. It's that cocktail of different interests and perspectives and every person in that room, their brain was working differently somehow, but there was commonality in terms of the level of engagement. The way people were thinking about how to integrate, it was really focused on interest and experience and the pieces that each person brought into the room and then to weave those together in ways that would have been difficult to come up with without that. It really was what everyone brought into the room that made it possible. I found it very thought provoking and very exciting to be just one piece of that group. But all the other pieces of the group were equally engaged and, yeah, I just found it to be a very, it just felt very ebullient. There was a kind of an overflow of possibilities there. *(Post-implementation interview, Paul, June 2, 2014)*

Many, if not all, of the ideas fit the working definition of creativity used in this research. It was novel and useful within the cultural, social, and educational context of the classroom.

Emergent Properties of ISD

Under certain conditions, such as with a strong facilitator (Paulus & Brown, 2003), in diverse groups (Nemeth & Nemeth-Brown, 2003), under time constraints (though not always) (Kelley & Littman, 2001) and using electronic brainstorming methods (Dennis & Williams, 2003) have been shown to improve the ability of groups to generate creative ideas. However much of the research on brainstorming has taken place

in laboratories (Kurtzberg & Amabile, 2000-2001), not in applied places and rarely, if ever, in a community-based effort to generate creative curriculum in schools. So what are the conditions that led to the successful brainstorming that occurred during ISD ?

The first and most obvious attribute of the Design Team was the diversity. Diversity is held as a cornerstone of creative group ideation (Kurtzberg & Amabile, 2000-2001; Milliken et al., 2003; Nemeth & Nemeth-Brown, 2003). Aside from the demographic diversity in the room (As discussed in Chapter III, six men, four women; two people of color; two from outside the United States) there was an immense amount of what Paulus (2000) termed *cognitive diversity.* Cognitive diversity describes the various personal and professional experiences and knowledge bases that participants brought to the room. As indicated in Chapter III, the information gathering stage of the processes yielded over 70 different concepts and ideas available to be combined during the speed dating process.

Analyzing the videos and corresponding transcripts from speed dates illuminates some of the processes that help and hinder the co-construction of creative curriculum. Partners were only given five minutes to generate their idea. Thus, certain processes can be examined to see, within the short time scale, how creative ideas developed. All of the following examples come from the final two rounds of ISD focusing on generating creative ideas to teach fractions because the purpose of the activity is to help the teacher generate creative lessons for her class. There were some differences between the first two round and the last two rounds. Notably, combinations in the first two rounds consisted of one concept off of each partner's list in combination such as bird beaks and pottery, and dog training and dance. When the goal of the ISD turned to generating fraction lessons,

many of the combinations ended up being between one concept and fractions (rather than two concepts combining to teach fractions). For example Fractional Fables combined fiction writing with fractions, Mullet Fraction combined haircutting and fractions. Two notable exceptions are A World of Fractions, which combined geography, house design, and fractions; and The T.V. Times, which combined TV watching, journalism, and fractions.

The following sections explore insights that emerged as a result of implementing the model. All speed dates were audio or video recorded, then transcribed and coded using a process coding technique (Saldana, 2009). A first round of coding using gerunds like *showing interest, finding commonality, trying for combination,s* and *dismissing ideas* led to a second round of coding that added specificity and yielded the themes mentioned below. Graduate student colleagues then conducted a third round of coding to test the validity of prior coding efforts. Discrepancies in the coding were reconciled through consensus. After three rounds of coding, four major concepts emerged from analyses of the speed dates: *Concept Affinity, Concept Symmetry, Concept Disunity, and Concept Dismissal*. Each is defined and discussed below (all emphases are mine). *(All excerpts are taken from transcripts of the Design Team meeting held April 21, 2014).*

Concept Affinity. Concept Affinity occurs during the speed dating process when one participant takes up the experiences, ideas, or suggestions of their partner and adds depth, asks questions, or seeks further exploration of the idea or theme. The Ideational Speed Dating process lends itself to concept affinity because it is only through the direct combination of separate themes that a class idea can be generated. Examples of concept

affinity occur in many of the fractional speed dates and many times the initial response guides the rest of the speed date.

In the following example from Collage Busting, Steve is reading off his list of assets from the 3-C packet. Sissy demonstrates an instance of concept affinity (bolded passages indicate the instant where the coded concept was found):

> Steve (class parent): Which one is - that's my friend? Actor and pot grower. Journalist, I have a Tibetan masseuse teacher, um, and a harp player. **God, we could do something with gator eggs.** [Speaker 2's brother works at an alligator farm in Louisiana] Collages. I wonder if collages can be...
>
> Sissy (community member): **We could do something with maybe a collage, drawings, and then breaking it down into parts**, we could have a whole bunch of magazines, and half of the pictures would have to be something about your job, and the other half about your interests.

Sissy took Steve's experience with collages and began the combinatorial process to merge collages with fractions. Collages were something that Steve did when he was a kid but does not do much anymore.

In another instance, concept affinity occurs in a return to an idea that had been moved away from. In the following example from Fractional Fables, Daisy (a middle school teacher) "spitballs" a variety of ideas including crochet, U.S. History, marathon running etc. Steve, a classroom parent, says:

> Steve (classroom parent): **I'm trying to think of your idea about writing** and characters and how much space different characters take up in a story, you know, like that character, there's 15 characters, but five of them are main characters –

The idea of fiction writing was part of both of their packets, an example of concept symmetry. It was briefly discussed at the beginning of their speed date but was abandoned as they explored their ideas. Concept affinity occurs when a concept from one partner strikes a cord with the other partner and focuses the discussion toward the combined concepts.

Concept affinity may provide a strategy for group based creativity. By showing interest in the ideas of others, it engages both parties in an exploration of concepts. It is an empathetic and lens-altering approach that immediately deepens the discussion and excites the partner whose knowledge and expertise is highlighted.

Concept Symmetry. Concept Symmetry occurs during speed dating exercises when both participants have a similar concept on their concept lists. Concept symmetry might occur more in the Speed dates focusing on fractions as partners attempted to combine their concepts with an outside goal (in this case, creating a lesson around fractions). As partners negotiated their concepts early in the speed date, those who used concept symmetry attempted to combine concepts in which they both held expertise.

During the Move It! speed date, the two participants looked for common expertise across their concepts.

> Ms. Szenes (participating teacher) : **So, we both get in with health, nutrition, fitness, and cooking. With food presentation crafts, cake decorating, anatomy, and physiology** - my son could bring in that. I studied it but that was many, many years ago. Organic chemistry, Sam could bring that in too. I do not [?] me. I do not - that eluded me. Climbing trees. Yes, I loved climbing trees. I didn't put that in; that was right down here for my fourth one.

Nancy (classroom parent): Well I also didn't think about until I saw it here but its definitely something I did as a child that I'm not going to do now.

Ms. Szenes: I think the last time I climbed a tree was when my older son was about two years old and he got really scared because I was too high up in the tree; and he was worried.

Nancy: That makes sense. The music, sculpture; those are definitely different areas that I have that you could use [crosstalk].

Ms. Szenes: **At least you're familiar with social justice equity, rights, civics; all of that. Whose voice is heard, whose voice is missing; bringing in the dissenting voice as well as silenced voices. With fractions, what could we do with this? Fitness, PE, exercise.**

Nancy: We could tie-in with dance too?

Ms. Szenes: **So, what could we do with that then? If we did the fitness - all of the kids need exercise. Some of them don't like to get exercise but if we did fractions or something, it might make it fun.**

In each of the bolded interactions the participants are searching for commonalities in their expertise. The original commonality is exercise and movement. This becomes the foundation for the idea that they chose.

In the Fractional Fable example mentioned above, the express intent was not to examine commonalities on their concept lists but both participants have fiction writing as one of their concepts. As they brainstorm different ideas, they return to fiction writing

and attempt to connect it to fractions. Both lend their expertise to how writing might translate into fractions.

Daisy (middle school teacher): Well, for story writing, when we first started writing stories, you have a story map, especially for your kids. You have setting, exposition, rising action, the climax and falling action at the end, with different parts of the story to make a whole.

(later in the speed date)

Steve (classroom parent): Do we want to use something that's maybe more fluid, like put it on the math model, which is initially pretty cut-and-dried and straightforward. I mean, I think we could. Like, take characters in "Charlotte's Web," I don't know if you can do that with 10 year-olds, or "Harry Potter" right? So, but that was almost like percentages you said it, which is when you go out with fractions, that's 6th grade, not 5th grade. They're supposed to know their fractions when they come in to 6th grade. But they don't, because a lot of them [?] fractions. I don't want to do this. So what's, I don't know, we've got to come up with a [quiz sheet?] now.

Daisy: I mean, part of the application of fractions is to be able to have an idea of how we spend time in our days, and what portions of the things we're eating. I mean, if we did do something like a story, and you divided it up into all the characters and then you weighted the characters, so the protagonist is 5 and the, you know -

Steve: Writing a fractional fable. How about that? [?] of writing a fable, we would give them a formula of writing first. But, I don't know, just because it's -

Daisy: The main character has to take up one-quarter of the space or one-half of the space -

Both partners use their expertise to develop and deepen the idea of using story telling to teach fractions. When a targeted concept (in this case, fractions) is introduced, the combined expertise of a pair may provide the basis for conceptual combination. It is a more difficult proposition to combine 3 concepts (one from each concept list plus the targeted concept). Concept symmetry allows participants to speak from their respective knowledge bases to generate creative combinations with the targeted concept.

Concept Disunity. Concept disunity occurs when concepts are discussed but no confluence of concepts can be found. Concept disunity represents a failed conceptual combination but not necessarily a failed speed date. Through the attempt, partners are able to explore similar strands between concepts and might possibly lead to other combinations in the future. It may also lead to a paring down of the idea into something that is more feasible for implementation. The short duration of the speed dates requires a quick paring down of ideas. With more time to plan, the combination may become more viable.

In the first example, the combination titled Flower Dissections, we first see two examples of concept affinity as both partners explore viable options from the other's list. Two ideas are explored alternatively, the idea of nature and flower symmetry and the idea of music making and drumming.

Malik (community organizer): Fractions. Immediately I say flower dissection. [flower dissection was on Speaker 1's concept list]

Paul (classroom parent): Yeah.

Malik: There's no doubt, nature is the way to go with fractions.

Paul: It's got – it's got a lot of, there are a lot of places to draw from, certainly. Fractions – yeah, I mean, trying to think of, like – I mean, fractions are numbers. They're – so how do we get at that?

Malik: With, uh, nature, like geometry as fractions, maybe [?]

Paul: Symmetry.

Malik: Yeah.

Paul: Symmetry, a tree, how limbs grow.

Paul: But music has fractions in it too. [music was on Speaker 2's concept list]

Malik: Yes it does, it has time signatures to go with drumming.

Paul: Hm, so how can we combine –

As they continue their exploration of both flower dissections and music, ultimately they give up on the musical aspects of the combination and focus more on how to use nature and flowers to teach fractions.

> Malik: The conceptual drawing really hits it, the drumming is cool but not so necessary; I think the drumming would be something very different.

Malik, who originally provided the expertise for the combination of nature and drumming, volunteers to pare the idea down to just flower dissections because they could not find a symbiotic combination between the two ideas. In this case, Speaker 2 was willing to subjugate their expertise for the expertise of Speaker 1. This willingness to give up on an idea may be important for creative ideation in a group. It represents an example of convergence after an initial divergence. It may represent the first stages of movement from idea generation to idea selection.

It is important to note, however, that Speaker 2 initially highlighted the idea of flower dissections as a viable combination for fraction learning when he used *concept affinity* to begin the speed date. How do concept affinity, concept symmetry, and concept disunity present themselves in different stages of idea generation and idea selection or on divergence and convergence of creative ideas?

Concept Dismissal. Though rare in this case, concept dismissal describes what happens when one partner ignores the contributions of the other. While not malicious, this might occur when one partner is very excited about an idea and is still working through how it might be implemented. This idea deserves further study as something that may hinder creative ideation in a group. The example below demonstrates concept dismissal.

Sam (university professor): Cooking and stuff that I do with fractions...like make pie.

Ari (local business owner): Yes! Right there you go.

Sam: This is one, then you cut it and you have half, ok? You cut it again and you have quarters.

Ari: I was thinking of food too. I was thinking about a tray of eggs. 12 eggs, or no, no, maybe a bigger tray like 24 eggs

Sam: The only problem with pies is that they are full of sugar. and the kids are going to eat them and be wired up for the rest of the day.

Ari: So maybe quiche!

Sam: So that will draw...something in the fractions they are afraid of but if we show them a pie and we say, "here you are cutting a pie physically." This is why you need to know if somebody says, "what is half of half?" and then with the pie you are cutting half into half and so its a quarter.

In this example, Sam introduces the idea of using cooking and pies. Ari agrees that this is a good idea and seeks to deepen the idea by introducing other foods as well. Sam does not acknowledge Ari's idea of using eggs, he returns to his original idea of pies. Ari again tries to deepen the idea by joking about quiche. Sam again does not acknowledge Ari's contribution and returns to his own original idea of cutting pies. Later in the speed date, they both begin to talk about full meals as opposed to just pies but pies remain the anchoring concept throughout the process. How do instances of concept dismissal impact

the generation of new and creative ideas? Ari's attempts to deepen the concepts being combined were dismissed. It is possible that an opportunity to generate more creative ideas was lost due to the dismissal.

Rejection, or dismissal, of ideas during the idea generation stage precludes the exploration of possibilities. Creativity thrives when participants are open to new ideas, free to imagine and play, and willing to take risks. However, as the example above shows, the dismissal is not malicious or selfish in intent. Rather, Sam seemed genuinely excited to share his idea. The five-minute time limit may also have played a role. As mentioned, towards the end of the speed date, they started to explore other types of cooking and food but ran out of time. Would increasing the time of the speed dates lead to a deeper exploration of the combined concepts? Does the five-minute limit preclude participants from passionately arguing for a point that they are excited about?

The idea-generating process relied on the collaboration of two participants. Individual contributions were incomplete without a corresponding idea. The rigid time constraints created conditions where there was not much time to disagree and, in fact, transcripts of the speed dates showed very little disagreement or myopic focus on one idea. The long list of potential combination allowed participants to quickly switch to a new combination if the first attempt was unsuccessful. This forced participants to attend to the ideas of others. This was demonstrated in the speed dates using what, in Chapter IV, was called *concept affinity*. Concept affinity occurred when one participant picked a concept off of their partner's list. In a explanation of successful group ideation, Paulus (2000) posited that

> Although there is much potential for cognitive stimulation in groups it is unlikely to be realized (sic) unless participants attend to each others' contributions. During

> group idea-generation, attentional resources can be allocated in various ways to one's own idea-generation process, to the ideas presented by others and to the various interaction processes (e.g. turn-taking). It is presumed that the more attentive one is to the ideas of other group members, the greater the impact of these ideas. (p. 246)

After coding the videos, concept affinity was shown to be a key component of seven of the ten ideas generated during the two rounds of speed dating that generated fractions lessons. This shows that within this group of people focusing on the concepts provided by a partner yielded consistent results for the idea that was ultimately chosen. There was no coaching involved that asked participants to attend to the concepts of their partners, it was a naturally occurring process.

Paulus (2000) also explained that idea sharing in groups is strengthened by the unique knowledge and mental structures that participants bring to the group. This can be true even when the knowledge bases share similar characteristics. The Design Team was made up of adults sharing their professional and personal expertise and trying to translate it into lessons suitable to a classroom of 5^{th} graders. This distillation process was often made more effective when Design Team members shared expertise. *Concept symmetry* occurred when a pair of speed daters shared expertise in a certain category and could thus, share and expand on their individual knowledge of a subject. Codes for concept symmetry appeared in six of the ten fractional speed dates.

The limited nature of this study precludes making strong assertions as to the effectiveness of the brainstorming session conducted during the idea-generation stage of the 3-C process. Many questions still remain. Notably, if we gave teachers a list of concepts, could they individually generate equally creative and possibly more numerous

creative ideas (although the goal of ISD was not quantity) as the Design Team did during our brainstorming session? Would coaching participants to concept affinity or concept symmetry have an impact of the quality of ideas? How did the 5-minute time constraint create or inhibit idea-generation?

What is the impact of the community focused nature of the group? More specifically, each of the Design Team members was a member of the Carver community, whether directly as a teacher or a parent of children there or indirectly as a friend or colleague. In Kurtzeberg's (2000-2001) critique of brainstorming research she explains that

> …we must note that the vast majority of studies of group brainstorming have occurred in a laboratory setting, with groups of participants gathered purely for the purposes of research. These teams had no history with each other, no established patterns of interaction, no knowledge of each other's strengths or weaknesses, and no strong incentive to cooperate or create a mutual understanding that would have helped them as a team at some future time. (p. 288)

While the Design Team was similar in the first three regards, they varied distinctly in the fourth. Each had a powerful incentive to participate in that they cared deeply about their children and their community and were willing to spend time and energy to improve their education. More can be explored regarding the goals that people bring to the 3-C process and exploring how the unity or disunity of those goals serves a purpose in idea-generation.

3-C as a Peak Flow Experience

Participants in the 3-C process reported feelings of excitement and even ebullience. The ascendance of excitement and enjoyment as a theme of participation in the 3-C process invites an analysis of the elements of flow to examine to what extent the experience fits the definition of peak flow. Feelings of enjoyment when engaged in activity have been described as reaching a flow state (Csikszentmihalyi, 1993, 1997; Csikszentmihalyi & Csikszentmihalyi, 1988). Csikszentmihaly (1993) explained that human beings crave experiences of complexity in which they can challenge themselves and test and refine their own skills. Finding enjoyment within an activity is based on a number of factors. First, the activity must be sufficiently challenging, not too simple nor too difficult. Flow also requires clear goals, consistent feedback, and an environment that allows total concentration (Sawyer, 2007). Flow experiences are often collaborative as work teams communicate in ways that both challenge and inspire. Sawyer (2007) listed ten conditions necessary for creating peak flow experiences in groups: the group's goal, complete concentration, being in control, blending egos, equal participation, familiarity, communication, moving it forward, and potential for failure. The ten conditions will be used as a heuristic to examine the role of flow in the 3-C process.

The Group's Goal. Ms. Szenes recognized a tension that exists between teachers and family members. That tension is often caused by different goals. Finding and working towards a common goal is imperative to successful collaboration. The 3-C process started with the recognition of common problems faced in the classroom that result in a lack of creative approaches to learning and teaching. Focusing on a common

goal to remedy the problem allowed for a common understanding and a vested interest as teachers, parents, and community members around Carver. While a basic understanding of classroom practices was shared among participants, that knowledge can often serve disparate needs. Parents are not often welcome in the classroom and perceptions of intent often cloud conversations between parents and teachers. Ms. Szenes reported that, at Carver, the high socioeconomic status of most families and the manner with which they advocate for their children often creates tension between parents and teachers.

> So, a lot of parents have offered to help but I don't know the energy that they are going to bring to the classroom so I am not always willing to because they have brought really weird energy in before, very judgmental energy. And they only want to focus on their kid and I'm not cool with that. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

This quote demonstrates the tension between parents who want to help and teachers who are wary of their intentions and their potential impact in the classroom. Coming to a common goal in the 3-C process had to manage this tension. The focus of the process is on helping teachers interpret, design, and deliver curriculum, not on critiquing the specific choices made by the teacher. This allows teachers and community members to become partners in the process. Additionally, the short time span of the partnership mitigated some of Ms. Szenes' fears.

> There is something about the unexpected, surprising, and unpredictable nature of this. It's something unique about these relationships. I don't have to marry these people; I don't have to work with these people forever. I don't need to keep a relationship with them. We're just playing with ideas. So I think that there is a freedom in there. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

The freedom to involve families and community members in the planning process and the short duration of the relationship provided some degree of comfort that, even if the process proved unfruitful, the teacher could return quickly to her normal approach.

Thus, the goal to generate curriculum ideas for implementation in the classroom provided a focus for the group and the open-ended and unspecified end point provided the freedom to explore ideas.

Sawyer differentiates two potential tasks facing work groups. A problem-solving creative task involves a clear goal that can be explicitly stated. A problem-finding task involves a more improvisational task in which problems are uncovered during the completion of the task. 3-C started with a very clear statement of the problem that allowed the group to quickly organize and focus in on potential solutions.

Close Listening. Communication patterns during the ISD process demonstrate the importance of deep listening and communication needed to reach a state of flow. Sawyer states, "Group flow is more likely to emerge when everyone is fully engaged – what improvisers call 'deep listening,'… Innovation is blocked when one (or more) of the participants already has a preconceived idea of how to reach the goal…" (p.46-47). During the ISD discussed above, concept affinity occurred when participants actively took up an idea from their partners and explored their idea before combining it with their own. This empathetic approach allowed for partners to engage quickly and deeply with an idea. Choosing from the partner's experience demonstrated an interest in their contributions, not an insistence on their own. In only one of the speed dates did one partner insist on their idea and then follow that through the duration of the speed date.

Termed *Concept Dismissal* in Chapter IV, this occurred when one partner failed to incorporate any of the ideas from the other.

Stasser and Birchmeier (2003) examined how groups converge on a decision. Their work demonstrated that initial preferences often guide group decisions. This is especially true when under time constraints. The 5-minute time limit on speed dates put pressure on participants to quickly decide on an idea. If partners had been given more time, would they have come up with better ideas? The concepts available to be combined might very well lead to a number of possibilities, but would groups spend time trying to come up with a perfect combination and, in turn, have trouble deciding on a combination? While these questions deserve further study, participants seemed to enjoy the process and it yielded a number of very creative ideas.

Again, the single iteration of this study precludes the ability to make any claims for generalizability regarding communication patterns and their impact on the process. However, more research on the communication patterns of ISD participants might help substantiate the claims made here. Further research will also demonstrate whether the group dynamic of this iteration of the process was due to the unique combination of individuals or if the process itself leads to a positive group dynamic.

Complete Concentration. Sawyer describes complete concentration as the group's ability to stay focused on the contributions of other group members in order to act and react to their surroundings. Tight deadlines might serve to inhibit group flow by placing an outside pressure on the creation of the end product. The 5-minute time limit on

speed dates might seem to inhibit this condition of group flow. However, the opposite was true for Ms. Szenes,

> So it was all of these connections and those connections creating ideas. And maybe the ideas didn't sound so great when we were thinking about it but then it was up on the board, and you saw them all next to each other, and then I could see the ones that were most exciting to me, and then when you hear the ones that people were describing it was like, "oooh! I want to do that one too!" So that was the exciting part. It was just all of this, all of this non-pressured creativity… That was no pressure. I thought it was going to be pressure and it wasn't. I mean, it was pressure because you gave us time constraints but it wasn't pressure. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

One possible explanation is that participants were intrinsically motivated to generate creative ideas. The playful atmosphere of the speed dates and the focus on generating fun and creative ideas may have mitigated the potential damage done to concentration by the strict time limit. Another explanation might be that the iterative nature of ISD allowed the stakes to be very low even with time constraints. The goal of the speed date was not a complete lesson plan. It was simply the name and the concept for the class, and partners were not responsible for generating *the* final product. Everyone was generating possibilities with the opportunity to generate another idea five minutes later.

Being in Control. Autonomy plays a key role in creating group flow. Group members must be given permission to think and act of their own volition within the constraints of the task. While most of the participants in the process enjoyed complete autonomy over their participation, for Ms. Szenes this presented an immediate risk. Having outsiders generating curriculum ideas and having Paul teach in her classroom presented an unexpected challenge. Because she spends so much time with her students

in the classroom, there are expectations for the relationship. When Paul entered as an instructor, it elicited a sense of discomfort in her

> Ms. Szenes: So I think it is because, as embarrassing as it is to say, and this is an exercise in humility, I didn't realize I have that attitude.
>
> Jay: Which attitude?
>
> Ms. Szenes: Of feeling unsure how to maneuver in my own classroom when somebody else is teaching. Because if a student teacher was in the room, I would not have had an issue. If a sub was in the room, I would not have had an issue. But because a parent was there, I wasn't expecting it but I discovered myself in dis-ease about how to navigate it gracefully and how to mediate and make him comfortable and make the kids comfortable. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

For Ms. Szenes, parental participation in teaching presented a unique challenge. Inviting outsiders into the classroom in non-traditional roles introduces novelty to more traditional educational approaches, placing Ms. Szenes in a position between making a classroom parent feel comfortable and making the students comfortable with the materials being taught. The discomfort she felt during implementation was not there during the ISD process, nor during the implementation-planning meeting. In fact, she expressed excitement in each of those cases. Her feelings of "dis-ease" were likely due to the lack of attention to the collaborative pedagogical approaches during implementation planning.

Blending Egos. Collaboration in general, and finding group flow in particular, requires the subjugation of egos as the group progresses toward a shared experience. The

3-C process requires that participants work together to combine their individual knowledge with that of their partner. The approaches that often hinder school/family partnerships are often based on unequal power dynamics and the unwillingness of privileged actors to relinquish their advantages. Schools with high numbers of students and families of color and/or low socioeconomic status are often reluctant to include families based on a deficit view of what the family can offer (McCaleb, 2013). At Carver, the high socioeconomic and educational levels as well as the predominant whiteness of parents put teachers on the defensive, often having to defend their practices and classrooms against parents who are empowered to question and challenge them (Lareau & Horvat, 1999). Finding synergy within the context of competing values presents a unique opportunity for both the parents and the teacher. On one hand, teachers must open the doors of their classroom to the energy and contributions of the parents and community members. On the other, parents and community members must focus on the contributions that can serve all of the students in the classroom. Inviting participation as co-teachers, rather than as advocates or mere contributors situates teachers, families, and/or community members as collaborators towards a common goal. It recognizes the unique contributions of both and highlights skills, dispositions, and knowledge bases that are often left out of traditional classroom teaching and learning.

Equal Participation. Achieving group flow is only possible when all participants contribute equally to the final product. In the 3-C, equal participation is a cornerstone of the process. The goal of the speed dates is to combine personal concepts into an emergent idea. This requires the equal participation of partners. The examples provided above of

concept affinity and concept symmetry demonstrate how partners worked together to come up with novel combinations. Concept dismissal demonstrates the impacts of an unequal partnership where one partner does not treat the contributions of the other as important.

Equal participation was also shown during the implementation-planning meeting where all three participants contributed nearly identically to generating ideas, selecting ideas, gathering information, and planning for implementation. Equal participation does not mean identical contributions, however. There are various roles that people can play in the process that contribute to end product. Paul often focused on the content of the flower lessons because that is his expertise. Ms. Szenes and I often focused on the pedagogical approach (even though in some cases we took for granted the need to intentionally plan a pedagogical approach) based on our knowledge and experience in the educational field.

Familiarity. For the Design Team, we needed to build familiar constructs in a very short period of time. First, individuals generated their own asset lists and familiarized themselves with a bouquet of potential concepts. All of the concepts on the asset lists were based on deeply familiar professional and personal knowledge bases. Thus, all of the content knowledge necessary was already held in the room. Second, the first two rounds of speed dating served as practice rounds. In those two rounds participants got to test out approaches to combinations and learn the rules of participation. This shared experience then informed the third and fourth round in which they generated creative ideas for teaching fractions.

In his discussion of improv groups, Sawyer explains three types of shared knowledge that allow groups to achieve flow. The first is an overall vision or outline for the performance; the second is a shared skill set based on experience; the third is an understanding of general group dynamics that govern improvisational theater. Familiarity with the conventions, rules, and norms of improvisational theater allows them to work together towards a co-constructed outcome. Similar types of shared knowledge proved successful in the 3-C process.

Communication. Attaining a flow state requires constant communication. Ideas are presented, negotiated, revised, and implemented based on open communication, constructive feedback, and possibility thinking. The keys to communication in the 3-C process were its playfulness, the ability to get to know others and engage with them quickly, and the ability to have someone reconceptualize ideas. Ms. Szenes recognized the playful atmosphere in the room.

> But working with Sam and working with Sissy, it was just this total playfulness. This willingness to play, which is how I teach. I want to play when I'm teaching. Kind of like, if we're not having fun we're not doing something. That was fun. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

Additionally, participants came to an increased understanding of each other as they participated in the group.

> The whole thing is about relationships to me so finding out things about people that I had never met, oh and that guy, the architect. He belongs to my Shul and I've seen him for years and years and never talked to him. So it was all of these connections and those connections creating ideas. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

As partners discussed their combinations, their ideas grew and changed. The conversations did not always lead to successful combinations, however. As mentioned in Chapter IV, *concept dis-unity* occurred when partners tried to make combinations but were ultimately unsuccessful. One such partnership, between Paul and Malik, tried to merge music and nature in order to teach fractions. While they were unsuccessful in their combination, the conversation led to a deeper understanding of their concept. As Paul relates

> What I thought was cool about that, was that the way he thinks about the world, the influence that music has on his whole world view and his whole thought process really influenced the way that that integration ultimately happened, even if we weren't bringing music directly in, he was kind of responding to what I was bringing to the table in a way that I would not have done on my own because I am not a musician in the way that he is. It's not even just the topics themselves or the interest or whatever but the way that someone catches something and shifts it about a little, but like a Rubik's cube, and then hands it back to you. *(Post-implementation interview, Paul, June 2, 2014)*

Moving it Forward. In improvisational spaces, the key to the performance is to build on ideas with one idea leading to the next. It is easy when trying to innovate to get bogged down in the process. Teams that reach a flow state focus on building on prior ideas and making space for the next one. The following is a transcript of an entire speed date between Daisy and Ari.

> Ari: What about, I guess, the world geography thing? Oh wait, are we supposed to look at the thing?

Daisy: Wait, do you want to share with me your –

Ari: Sure.

Daisy: So you design a house, build a simple toy, very basic Hebrew. I like metaphors and similes, I could teach those...

Ari: Wow.

Daisy: Cooking, peer mediation, meditation, yoga, or juggling.

Ari: Okay, juggling. Juggling is good, because there's always 2, 3, right?

Daisy: I can't juggle more than three balls, so –

Ari: That's okay, you can teach them about it.

Daisy: Literature, history, algebra.

Ari: Climb trees?

Daisy: I'm active, and I used to write, and play D&D.

Ari: Wait, what?

Daisy: Play dungeons and dragons. I was a nerd.

Ari: I never did that. Climbing trees is good, but I don't know how we can – I suppose that takes ability, huh?

Daisy: Try to grab this thing.

Ari: Well, juggling is good, I think.

Daisy: I know there's amazing – well, you have house design and building a house. We could talk about – I don't know how engaging that is, especially all these razzle dazzle ideas –

Ari: Uh-huh.

Daisy: - different parts of a house. I taught sixth grade math, that was my favorite. We talked about the whole and then divided into parts, like this is the 3 branches of government. Government – legislative, judicial. This is the worst United States ever, but it's like one out of one – like Oregon would be one, so possibly we could do a blueprint, and have it be the house itself, as one.

Ari: Divided into rooms. Ok. That's cool. No, that is.

Daisy: I know.

Ari: Build a simple toy.

Daisy: What kind of toys?

Ari: I don't know, dreidels and stuff like that, really simple toys. Geography definitely sounds good to me. Kind of geographical. I don't know if that relates too much to my thing. I guess I'll just add geography.

Daisy: We could do local geography, though. Oregon, Eugene.

Ari: Just looking at a map, we start looking and dividing, like you were saying – how many countries are in Africa – and start thinking about – I don't know if it

works – but, the numbers. There are 50 states in the States, but do they have all the same amount of land? Have them start understanding, how big is California compared to Delaware –

Daisy: Geographical comparisons, geographical metaphors, population, income?

Ari: GDP? That would be cool

Daisy: Populations, land, I mean that sounds a little complicated, but I think they'd understand them if we tell them –

Ari: But we're talking about the world, right?

Daisy: The world, or a country, or even a region, right?

Ari: We could either do something with countries, world, regions.

Daisy: Yeah. So have them start to understand, to think about, "There's the size of the land, that's one way to count, the number of entities, so there's – here's a country and there's a country so there's two –

Ari: So there's two countries, so that's the division of two, but if we look at it, this is country is a lot bigger, and you maybe start working –

Daisy: So a bridge to division of fractions-

Ari: And literally work with grids. Okay, let's draw a grid over this little region and see how much this country is taking and start to estimate, so this is one and this is two, and then maybe later, think about, "Well, we also know there are 1,000 people here and 3,000 people here," and it's not one lesson, but over time, I can see –

Daisy: So what could we call our class?

Ari: And it can start with very basic, like a neighborhood

Daisy: So we could do micro into macro.

Ari: Right. And almost start with a house, like you were saying, "How many people are in your family, and how many rooms are in your house?"

Daisy: To city, to state, to nation.

Ari: To region. Yeah, yeah. There you go. Cool.

Daisy: So how can we do this?

Ari: Well, as long as we're looking at the way people are occupying them, so it is made into countries. They'll need to know, we'll need to bring them more information – like Haiti and the Dominican Republic are just two countries on one island, but we tell them, "Okay, well –"

Daisy: We look at North America or South America.

Ari: What do we call this class?

Daisy: What do we call it? We call it – wait a minute –

Ari: Fractional –

Daisy: A world of fractions.

Ari: A split world? A world of fractions?

Daisy: Write it?

Ari: Sure. *(Design Team meeting, April 21, 2014)*

Within the 5 minute time span of the speed date the pair covers juggling, toy making, dungeons and dragons, tree climbing and finally a combination of world geography and architecture in ways that cover geopolitical issues. All of this would not be possible without the implied agreement to continue moving forward until an idea is reached. There is no moment when they verbally agree to do geography and architecture. The natural flow of the conversation led them to it and they both followed the energy of the conversation.

The Potential for Failure. When Ms. Szenes talked about the feeling of playfulness, the energy in the room and when Paul used the words "ebullient", "humbling," and "engaging" it relayed the sense that participation in the activity was fun but it was also low-stakes. While the 5-minute time limit created a sense of urgency, there didn't ever seem to be a sense that failure was possible. Ideas were suggested and then we moved on to the next speed date to try again. Creative activities are often those that do not have a predetermined ending (R. K. Sawyer & DeZutter, 2009). When the end point is unclear there is the potential for failure. This is accepted by the participants and provides some of the inspiration that leads to a peak flow experience.

Active Engagement in the 3-C Model

While schools often speak to the importance of parent and community involvement, the resulting participation is often relegated to roles that support the academic, economic, or social goals of the school. Carver Elementary is ripe with parent volunteers. Parents serve as fundraisers, library aids, spelling challenge facilitators, and chaperones. All of these roles fit within traditional notions of involvement for families. Is there a lost opportunity for schools in not engaging family and community members in the development and delivery of classroom content?

Paul, the parent who participated in the entirety of the 3-C process, is a skilled and educated person with a passion for nature education and experience as a coach and educator. He also has a willingness to engage with the school. He participates as a reading volunteer and a field trip chaperone. He recognizes the potential of parents at Carver to bring real-world experience to what students are learning.

> Yeah, I've always wanted to, there's a real gold mine of parent knowledge at Carver and every school could do a better job of tapping into and integrating what are interesting and relevant content areas and taking a little bit of pressure off of faculty to bring in different stuff, like I know at Carver, I know of parents who are architects, who do meaningful work out in the world and I think that parents can help students relate what they learn in school to actual stuff going on out there. Education is getting a little bit disconnected from students and what they might want to do as adults, professionally. We limit our kids' thinking in terms of what kinds of work they can do themselves, that they have fun doing and that contributes something to society and we tend to direct them down paths and maybe respond in a reactive way to societal needs like, we really need more nurses, we really need more civil engineers, mechanical, etc.… we lose something, I think, and in helping kids understand that there are a lot of ways to be a productive member of society from a professional perspective and that there

are a lot of really exciting ways to make that kind of contribution. So I just think that schools in general could bring in more parents who have something to share that is interesting and that gets kids excited. I want to be a part of that.

I love to teach kids about land conservation and why it's important. What I do on a day-to-day basis and how it is really fulfilling and it does make a direct contribution. It's not something that is just about a paycheck or career advancement but that really gets at kids' hearts and the things that they love to do. I think, as a society, we put so much emphasis on having a career for the sake of supporting yourself or supporting your family but we've lost some of the, why do you get up in the morning? Why do you get out of bed in the morning kind of orientation to work? You know, work is kind of, work, I don't want to go to work. There has been a kind of erosion of…kids are kind of lazy these days. They want to have things handed to them. It's all about giving them, presenting things to them the ability to focus on something for more than thirty seconds. It feels like it is really deteriorating and I don't think it needs to be that way. But I think it is a result of kids being disengaged from what is really out there for them. It doesn't have the idea of developing an educational pathway that leads them to something that they really care about, that they want to do as adults in terms of the work that they do. We haven't really given them a lot to get excited about. We are so focused on testing and these benchmarks. The benchmarks that we have established don't support interest, real genuine interest in the world that our kids are growing up in and I think one of the byproducts of that is that kids want to watch TV and be on their iPads all the time. And I think that is really unfortunate. There is so much out there. *(Post-implementation interview, Paul, June 2, 2014)*

While Paul recognizes the importance of preparing kids for future careers, his viewpoints are especially poignant in light of the reason that so many are calling for more creative approaches to education. Developing cognitive and practical skills in innovative thinking is often couched in calls for students to compete in a global marketplace. This fits

Moran's (2010) definition of "creativity for improvement." However Paul's calls for further engagement with parents relay a very nuanced view of preparation. Parental engagement in teaching demonstrates to students how they can activate their knowledge in ways that serve the community in real time. It broadens the scope of what is possible and focuses the abstract idea of a global marketplace into a more viable conception of professionals as actors in the local community.

Active engagement of families and community members through the 3-C process also had an impact on Ms. Szenes. In our initial interview, her perception of parents was of defensiveness. Parents were not seen as allies in the education of children but rather as interlopers entering for selfish reasons and with judgmental attitudes. In our interview post-implementation her conception of parents had changed.

> When I hear teachers say, "Well I'm not letting them come in and telling me what to do." You know when parents have suggestions, I used to have, it would rub me the wrong way. Now it's like, "Well why don't we listen to what they have to say?" We want to hear that. They may not be wanting to tell us what to do, let's not leave them out. "They are not going to tell me how to teach." Well what if they have some way to make it easier for us? Its sort of like, its shifting my approach even in a school where parents are notoriously controlling. What if, instead of worrying about letting them run the school, what if you let them participate in the classes teaching them? Not just doing the Xeroxing and the prepping and all that stuff. Not just running the food drives or the Jog-a-thon. What if you bring in what they know? I found out later that one of the Moms that volunteered, I didn't understand her personality. She writes really terse notes and they sound really offensive. About halfway through I wrote her back saying, you know, I'm sorry if I offended you. And she said, "No, you haven't offended me." And we finally got to understand that that is her style. This whole thing, if it were set up early, I would get to know her style. I'd know that she comes into the

> school and shoots you between the eyes and that is not personal. She's not angry. Its how she talks and its real weird in terms of social interactions but it is ok. And she's a phenomenal landscape architect. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

Through a process like 3-C, engagement becomes a vehicle by which teachers get to know parents in more depth and consequently can serve to overcome misconceptions. Equally important, they may be able to take some of the pressure off of teachers by contributing ideas.

The 3-C process seeks to capture and activate the knowledge, experience, and creative potential that exist in all communities. This involves the shifting of paradigms that define who holds valuable knowledge and what is important for students to learn. Active engagement of families and community members in curricular and pedagogical approaches holds the potential to broaden teaching and learning in ways that highlight local epistemologies.

Impact on the Teacher's Interpretations

The final research question guiding this study was, *How does such a process impact teachers' interpretations of their role as interpreters, designers, and delivers of the curriculum?* Addressing this question also aligns with the goals of the design-based approach to research in that teacher plays an integral role in reflecting on the implementation of the intervention. In what follows, I discuss the role that Ms. Szenes played during the process and report on her perceptions of how participating in the

process impacted the ways that she interprets, designs, and delivers curriculum in her classroom.

Role Played by the Teacher

Ms. Szenes played an integral role in the process. In order for the 3-C process to function as an intervention in the classroom, the skills, interests, and approaches of the teacher must be centered and his or her comfort with the material and the approach is vital as well. Ms. Szenes and I collaborated throughout the process. From our first interview until the final drafts of this dissertation, her contributions influenced and helped guide the process. She was, at times, a facilitator, a synthesizer, and an energetic contributor that helped move the process forward in ways that served her students. Teachers have in-depth knowledge of their students and the classroom culture that they develop together. The possibilities that the 3-C model present can be successful only insofar as they add to the skillset of the participating teacher. It is a value added proposition that provides a new lens through which teachers might approach the interpretation, design, and delivery of classroom content.

Most profound for Ms. Szenes was the way that her participation influenced her conception of the role that parents played in the classroom. Ms. Szenes had recently moved from a Spanish dual-immersion school where a majority of the students in her class were of color. She developed a cultural linguistics class in which students explored concepts of race, colonialism, justice, and democracy. Her move to Carver, a far more affluent school with a majority of white students, presented new challenges. At her previous school, she often advocated for kids and families within a school that often

treated them poorly and saw them through a deficit lens. At Carver the parents and family members advocated for themselves, and often in ways that threatened teachers' sense of autonomy in the classroom and their very identity as teachers. Ms. Szenes reported being warned about the parents at Carver from a number of different professional colleagues.

> Ms. Szenes: So I came into the school being warned about the parents all the time. "Oh my god you're going to Carver you have to deal with the Carver parents. Oh my god the Carver parents eat you alive, they're so judgmental." And on and on.
>
> Jay: Is that from teachers at Carver?
>
> Ms. Szenes: Oh, yeah, teachers at Carver, teachers who've left Carver, teachers at other schools, retired teachers. That's the word on the street. It's a tsunami of that. So people come in shaking in their boots. It's not my personality to do that. I realized at a certain level it was getting to me. I mean the amount of emails from parents on a weekly basis is overwhelming. I didn't have that before. People would come in and talk to me if they wanted to talk to me. I wasn't getting bombarded with emails. So this process, the design process, even just inviting them into it and having the conversation it was like a window, door or a whole wall being opened. I loved that. I really loved that. I really don't want a cloistered classroom. That's not how I want to function. And I do function best in teams. I like bouncing ideas off of, I get ideas. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

I asked her why teachers have that fear of participation among the families and what impact the 3-C model had on the fear that she had.

> Ms. Szenes: To me, the myth of control. The mythology of being in control, maintaining control, and I think the fear of being deprofessionalized. There is such an assault on the identity of teachers right now anyway, teachers being deprofessionalized. With that piece, I think it then becomes generalized out, rather

than realizing that this is something else. But if it were actually opened up to all the parents, where people identify what it is they see as issues in the community, and I would see their passion and what they would want to see kids do to address that, more of an emergent curriculum that would be project-based. They are doing that at another school but they are having some problems because of the benchmark piece. That is where the fear comes in. With the benchmark piece.

Jay: The fear being that, if we go to this more community-based model, they won't pass benchmark?

Ms. Szenes: Then, if they don't pass benchmark, then I'm not a good teacher and then my evaluations can go down and then my pay can go down and I can lose my job. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

This is a powerful logic that stifles opportunity for alternative approaches to education including family and community engagement. For teachers, if they choose to go outside of the mainstream and district approved curricular and pedagogical practices, then they face a loss of control over the outcome. If they cannot control the outcome, their students may not pass the test, and if they do not pass the tests, it challenges their very identity as a good or bad teacher in addition to the potential professional and material consequences to their livelihood. These very real consequences must be attended to in any effort to impact the way teachers apply their trade, at least until accountability to standardized tests is not the unilateral metric for teacher effectiveness.

Impact on Interpreting Curriculum

In our initial interview, Ms. Szenes talked about the way that she manipulated state and federal standards to fit into the way that she wanted to teach. She developed that

skill in response to an administrator telling her that, in order to create the space for the way she wanted to teach, she would have to justify her approach. For her, this meant placing the lessons she wanted to teach before the standards of the Common Core or the prior state standards. In the second interview, we talked about how the 3-C process might assist in this process.

> The 3-C, you've already got it. Actually they embolden the Common Core. The 3-C process, the Common Core is about thinking creatively. That's what it is supposed to be about. It's about thinking of ways to extend ideas. Well that's exactly what is happening in your whole process. When you are getting together and speed dating and thinking of whole other ways to teach fractions besides the deadly ways they teach in the book, which may get kids to know it for three weeks but they are going to understand flowers for a whole lot longer and the whole relationship and then that will connect when they start to take biology in middle school and high school, so how do you connect it? If I dive into creativity to discover the Common Core, rather that diving into the Common Core to discover creativity.... So if I were at a workshop looking at the Common Core and thinking about how I am going to be creative, it wouldn't have happened. But with speed dating, with the 3-C, you're there, its happening. All you have to do now is take a look at the Common Core and just plug it in because it is just right there. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

Ms. Szenes placed the idea of creative lesson planning before looking at the mandates of the Common Core. Doing this gives her freedom to generate ideas, to work with families and community members, and to interpret and design her curriculum with the needs of the students first, not the mandates of the state.

Another key piece of the interpretation of curriculum was the random and pressure-free approach of the 3-C process. Curriculum that is both scripted and mandated

often carries requirements for fidelity that can stifle creativity and limit the teacher's freedom to interpret the curriculum.

> There is something about the unexpected, surprising, and unpredictable nature of this…. And with other professional development thing, you have some sort of investment with the person, with carrying it through. Are you implementing it the way they want you to implement it, and how are you going to assess it? *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

Thus, part of the current approach to professional development asks teachers to interpret curriculum based on elements of fidelity to an outsider. Alternatively, the 3-C presents an interpretation of the curriculum that is not pre-ordained; it contains elements of surprise and unpredictability that allow the interpretation to start from the students' perspectives.

> It [the 3-C process] didn't feel weighted. It felt very light and it felt like, the kids are going to love this. It wasn't, "I have to do this and this is a creative way to do it, even if it isn't something I want to do." It's, "The kids are going to want to do this." That was a very different vision. So, rather than a "curriculum" vision, or "what they are going to need for the rest of their lives" vision, it was an "engage the kids" vision. Playful, the word playful, that's what was so exciting. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

For Ms. Szenes, the removal of outside curricular pressure allowed her to focus on the needs and interests of the students in her class. Interpreting the curriculum became playful and open to unexpected results.

Impact on Designing Curriculum

While Ms. Szenes interpretation of the standards did not change through her participation in the 3-C, the experience did give her new tools with which to think

creatively about how to generate curriculum with the external mandates still in mind. It is possible that this represents a bridge connecting the teaching paradox mentioned in the introduction. Teachers need tools that help them conceptualize creativity within the constraints of the current educational requirements.

There are two keys to this approach in order for it to be successful. The first is a reconceptualization of the role that parents and community members play, or could play, in the school. Ms. Szenes recognized this as a result of participating in the 3-C process. Bringing in family and community funds of knowledge can work in concert with the planning that teachers already do,

> How do you get teachers who feel like they are overworked and don't have enough time, as it is to do one more thing? I don't know. How do you make them see that it is just easier?...Because everything that teachers would be doing [anyways] would be [replaced by] creative ways to fulfill all of those things. You're fulfilling it in math; the kids start writing about it. They're having the critical conversations about it at their tables. All of that is right in there….So if you do that then it's not one more thing they are doing, its one less thing they have to do on their own. *(Post-implementation interview, Ms. Szenes, August 21, 2014)*

The reconceptualization results in teachers seeing family and community members as allies rather than as threats to their control.

Doing this effectively requires the use of the second key, that of planning engagement far in advance to give teachers time to strategize for implementation. As mentioned in the evaluation stage of the model, both Ms. Szenes and Paul recognized the need for increased planning to discuss pedagogical roles and co-teaching strategies. Our process was initiated in April, just after state testing but with only about six weeks left in

the school year. We discussed conducting the Design Team meetings during the summer prior to the beginning of the school year. Conducting the Design Team meeting during the summer would allow the teacher to spread the participation of community and family members throughout the coming school year. They could also strategize and organize the creative ideas based on complexity, starting with the most simple and progressing to higher concepts.

Impact on the Delivery of Curriculum

Delivering instruction is perhaps the most fundamental of roles that a teacher plays. The 3-C process seeks to enhance and augment this process by introducing family and community members with unique skill sets. For Ms. Szenes, the delivery of the Flowering Fractions lesson opened up new avenues for instruction and raised important insights into her approach to her classroom. The lack of preparation for the delivery of the curriculum exposed a flaw in the implementation planning stage in that we did little planning for how to co-teach the information. The inclusion of a family member in the lesson also brought up an important point. Outsiders are often included in classrooms, whether they be student teachers, substitutes, or other educational specialists. As mentioned in Chapter III, the inclusion of a non-education professional, and more specifically, of a parent with a significant stake in what was going on in the classroom, made Ms. Szenes uncomfortable. The discomfort Ms. Szenes felt might be an embodiment of the fear of relinquishing power within the classroom. Incorporating the funds of knowledge that are held in the community requires a reconceptualization of the role that the teacher is often asked to play as the holder and disseminator of information.

Summary and Concluding Thoughts

This chapter had the purpose of addressing research questions two and three: *What are the distinguishing features of this collaborative curricular process?* And, *How does such a process impact teachers' interpretations of their role as interpreters, designers, and delivers of the curricula?* Three main elements stood out in regards to the distinguishing features of the model: the ISD process, the 3-C process as a peak flow experience, and the role of active engagement. The ISD process stood out due to way it managed to collect and synthesize knowledge and experience in ways that led to creative ideas.

This leads to the second distinguishing feature, and one that I did not anticipate when I started the process. It was fun. Participants in the process reported feeling excited and even ebullient. It was inclusive and engaging and represented a stark diversion from other approaches to curriculum design. While this process may not be a panacea for the ills of education, it does represent a potentially viable approach to bridging the paradox of creativity on one side and standardization on the other.

Lastly, the reconceptualization of family and community members as allies and contributors to the curricular aspects of the educational mission of the school is another distinguishing feature. The inclusion of family and community partnerships in meaningful and engaging ways opens up possibilities through the incorporation of new epistemological approaches to classroom content. It also raises important questions about the role of teachers and their personal and professional identities as classroom leaders.

For Ms. Szenes, the strength and viability of the 3-C process lies in its ability to reconceptualize relationships between teachers, the work they want to do, and the constraints of accountability that they are responsible for. The 3-C process provides an extra tool that teachers could be trained to use in order to ease the burden of interpreting, designing and delivering curriculum and perhaps make the learning more culturally and locally relevant.

The following chapter uses these findings, assumptions, and possibilities to outline refinements for the 3-C model, future directions for research on community-based approaches to creativity in schools, and implications of this research for theory, research, and practice.

CHAPTER V

REFINEMENTS AND IMPLICATIONS

The final stage of an initial iteration of the 3-C process involves describing implications, potential refinements, and next steps. Indeed, designed-based research has the goal of not only developing and implementing interventions aimed at addressing practical problems; it also has the goal of learning from the implementation and adjusting the model based on what has been learned. To that end, I will present a discussion of the refinements to the model, suggested next steps, and implications for theory, research, and practices.

Refinements to the Model

During future iterations of the 3-C process, specific refinements will account for the shortfalls uncovered during the 7 stages of implementation. Refinements will be designed to strengthen limitations and to further test the theoretical implications of the process.

Pedagogical Strategies During Implementation Planning

The first adjustment will improve the implementation planning stage. Individual classrooms are unique contextual ecosystems with norms and procedures that emerge as the teacher and the students build relationships with each other and with the content. These relationships are carefully cultivated through experience. Inviting outsiders (in this case family and/or community members) into this space requires a greater degree of preparation than we anticipated during this first attempt. Refining the implementation planning stage involved preparing the visiting instructor with regard to pedagogical

practices, where the lesson fits within the larger scope and sequence of content and instruction and the existing culture within the classroom (including behavioral norms, communication patterns, and both explicit and implicit rules). More time will be spent preparing the visiting instructor for their participation in the classroom. During implementation planning, the teacher will be tasked with advising their community teaching partner about what to expect in the classroom, how to encourage positive behavior, recognizing engagement and encouraging participation, and specific classroom management strategies. The team will also discuss specific mechanisms for supporting each other without overstepping. These mechanisms may include the teacher intervening at certain times to calm the class, redirect behavior, or provide insights and connections to prior classroom knowledge that will strengthen the lesson. One potential strategy to increase the comfort of the community volunteer would be to have them visit the classroom for a period of time before participating directly. This strategy will, of course, be contingent on availability and willingness to spend time in the classroom.

Additionally, the teacher will prepare their class for what it means to have a visitor, to discuss their expectations as participants in this novel educational approach, and to discuss ways that they can create a welcoming environment that actively incorporates the views and contributions of others.

Role of the Facilitator

During the first iteration of the process, I played a key role through the seven stages. I utilized my experience in community development for education to gather the Design Team, develop the asset map, design the materials, facilitate the idea generation

stage, and take part in implementation. A facilitator can play a key role in the generation of ideas (Paulus & Brown, 2003) but limited resources may restrict the ability of an outsider to serve as the facilitator. Future iterations should focus on developing the skills of the teacher to act as the facilitator. This will present new tensions as the teacher negotiates the time and energy necessary to facilitate the process and manages the resource development and implementation planning stages of the process. One idea developed during the evaluation stage of the process would be to conduct the first Design Team meeting prior to the start of school and then have multiple times during the school year to develop and implement ideas generated during the summer.

Implications

The sociocultural nature of the 3-C process, like Glaveanu's 5-A's, requires that discussions of the implications for theory, research, and practice be examined not at separate, discrete areas, but rather as contingent and mutually informing concepts. The underlying theories have implications on the resulting methodological and practical applications. One of the strengths of design-based research is its focus on reducing the distance between theory and practice. In the following sections, I will discuss a number of theoretical implications of this first iteration and the methodological and practical opportunities that they present.

This dissertation examines a number of binaries: theory-practice, school-community, teacher-parent, creativity-conformity, and curriculum as planned-curriculum as lived. However, the 3-C process can create a space where collapsing these binaries, which are often sources of tension in educational institutions, is possible. For example, in

the opening chapter, I presented the paradox that teachers often face between wanting to teach creatively yet having to maintain curricular fidelity. Glaveanu's call for a more integrative approach to creativity research requires the examination of the space between the elements of the 5 A's framework. The tension between the actor and the artifact collapses as the liminal spaces that lead to creative acts are understood. They are understood, not as linear progressions, but rather as an intentional process of fits and starts, being stuck and getting unstuck, through processes of conceptual combination both cognitive and social. The 3-C serves as a "conceptual gateway" (Meyer & Land, 2005) through which teachers can pass as they transform their practice in ways that activate community social capital within their curriculum and instruction. Such gateways represent new paradigms through which established concepts can be examined, manipulated, and improved. For teachers, participating in the 3-C process requires an examination of their role as the sole figure responsible for interpreting, designing, and delivering curriculum. Meyer et al. (2005) discuss such transitions:

> Earlier work introduced the basic idea that in certain disciplines there are 'conceptual gateways' or 'portals' that lead to a previously inaccessible, and initially perhaps 'troublesome', way of thinking about something. A new way of understanding, interpreting, or viewing something may thus emerge – a transformed internal view of subject matter, subject landscape, or even worldview. In attempting to characterize such conceptual gateways it was suggested in the earlier work that they may be transformative (occasioning a significant shift in the perception of a subject), irreversible (unlikely to be forgotten, or unlearned only through considerable effort), and integrative (exposing the previously hidden interrelatedness of something). In addition they may also be troublesome and/or they may lead to troublesome knowledge for a variety of reasons. (p. 373-374)

Ms. Szenes' participation in the project led to a transformation of her perception around family and community involvement. That knowledge is now irreversible; she cannot *unlearn* the knowledge that family and community knowledge can be incorporated into her curriculum and instruction. The knowledge is integrative in that it makes apparent the potential contributions of family and community members. It is troublesome (though not necessarily negatively so) in that it challenges the traditional role that teachers play as holders of knowledge in their classrooms.

Implications for Creativity, Research, and Engagement

Transitioning from traditional approaches to school/family/community involvement and curriculum and instructional development requires a framework that is theoretically sound, methodologically observable, and practically applied. A core value of DBR is collapsing the space between theory and practice. Using DBR to study the sociocultural nature of creativity allows for the examination of theory, research, and practice as they interact during implementation of the process. The following sections examine these implications.

The 3-C process model represents a theoretical framework hypothesized to lead to community-based creative curriculum that is co-constructed by teachers in collaboration with families and other community members. Implementation created a complex process that includes sociocultural creativity; family and community engagement; and curriculum as it is operationalized by the teacher.

First, as discussed in Chapter II, the field of sociocultural (as opposed to cognitive or sociocognitive) creativity recognizes the contingent nature of creativity as it emerges

from the relationships between actors and artifacts as they interact in environments. The 3-C model embodies this process as teachers, families, and community members interact with curricular and instructional approaches to design locally and culturally relevant learning opportunities for students. Glăveanu (2013) re-imagined creativity models that had largely focused on either individual cognitive or sociocognitive processes of creative emergence. His discussion of an alternative, a model that examined the way that creativity developed within a system of relationships, requires models of creativity development that allow for the examination of the way creativity emerges *within and between people as they interact in complex environments.* This allows for researchers to examine the ways in which creativity is distributed across communities and how the affordances made available within communities can be purposefully activated towards the achievement of a creative goal (Glăveanu, 2013).

Further, the integrated nature of Glăveanu's Five A's framework also presents a methodological approach to sociocultural creativity research. The Five A's: actor, action, artifact, audience, and affordances, are interrelated and inseparable methodologically. However, each of the concepts can be investigated individually. The inability to observe internal cognitive processes and the time and rigor of observation and analysis present methodological challenges to creativity research. The 3-C process helps to mitigate these dilemmas by making the process collaborative. Individual actors in the process are forced to externalize their creative processes. Externalizing internal processes is one way of making the unobservable visible to researchers (Sawyer & DeZutter, 2009). Head mounted mobile cameras capture the creative interactions as they occur and thus assist in understanding how creative ideas are formed in dynamic and naturalistic settings. The

cameras allowed us to capture multiple conversations as they developed throughout the room. In future iterations, the cameras can be used to capture more of the process as it develops from the idea generation stages through implementation.

This iteration of the 3-C model provides a fertile methodological starting point in which to investigate sociocultural creativity. The collaborative and contingent nature of the Ideational Speed Dating process externalized the creative process by asking partners to co-construct a creative idea based on their own historical and cultural knowledge and experience. As they did, their conversations demonstrated the ways that creativity emerges within and between people as they interact purposefully toward a common goal. While the individual cognitive processes are more difficult to observe, by examining how participants take up each other's ideas using Concept Affinity and Concept Symmetry we start to see how ideas might combine to form emergent ideas.

Reform efforts and educational interventions often begin from a perspective of needs. Schools need to raise test scores, teachers need to differentiate instruction, students need rigorous training in reading and math scores. This approach frames school issues from a deficit perspective which requires that schools hire consultants and pay for interventions in ways that often further distance the curriculum from the students and the community.

The 3-C process takes a different approach. Our starting place was an intense examination of the assets that were in the room at the time of the Design Team meeting. The list generated by the 10-member team had nearly 200 potential assets that could serve as conceptual starting points for creative ideas. This strengths-based approach is used often in community organizing circles in order to catalogue and activate the existing

resources within the community. Framing the process in this way allows communities to use these extant resources to attempt to solve the problems within their community without the need for major outsider intervention.

Methodological Implications

Social Networking Analysis (SNA) is a promising methodological approach to understanding how resources and relationships are distributed across communities. SNA examines the building and the strengths of relationships as they interact with each other within a community (Marin & Wellman, 2011). The patterns of the relationships may provide unique insights into how schools interact with their communities, how parents interact with each other and with the schools, and what relationships yield promising results for collaboration. Daly (2010) provided an anthology of resources documenting the analytical impact that SNA can have in examining educational reform in communities. Using SNA longitudinally can show how networks of support within and around a school are strengthened (or not) by participation in the 3-C process.

The idea of framing and starting points also came up as Ms. Szenes confronted her conceptions about creativity. Using an asset-based approach and then moving to the curricular standards the students were expected to meet allowed for a reorganization and a reprioritization of approaches to curricular and instructional development. This approach can have profound theoretical implications amid calls for creativity, critical thinking, and metacognitive skills. Educational approaches that place assessment and accountability first may struggle to find creative and critical approaches that retrofit to the standards. However, the experiences of Ms. Szenes demonstrate that in the hands of

an experienced teacher, the standards can often be manipulated to fit into more emergent curricular approaches.

Teachers are often tasked with interpreting curriculum that is created outside of their classroom context. The deeply situated nature of classrooms and the multiple relationships that impact the process of teaching and learning make fidelity to such approaches difficult. Classroom culture, pedagogical style, content, and the lived experiences of the students and their families often interact in ways that limit the generalizability of mandated curriculum (Gravemeijer & Cobb, 2006). The 3-C process creates conditions well suited to customizing curriculum in ways that meet the cultural, social, and academic needs of the students. Such approaches recognize the value of students' knowledge (and that of their families) as they enter the classroom and centers it as an integral part of the teaching and learning experience. Future research can include students in the 3-C process as well. Students can participate in all levels of the process, helping to create asset maps of their community, generating creative ideas and planning, and implementing and evaluating the success of the lessons. This will allow both students and teachers to explore the metacognitive processes in play as they participate in activities that are creative and collaborative.

The theoretical and practical foundations of the 3-C process present a critique of predominant approaches to curriculum development that isolate the teacher, limit creative expression, and focus on convergent educational goals. The process works within the constraints of current educational approaches by imagining what is possible within those limits. Future work will examine the impacts of the creative lessons on a range of metrics

including creative self-efficacy, enjoyment of learning, and achievement on standardized assessments.

Theories of parental/family involvement and parental engagement in school expand when the epistemological contributions of parents and community members are included in the curricular development and delivery process. Theories of the funds of knowledge that exist in children's homes often focus on the teacher using ethnographic approaches (mostly in-home interviews) to uncover the funds of knowledge in their students' homes and then incorporating those epistemologies (but not necessarily the people themselves) in classroom content (Gonzalez et al., 2005). The 3-C process might be improved through the ethnographic approach taken by Gonzalez et al. It could also provide guidance to incorporate the family and local epistemological approaches throughout the curriculum. The 3-C can support this by providing a theoretical model that actively incorporates family and community members, and their associated funds of knowledge in the design and delivery of the curriculum.

Important practical implications also arise in the context of the power dynamics inherent in the relationship between schools, families, and communities. One such implication, discussed previously in Chapter IV, has to do with the type of information and knowledge that families bring into the classroom. Many teacher-training programs have an intentional focus on equity in the classroom. Teachers receive training on recognizing systems of power and privilege and how they can either challenge or reinforce them through their pedagogical and curricular choices. What would happen if a parent, without such background information or pedagogical skill, were to use methods or approaches that are not conducive to equitable educational practices? Teachers, students,

and the family or community members would be placed in an awkward position of negotiating potentially damaging interactions. The purpose of the 3-C process is to decenter the teacher as the holder of all important knowledge but not to have them disappear from the educational process entirely. In fact, the role of the teacher is paramount in the creation of educational approaches that fit within the scope and sequence required by the educational institutions. Family and community members are engaged in the process insofar as they help the teacher negotiate the space between the curriculum as it is planned and the curriculum as it is implemented.

The teacher's role as a moderator and facilitator of the educational process does not change. The 3-C process does not ask teachers to relinquish their power, rather it invites them to open up their classrooms to create more horizontal leadership structures that recognize the important contributions that family and community members can make in the classroom. In his explanation of the family engagement model of the Texas IAF program, Shirley (1997) spoke to the importance of flattening the hierarchical power dynamics that often worked to exclude certain family and community members from active engagement in the school. Doing so, he argued, allowed for the cultivation and activation of less privileged, yet integral, forms of social capital and led to a more cohesive and active group of family members. Most promising from this research is the impact that the process had on the participating teacher and the family volunteer. As has been mentioned, future iterations will focus on the way teachers and community members co-construct lesson plans that capitalize on the strengths of each. Tracking these relationships over time allows for investigations into longer-term impacts on the collaborative relationships between teachers and family members.

Examining the tensions that exist between schools, teachers, family members, and the larger community requires a methodological approach suited to uncovering the issues inherent in complex systems. One of the strengths of DBR is the variety of methodological approaches that can assist in the implementation and evaluation of theoretical models. Expanding the methodological approach used to analyze the 3-C process may yield unseen attributes and tensions that impact the model. Various methodological approaches might shed light on different aspects of the 3-C. Cultural Historical Activity Theory (CHAT) is a methodology drawn from the work of Lev Vygotsky and his philosophical descendants. Also called Activity Systems Analysis, this methodology uses human activity as the unit of analysis. CHAT may be well suited to examine the complex learning environment created by the intersection of classrooms and the greater community. The theoretical strength of CHAT analysis lies in its ability to uncover tensions that exist within systems of human activity. CHAT analysis has been used in partnership with DBR (Squire et al., 2003) because of the methodological dexterity it allows when investigating relationships complex learning environments. It is also a promising approach to uncover the ways that actors, content, and environments work in relationship to generate novel and useful educational approaches.

From a teacher education perspective, creativity becomes a teachable and learnable skill as we train teachers to recognize the distributed creativity inherent in all communities. Glăveanu (2013) states, "A creative actor is arguably one able to exploit the affordances of his or her surroundings in an innovative way, to discover new affordances, and even "create" the ones needed to fulfill a specific action" (p.76). Placing teachers as the role of "creative actor" in this case means training them to search for,

collect, and to activate affordances in service of more creative educational opportunities for their students.

Traditional methods of teacher training for curricular and instructional development, both in-service and pre-service, often reinforce teacher-centered, and outcome-based methods (John, 2006). Re-imagining parts of teacher preparation to focus on the teacher as an aggregator of community affordances might have a profound impact on curricular and pedagogical approaches and provide an avenue through which funds of knowledge (Gonzalez, 2005) can be activated in the classroom.

Next Steps

As mentioned earlier, DBR involves the testing and refinement of a theoretical framework across multiple iterations. While the findings of this dissertation are a compelling beginning, more research is needed to further develop the process. The next step is to conduct second and third (and more) iterations across a number of contexts. Future work with Ms. Szenes and Carver Elementary can further develop the role of the teacher and the requirements for planning that help visiting and classroom teachers co-teach effectively and efficiently. Both Ms. Szenes and Paul felt rushed and chaotic during the implementation of the Flowering Fractions class. A more developed plan for collaborative teaching could help to alleviate some of this tension.

Multiple trials in one location would also allow us to further develop the construction of the Design Team. Was there something unique about this group of people that allowed them to achieve a sense of group flow during the Design Team meeting? Was a 10-person Design Team optimal? Would more (or less) people yield similar

results? Should the Design Team stay constant across iterations or would there be a loss of creativity over time as they worked together? What would be the impact of including students on the Design Team? How could a Design Team be set up to function more sustainably in a school? Extended time across multiple iterations would allow some of these questions to be answered.

Unfortunately, objectivist approaches to learning, teaching, and assessment have limited teachers' curricular freedom resulting in often-mandated adherence to all aspects of a particular teaching unit. This is magnified at schools that have historically underperformed on standardized assessments that may face penalties for straying from such mandated curricular approaches designed to raise standardized test scores.

This research was conducted at a school that is historically high performing on standardized assessments, has school-prescribed family involvement, and where the leadership and community expect teachers to freely supplement the district prescribed curriculum with innovative and creative lesson plans. The privileged position of affluent, high-performing schools allows teachers to craft curriculum that is more creative and relevant. Meanwhile, teachers in lower performing schools are often required to teach with fidelity to their district's endorsed, research based curriculum. The work of Delgado-Gaitan (1990), Gozalez et al. (2005) and McCaleb (2013) all demonstrate the educative potential of including family and community voices in curricular and pedagogical approaches for students of color and second language students. However, in the post NCLB world of high-stakes testing, this research is not often operationalized in schools who are underperforming in state based assessments. The privileges afforded to high performing schools, and the restrictions placed on lower performing ones, will allow

future iterations to examine the institutional implications and resulting educational outcomes of this creative opportunity gap.

In the context of this research, we see this played out. Ms. Szenes spoke of her experiences at her previous school, which was a dual-immersion Spanish school. Often times, this school silenced student and family voices and she found her herself in the tole of advocating with families to break down the institutional barriers. In this context, family and community engagement looked different. Additionally, the school's adherence to standardized assessments led to a rigid implementation of many external curricular approaches. Creativity and deviation from these processes was institutionally quieted because the school prioritized the focus on increasing test scores. At Carver, families and the administration expected teachers to deviate from and augment the curriculum mandated by the school district. Applying this process to schools with more diverse demographics would present a valuable set of opportunities for conceptual combination that are not usually included in curricular and instructional design and would require buy-in, and/or a paradigm shift for school leadership to implement. Increased parental involvement in culturally and linguistically diverse settings has proven to be effective in helping students gain literacy skills (Delgado-Gaitan, 1990; Gaitan, 2012). Would the 3-C process yield similar results? What will engaging families in culturally and linguistically diverse ways lead to? Will participation in the 3-C process lead to positive educational outcomes across a spectrum of indicators (including, but not limited to, scores on standardized tests)?

As future iterations occur, a multiple-case study that examines how teachers react to the 3-C process will provide a deeper contextual understanding of their interpretations

of the experience as it relates to their identity as teachers. How does the process challenge their self-perceptions in their current role? How might this identity develop based on their new experiences? What are the long-term consequences if, in fact, a paradigm shift does occur? How do teachers and family and community members oscillate between the roles expected of them within the current educational milieu and their reconstituted identities as participants in more community-based educational approaches?

APPENDIX A

PROCESS CODES FOR IDEATIONAL SPEED DATES

Concept Affinity. Concept Affinity occurs during the speed dating process when one participant takes up the experiences, ideas or suggestions of their partner and adds depth, asks questions or seeks further exploration of the idea or theme.

Concept Symmetry. Concept Symmetry occurs during speed dating exercises when both participants have a similar concept on their concept lists.

Concept Disunity. Concept disunity occurs when concepts are discussed but no confluence of concepts can be found. Concept disunity represents a failed conceptual combination but not necessarily a failed speed date. Through the attempt, partners are able to explore similar strands between concepts and might possibly lead to other combinations in the future. It may also lead to a paring down of the idea into something that is more feasible for implementation.

Concept Dismissal. Though rare in this case, concept dismissal describes what happens when one partner ignores the contributions of the other. While not malicious, this might occur when one partner is very excited about an idea and is still working through how it might be implemented.

APPENDIX B

HYPOTHESIS CODES FOR IMPLEMENTATION PLANNING MEETING

Information Gathering: If the questions being asked or the information being shared contributed to the knowledge of the group or requested clarification based on content of the class being taught.

Examples:

"We have 31 students who sit at tables of 4."
"The rose family each has multiples of 5."

Idea Generation: If the statement represented a new idea being suggested for implementation.

Examples

"What if we…"
"It would be cool if we could…"

Implementation Planning: If a statement is centered on the logistical implications of implementing the lesson.

Examples

"So we will do the flower dissection for 15 minutes then follow that with a quick assessment to make sure they understand."

"I will teach the first part then you can come in and do the second part."

Idea Selection: When an idea is agreed upon or selected for implementation.

Examples:

These can be both direct quotations such as:

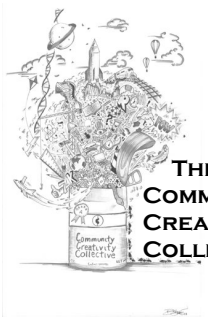
"Yes, let's do that,"

or more tacit selections such as:

"Ooh, I like that idea."

APPENDIX C

DESIGN TEAM MEETING PACKET



THE COMMUNITY CREATIVITY COLLECTIVE — — — — — — — — **DESIGN TEAM MEETING**

AGENDA

1. WELCOME AND DESCRIPTION OF THE PROJECT
2. INFORMED CONSENT
    a. USE OF VIDEO EQUIPMENT
3. PERSONAL AND COMMUNITY ASSETS
4. IDEATIONAL SPEED DATING
5. IDEA SELECTION
6. REFLECTIONS AND FEEDBACK
7. NEXT STEPS

The Community Creativity Collective

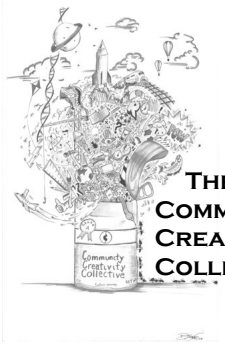
Personal Asset List

What do you do and/or what have you done professionally?

What other skills/hobbies/activities do you have expertise in?

What are some other activities that you enjoy (but are not necessarily an expert)?

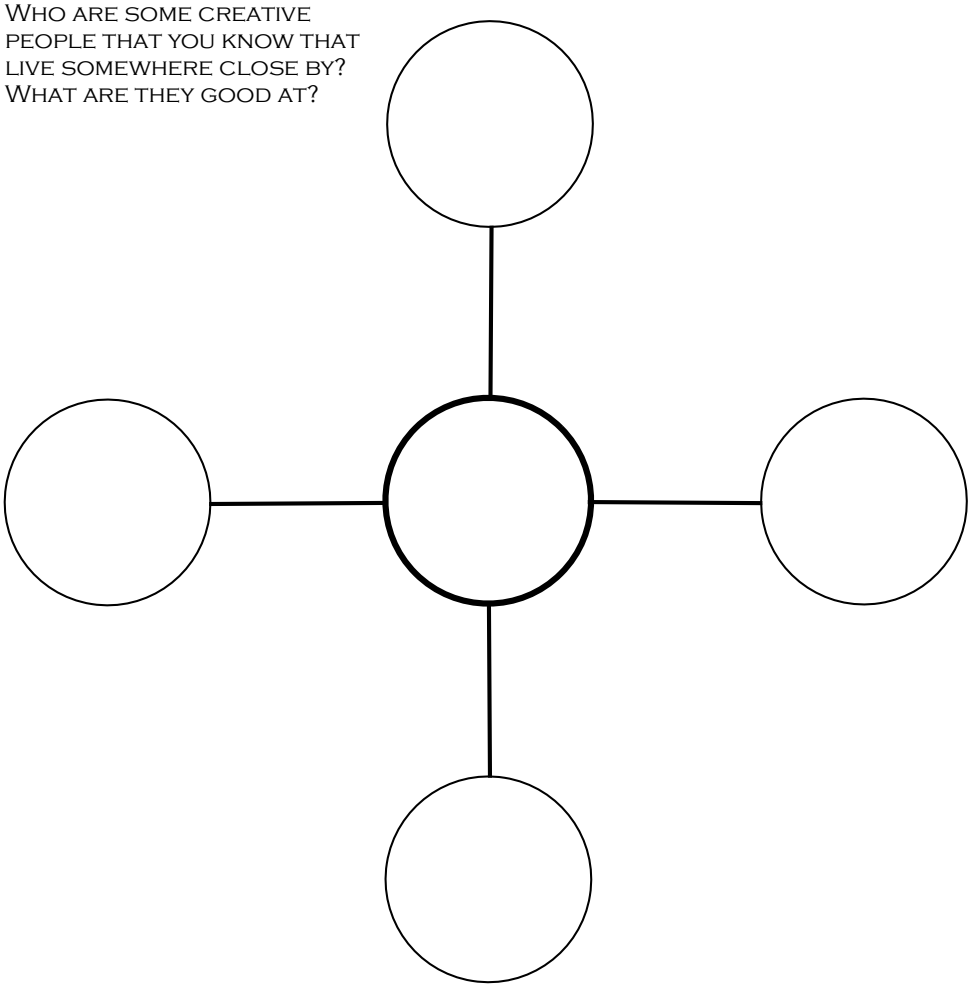
What were your favorite things to do as kid?



The Community Creativity Collective

Personal Asset List

Who are some creative people that you know that live somewhere close by? What are they good at?



The Community Creativity Collective

Ideational Speed Dating

Please write down 3 things you could walk into this class and teach (or help teach) right now.

1.

2.

3.

Please write down 3 things that you could teach (or help teach) if you had some time to prepare.

1.

2.

3.

Please Write down your 3 favorite subjects to study in school.

1.

2.

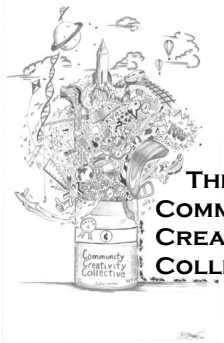
3.

Please write down some things you liked to do as a kid but don't do anymore.

1.

2.

3.



THE COMMUNITY CREATIVITY COLLECTIVE

IDEATIONAL SPEED DATING NOTES

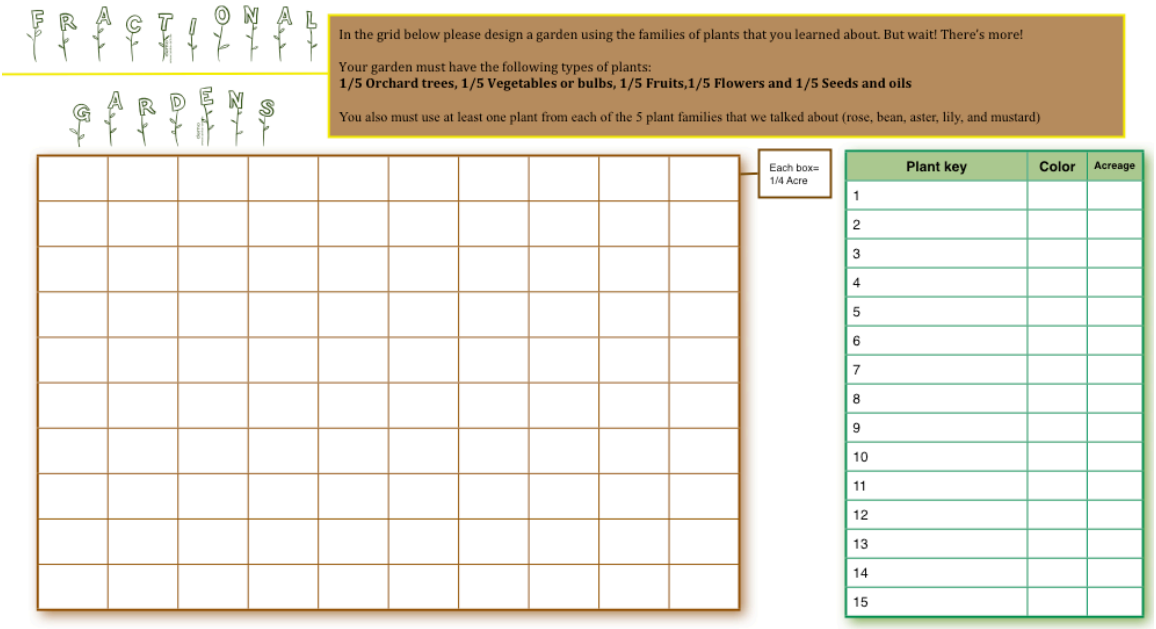
APPENDIX D

FLOWERING FRACTION PLANT MATRIX

GARDEN USE ⇩	PLANT FAMILIES Rose Family (Rosaceae)	Bean/Legume Family (Fabaceae)	Mustard Family (Brassicaceae)	Lily Family (Liliaceae)	Aster Family (Asteraceae)
Fruits (on the ground or shrubs)	Strawberry Raspberry Blackberry Quince				
Vegetables (including Leaves, bulbs, roots)		Green beans Peas Chick peas/garbanzo beans Baked beans (Navy) Kidney beans Lima beans Soy beans Alfalfa Edamame Lentil bean	Brocoli Kale Cauliflower Brussels sprouts Broccoli rabe Radish Cabbage	Onion Garlic Shallots	Lettuce Artichoke Dandelion Chamomile (tea)
Orchard trees	Cherry Apple Almond Pear Peach Apricot Plum Nectarine				
Flowers	Rose	Clover Lupine	Nasturtium	Day lily Tiger lily Tulip Camas Fawn lily	Marigold Black-eyed Susan Echinacea Zinnia Dahlia Daisy
Seeds/nuts & oils	Almond	Peanut	Black/yellow mustard Rapeseed (Canola)		Sunflower Safflower

APPENDIX E

FLOWERING FRACTIONS WORKSHEET



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