

The Literacy of Play and Innovation: A Case Study of Bricolage

By

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Dedicated to those who think outside the box – the bricoleurs

Table of Contents

Abstract	vi
Acknowledgements	vii
CHAPTER 1 – INTRODUCTION & BACKGROUND.....	1
Purpose	2
Objective and Research Question	4
Definition of Terms	6
Bricolage/tinker	6
Design	6
Imagination	6
Innovation.....	7
Krewe.....	7
Make	7
“Mini-maker” space.....	7
Mode.....	7
Multiliteracies.....	7
Multimodality	7
New Literacies.....	7
Play.....	8
Serious Play	8
Semiotic domain	8
Education in New Orleans Pre and Post Hurricane Katrina.....	8
Pre Hurricane Katrina – New Orleans public schools.....	9
Hurricane Katrina.....	10
Post Hurricane Katrina – New Orleans public schools.....	11
My story.....	13
Overview of Dissertation	14
CHAPTER 2 - LITERATURE REVIEW	18
Sociocultural Theories	18
Historical Discourses of Play	19
Friedrich Froebel.....	21
Maria Montessori.....	24
John Dewey.....	28
Ideological Shift.....	30
Jean Piaget.....	31
Lev Vygotsky.....	33
Jerome Bruner.....	37
Loris Malaguzzi and the Reggio-Emilia approach.....	41
The Concept of Play.....	45
Play / work relationship.....	47
Contemporary definitions of play	50
Emergent literacy and play.....	52
Seymour Papert and Constructionism	54
Design Thinking and Innovation.....	56
Summary	58

CHAPTER 3 – THEORETICAL FRAMEWORKS	61
Sociocultural Theories of Literacy.....	61
New Literacies.....	64
Bricolage-Tinkering.....	67
Multimodal Literacy.....	71
Semiotic Domain	73
Transformative Literacy	74
Summary	75
CHAPTER 4- METHODOLOGY	77
Bounded Case Study.....	77
The Place and the Players.....	80
Bricolage Academy, 2014-2016.....	81
Adult participants	81
Children in the study	84
Research Design	85
Data Collection Procedures.....	87
Data Collection Methods	88
Participant observation.....	89
Field notes.....	89
Digital photographs.....	89
Video and audio recordings.....	89
Semi-structured interviews.....	90
Classroom mappings	90
Artifacts.....	90
Data Analysis Categories.....	91
Literacy.....	91
Play.....	91
Tinkering.....	91
Overarching themes.....	92
Trustworthiness and Limitations	94
CHAPTER 5 – THE SPARK OF MINDFUL DESIGN	96
Josh Densen.....	97
Playground Talk, Living Room Conversations, and Community Meetings	99
The Iterative Design Process	99
Naming Bricolage.....	101
Culture, Mission and Core Values of Bricolage Academy	103
Summer Camp	104
Curriculum Design.....	105
Literacy Curriculum.....	106
Content Curriculum	108
Innovation	108
Summary of Findings: The Beginning of Bricolage Academy	110
CHAPTER 6 – THE WONDERINGS OF THE KREWE	113
The School Context: St. Charles Avenue.....	114
Ms. Lorio’s Kindergarten Classroom.....	116
Ms. Lorio.	117

Kindergarten reading workshop.....	118
Ms. Turner's First Grade Classroom.....	120
Ms. Turner.....	121
First grade writing workshop.....	123
Summary of Findings.....	126
CHAPTER 7 – THE WHIMSY OF THE MAKER.....	131
The Innovation Room.....	132
Mr. Reynaud.....	133
Innovation time.....	134
Design – Animal Adaptations.....	135
Tinker/Make – Animal Adaptations.....	141
Design of pollinators.....	143
Tinker/make – pollinators.....	144
Whimsical Play vs. Guided Pedagogical Play.....	145
Summary of Findings.....	147
CHAPTER 8 –THE CLEVERNESS OF INNOVATION.....	156
The School Context: Esplanade Avenue.....	156
Alex Owens – Innovation Room Teacher.....	159
Classroom Design – The Innovation Room of Mr. Owens.....	160
Zulu coconuts.....	163
Designing a Bricolage throw.....	165
The problems of Mardi Gras.....	166
Mardi Gras floats.....	167
Summary.....	167
CHAPTER 9 – CONCLUSION.....	171
Overview of Findings.....	171
Sociocultural context of Bricolage Academy.....	172
Classroom spaces.....	174
Collaborative culture of the Krewe.....	175
Design-tinker-make framework for play.....	176
Iteration of Multiliteracies Theory.....	179
Bricolage Literacy Theory.....	181
Literacy for the bricoleur.....	182
Tinkering as a form of literacy.....	184
Implications for Play.....	185
Implications for “Mini-Maker” Spaces / Innovation Rooms.....	186
Shaping the environment: time and space.....	187
Talking and thinking curriculum.....	187
Culture of support.....	187
Literacy and play.....	188
Limitations of the Study.....	188
Implications for Future Research.....	189
REFERENCES.....	192
TABLE 1: Data Collection Timeline and Procedures.....	213

TABLE 2: Examples of Children's Prototypes	214
TABLE 3: Comparisons	215
Appendix A: Bricolage's Core Values.....	216
Appendix B: Administrator Semi-Structured Interview Guide.....	217
Appendix C: Teacher Semi-Structured Interview Guide	219
Appendix D: Child Semi-Structured Interview Guide.....	222

Abstract

This dissertation examines the types of literacy young children enact when they play/work in environments that support play/tinkering. Theoretically, my study sits within the larger field of research on multiliteracies, at the intersection of play theory, new literacy theory, and sociocultural theories of literacy. I used those theories to help me locate a school that supports play and tinkering, and I found a public charter elementary school (grades K-2) in New Orleans, which was designed specifically for play and innovation, called *Bricolage*. I used this school as my research site over the course of sixteen months, gathering data to both theorize and document how socially, ethnically, and culturally diverse young children use a wide range of literacy practices to play and innovate with each other. Findings from this bounded case study indicate that children create real, workable designs in educational environments that provide time and space, a collaborative culture, and a design/tinker/make framework for play. These findings expand the definition of new literacies, refine ideas about play within the larger scope of multiliteracies, and form the foundation of a theory of literacy that encompasses the concept of bricolage/tinkering. Recommendations from the study are provided for educators, designers of formal learning environments, policy makers, and researchers who seek to better understand the relationship between literacy, play and innovation in contemporary classroom environments.

Keywords: New literacies, multiliteracies, sociocultural literacy, play, bricolage/tinker, innovation, design thinking, mini-maker space

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CHAPTER 1 – INTRODUCTION & BACKGROUND



This space is loud.

Children are talking, singing, and making muddled noises...

This rhythm and melody could be the sound of thinking, creativity, whimsy, or of an inventor.

Some children are gathering materials of cardboard, tape, glue, and fasteners.

*Others are tinkering - trying out their cardboard creations,
some only to find that the creation is not strong enough to sustain user testing or usability.*

Failure? Not at all – try and try again.

It is the process of iteration, one step in the design process.

At first glance, this classroom may seem chaotic – but it can also be seen as a playful, meaning making environment embodied with literate possibilities. This is what this dissertation is about: literacy, play, tinkering – bricolage, in an environment that “advances educational

equity by preparing students from diverse backgrounds to be innovators who change the world” (Bricolage Academy Family Handbook, 2014, p. 5). This is a case study of Bricolage Academy of New Orleans, a public elementary charter school serving children kindergarten through second grade during the 2014-16 school years. I have chosen to present the instructional models found in a kindergarten, first grade, and innovation classrooms because I believe the ideologies and pedagogical practices in this space move the conversation forward regarding what counts as literacy in our contemporary time. Although this study presents four educators who make efforts to promote literacy through play and tinkering within their classroom contexts, their practice can serve as a starting point or an “available design” from which other educators can “redesign” by taking what exists as described in this study and make it better - leading to innovation and new and broader ways of thinking about literacy and the future of classroom contexts and schools.

Purpose

New literacy research suggests an investigation of a broad range of hybrid literacies and new pedagogies. Key ideas informing multiliteracies focus on the complexity and inter-relationship of multiple modes of meaning (Gee, 2007; New London Group, 1996; Street, 1987). Bezemer and Kress (2008) define a *mode* as a “socially and culturally shaped resource for meaning making” (p. 171). For example, multimodal literacies combine the form and meaning of audio, visual, linguistic, action, and environmental modes of representation (Kress, 1997; New London Group, 1996; Norris, 2004).

Theoretically, my study sits within the larger field of research on multiliteracies, at the intersection of play theory, new literacy theory, and sociocultural theories of literacy. One purpose of this study is to examine enactments of multimodal literacies and new modes of

thinking where children are the makers of communication systems (Kress, 1997). Another purpose is to examine the role of play and tinkering in support of literacy development. This research is necessary to understand the complexities of children's access to new forms of literacies and meaning making, and concurrently to understand how a culture of innovation can be built in formal school settings (Kress, 1997; Wholwend, 2011).

Sociocultural theories of literacy have expanded the definition and blurred the boundaries of tightly held traditional conceptions of literacy as a mono-modal static entity of learning to read and write print texts. The re-conceptualization of literacy from a sociocultural perspective views literacy as an active practice entrenched in historical, cultural, and ideological perspectives, which places a greater emphasis on the role of both the individual and the culture (Lewis, Enciso, and Moje, 2007; Street, 1987). This view provides an insight into how signs and symbols can take on different meanings in different situations, contexts, practices, cultures, and historical periods as children form different affiliations and prepare for future learning (Cope & Kalantzis, 2009; Gee, 2007). Because children in our current globalized society require competence in a range of meaning making systems, including design and innovation, there is a need to transform inequitable distributions of literacies through new pedagogies for improved literacy access.

The purpose of education, historically, has been to reduce poverty, provide a means that allows students to fully participate in society, and prepare students for a new world of work. Literacy pedagogy plays an important role in fulfilling this purpose (New London Group, 1996). In particular, early childhood education sought to break the cycle of deprivation by providing access to literacies through play-embedded curriculum. Currently, though, play, as it relates to

contemporary literacy learning, is questioned as a valuable activity. This suggests a lack of awareness of the theory and research regarding the importance of play in early literacy environments (Lynch, 2015; Roskos & Christie, 2001)

Discontinuity between policy, practice, and the importance of play in children's educational experiences drives the purpose of this dissertation. Rethinking the affordances of play and examining the spaces where literacy, play, and innovation interact and function may allow for formal schooling environments to harness a socially and culturally powerful medium of embodied literacy engagement. What it means to be literate and how play contributes to the new set of skills needed for literacy development in our current time challenges traditional definitions and pedagogical practices of print based literacy. This research is significant because the intersections among literacy, play and bricolage/tinkering as pedagogical practices have not been studied with young children. In addition, formal school environments that have been designed to foster innovation for a diverse urban population of young children have not been studied, simply because there are not many schools like that. However, I found one located in Bayou St. John, New Orleans, Louisiana – Bricolage Academy.

Objective and Research Question

The following research question aims to refine ideas about play within the larger scope of multiliteracies. Using multiple theoretical lenses, I set out to identify a working definition of play from key features of sociocultural theory, new literacy theory, and play theory. I also use the concept of bricolage/tinkering because it helps to explain the relationship between play and innovation. With this dissertation, I establish that bricolage/tinkering is both a form of literacy

and a crucial component of a pedagogy of multiliteracies. This study seeks to answer the question:

1. What types of literacy are young children enacting when they play/work in environments that support play/tinkering?

Further questions that I explore include:

1. What do children do when they play/work in environments that support tinkering?
2. How do teachers create classroom environments that encourage such play and tinkering?
3. How does a whole school embrace the students and their teachers in the bricolage mentality?
4. What environments support play and tinkering? What are the tools and technologies available in these environments?

I ground my study in the convergence of play theory, new literacy theory, and sociocultural theories of literacy. I use intersections of these three learning theories as my analytical frame. My aim is to both theorize and document how socially, ethnically, and culturally diverse young children use the literacies of play to innovate, which also addresses the wide range of literacy practices available in engaging multimodal environments (Coiro et al., 2008; Kress and van Leeuwen, 2001). This study fills an important space in the research on the pedagogical practices related to the intersection of play, new literacies, and bricolage/tinkering. In doing so, it broadens the limited literature on literacy-play in contemporary times and advances discussions about how this intersection can be better understood to deepen the connections between scholarship and practice. This research is also significant because it may

contribute to the national debate about the nature of play and its disappearance in schooling environments.

Definition of Terms

Before I delve into the social and historical contexts of New Orleans public schools, the following terms and definitions are used throughout this dissertation to convey specific concepts, as follows:

Bricolage/tinker: Bricoleurs are “‘tinkerers using what they got, [to] improvise, and make do’ ” (Repenning & Ioannidou, 1997, p. 3). According to Berland, et al. (2013), tinkering is considered divergent as it describes both an orientation and a set of activities. As an orientation, tinkering describes the act of playful experimentation. As a set of activities, tinkering includes experimentation, messing around, fussing, or a combination - ultimately leading to engagement of trial and error. (p. 5)

Design: the iterative selection and arrangement of elements to form a whole by which people create artifacts, systems, and tools intended to solve a range of problems, large and small (Honey and Kanter, 2013); how people make use of the resources that are available to them at a particular moment to create their representation; presupposes imagination of different, new, possibilities and is oriented toward change, future needs, wishes, and demands (Kress, 1997)

Imagination: exploration of new possibilities free from the literal and mundane; experiencing life vicariously. Imagination is a release from seeing the world only as a set of categorizations and naming parts, allowing us to particularize, to see, hear and experience things in their concreteness and within our own contexts (Albers & Harste, 2007, p. 10; Greene, 1995)

Innovation: a label for a classroom space in my particular study where children engage in making activities, problem solving, design thinking, and play. It could easily be called the “Innovation Room,” but the people in the study referred to the time spent in this space and the room itself as simply “innovation.”

Krewe: a group of people, a community, collaborative participatory culture

Make: to build or adapt objects by hand for the simple personal pleasure of figuring out how things work (Honey and Kanter, 2013, p. 4)

“Mini-maker” space: an environment that includes materials (e.g., cardboard, string, pipe cleaners), tools (e.g., scissors, fasteners, pens, computers), and opportunity for children to design, make, solve problems, innovate, and play

Mode: various sign systems that carry meanings that a social collective recognizes and understands (e.g., visual, spatial, digital, musical, gestural) (Alpers, 2007; Jewitt, 2003; Kress & van Leeuwen, 2001)

Multiliteracies: a set of open ended and flexible multiple literacies required to function in diverse contexts and communities (New London Group, 1996); describes the teaching of all representations of meaning including linguistic, visual, audio, spatial, and gestural, which are subsumed under the category of multimodal (New London Group, 1996)

Multimodality: meanings are made (as well as distributed, interpreted, and remade) through many representations and communicational resources (Kress, et al., 1998; Kress & van Leeuwen, 2001)

New Literacies: the theorization of the complexities of literacies as historically, socially, and culturally situated practice (Jewitt, 2008; Street, 1998)

Play: curiosity, investigation, discovery, creativity, exploration, tinkering, and invention

Serious Play: intense experience in which children voluntarily devote enormous amounts of time, energy, and commitment and at the same time derive enjoyment from the experience (Reiber, Smith, & Noah, 1998)

Semiotic domain: *Semiotics* is the study of signs such as images, symbols, words, movements, gestures, objects, and artifacts. These signs, however, only take on meaning when they are embodied in a *domain* explained as a context, practice, culture or historical period (Gee, 2007)

Education in New Orleans Pre and Post Hurricane Katrina

The roads and buildings, the borders between cities and suburbs, the informal labels associating neighborhoods with racial groups or social class distinctions – all seem literally set in concrete, asphalt, and corralled grass and trees...the physicality of neighborhoods matters. It echoes with voices of those who lived before, including those who brought their hopes and dreams for their children to cities-in-formation and whose lived experiences continue to shape children's lives. (Dyson, 2013, p. 9)

Based upon the conversations I had and observations I made during my time in New Orleans, I learned that it is typical for a New Orleanian to speak of their city from a pre-Hurricane Katrina and post-Hurricane Katrina perspective. Echoing Dyson's (2013) quote above, the physicality of the city and the division of one's life around Hurricane Katrina matter. "It echoes with voices of those who lived before" and those who "hopes and dreams for their children" (Dyson, 2013, p. 9).

It is important to set this in context as it relates to public education in New Orleans. The critical political perspectives centered around the topic of the charter movement and public education in New Orleans is beyond the scope of this dissertation, but some background information is necessary, first, to provide a picture of the past in order to understand the present, and second, to understand how and why Bricolage Academy came to be.

Pre Hurricane Katrina – New Orleans public schools.

For generations, long before Hurricane Katrina, the public schools in New Orleans had been subjected to racial neglect, exploitation and segregation (Buras, 2011). Twenty years after the court ruling of *Brown v. Board of Education* (1954) integration was forced upon the public school system, which led to white flight from the city. By 1960, schools that were once split evenly demographically gradually became predominately African American, as White middle class families disengaged from public education and moved to suburbs outside the city, with many choosing to send their children to private schools, resulting in a shift of racial demographics. According to Carr (2014), shifting demographics coupled with economically disadvantaged populations are contributing factors that led to the failure of the public school system.

By 2005, plagued by corruption, financial mismanagement, racial disparities, poverty, and disheartening academic performance, confidence was lost in the city's public school system (Buras, 2011; Carr, 2014; Rossmeier & Sims, 2015). Prior to Hurricane Katrina, the Orleans Parish School District (OPSD) was considered "academically unacceptable" by the Louisiana Department of Education (2006). Schools were in a state of disrepair and fundamental concerns had been voiced about essential resources including infrastructures, ventilation, as well as

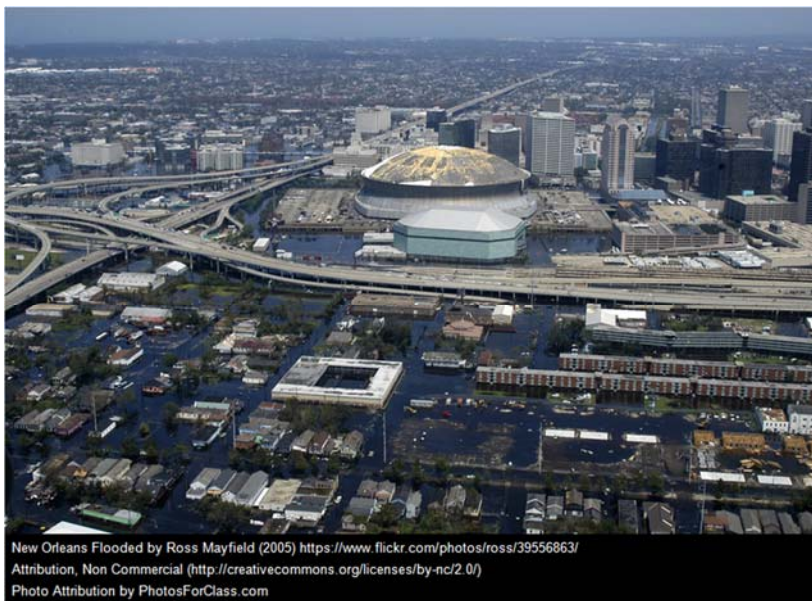
electrical and plumbing issues (Johnson, 2008; Saltman, 2009). Students experienced classrooms that were over-populated, that lacked materials, and that did not have adequate staffing (Buras, 2009). Schools were falling short of their mission and failed to educate the majority of the children (Cowen, 2015). Drop-out rates were high, graduation rates were very low, and no solutions were in sight to help improve public education in New Orleans (Buras, 2011).

Under the Bush Administration's federal educational policy, No Child Left Behind (NCLB), the Orleans School District pushed for an increase in test scores and raised school accountability. However, the majority of schools in New Orleans failed to meet Annual Yearly Progress (AYP). Two years before Hurricane Katrina, the state created the Recovery School District (RSD), which either turned low performing schools (schools that failed to meet AYP four years in a row) into charter schools or turned them over to the state of Louisiana. The charter movement, as a school reform initiative that began prior to the storm, later would become the primary way schools operate (Cowen, 2011; Harlin & Kirylo, 2005).

Hurricane Katrina. Early in the morning, on August 29, 2005, Hurricane Katrina struck the Gulf Coast. The storm's high winds and rain brought devastation to much of the South. But, in New Orleans, a city that is about six feet below sea level and completely surrounded by water, a devastating event happened. The levees built by the Army Corps of Engineers that held back Lake Pontchartrain and other bodies of water broke, and the city flooded, leaving more than eighty percent of New Orleans under water (Bullard & Wright, 2010). Hundreds of thousands of people were displaced, suffered destruction, disease, and even death (Dyson, 2006). According to Bullard and Wright (2010), "Katrina was an insufferable tragedy that will never be

forgotten... devastating homes, neighborhoods, communities and institutions” (p. 26).

Hurricane Katrina left devastation in its aftermath. Following Hurricane Katrina, school buildings were heavily devastated, leaving fewer than 20 of approximately 120 school buildings usable (Hill, 2006). Communities, families, children and teachers were scattered, and many challenges faced New Orleanians. However, perseverance and determination to bring the city back continues to be illustrated in the rebuilding of schools and communities.



Post Hurricane Katrina – New Orleans public schools. Despite the delay of children returning to school until January, nearly five months after the storm, pushing forward – schools began to reassemble. Transformative change in the landscape of public education ensued after Hurricane Katrina as the Orleans Parish School District became decentralized, resulting in charter school dominance (Rossmeier & Sims, 2015).

[After] the storm, city leaders, school board members, and the state education officials questioned the feasibility and safety of getting the district up and running to serve

returning students. Charter conversations enabled individual schools to serve students before the district as a whole was ready to open its doors. (Public Impact, 2015, p. 21)

Now, ten years after Hurricane Katrina, the city continues to push toward a more equitable and effective urban public school system. According to Buras (2011), the transformations brought about by the charter school movement make New Orleans regarded as an *educational incubator and experimental site for urban educational reform* in the United States. The charter school movement brought about academic improvement, accountability, autonomy, and new school facilities. Many New Orleanians and educators I spoke with stated that the resurgence, changes, and improvements in the school system would not have occurred at this level had it not been for Hurricane Katrina.

Currently, 90 percent of all New Orleans public school students attend charter schools (Public Impact, 2015). According to Mitch Landrieu, New Orleans Mayor, charter schools in New Orleans provide opportunity and a pathway to higher education. Charter schools are seen as places that can provide opportunity, autonomy, and a curriculum that meets the needs of students and the



Bricolage Academy, October 2014

community, while demanding accountability and placing focus on equity (Public Impact, 2015). With regard to equity, in New Orleans, the term refers to programming and policies to ensure all families (especially those who are most vulnerable and marginalized) have public school enrollment opportunities, access to services, unified discipline policies, and free citywide transportation (Public Impact, 2015). These improvements toward advancing equity and

educational opportunities for all families now provide options for children who have historically been neglected by traditional public schools (Public Impact, 2015; Rossmeier & Sims, 2015).

My story.

To current concerns about our increasingly diverse student population and about the school's effectiveness in serving those students, we collectively declare through vivid example the need for and the power of story. (Dyson and Genishi, 1994, p. 6)

Let me begin by stating that I am not naïve to the criticisms of or realities facing New Orleans public charter schools or the children they serve. My dissertation research aims to tell one school's story – a story of literacy practices that may impact educating young children beyond this case study. By sharing stories, we have the potential to transform and create new relationships and classroom cultures and bring about new perspectives and viewpoints regarding the education of all children and the future of schools. Together, I believe we weave our individual stories into the fabric of educational communities to create a large quilt – joined together by the interconnected voices, experiences and opportunities.

The narrative that follows describes my experiences as a doctoral student/educational researcher in New Orleans, Louisiana. My dissertation question and interest in the topic of rethinking schools for the future emerged out of my own personal experiences on which this reflective work is based. Prior to conducting this research study, I worked as a classroom teacher for over 14 years in urban cities of the northern United States. My experiences working with diverse populations of children sent me on a quest to find ways in which marginalized children could benefit, learn, and be engaged in their education, with hope to improve their future. It is

my own reflective practice as an educator that leads me to think deeply about the realities of children's and teachers' lived experiences and find ways to improve literacy teaching and learning. By looking through the lens of one school's actual experience to transform educational opportunity and practice for all children, this work tries to reflect the intensity, perseverance, and need to change how children are educated and how schools can be re-imagined, and offer a potential educational trajectory for urban children. Concerned about the future of schools in general, my dissertation question grew out of my curiosity and determination to challenge traditional schooling practices and transform the vision of schools for future generations.

Overview of Dissertation

With this dissertation, I contribute to an expanded definition of new literacies to include tinkering as a form of literacy and discuss how literacy is not about being able to *construct* "objects" of knowledge and learning. Instead, literacy is directed toward *making* and the *process of design* to interpret useful relations between and among what is perceived and what is imagined through tinkering. In the following chapter, Chapter two, I provide a review of literature that guides this study in support of the themes that emerged from the data to answer my research question. The review of literature discusses historical discourses, definitions, and implications the role of play has on current early childhood literacy. This literature review reveals that play, historically, has cultivated children's participation and dispositions toward culturally diverse societies, challenged equitable education, and was central to constructing knowledge and understanding of how teachers and children interact to design and connect literacy to their lives and the world around them.

In Chapter three, I discuss sociocultural theories of literacy as the theoretical framework of this study. Sociocultural theories of literacy focus on how children understand and make meaning in relation to the cultural context in which they have developed and grown, emphasizing the interdependence of social and individual processes in the construction of knowledge. Examining the context/environment, culture, and ideological perspectives of play and literacies help uncover the triadic relationship between educators, children, and cultural tools in order to gain understanding of the complexities of children's access to new forms of literacies and meaning making. By combining sociocultural theories of literacy, including new literacies, with the concepts of bricolage/tinkering and the literature around innovation and design thinking, I develop a multifaceted theoretical framework to ground my dissertation research.

In Chapter four, I discuss my research design. I chose to conduct a qualitative study, in particular, a bounded case study, because this methodology offers the best strategies to address my research question. Supporting a holistic view, qualitative research allows researchers to develop a comprehensive understanding of the people and institutions they are studying. In my case, it has allowed me to understand the teachers and students who spend their school days within a sociocultural context that is specifically designed for innovation through play, tinkering, and other acts of literacy. In addition, I provide a rationale for my research method, address issues of reliability and validity, and discuss data collection methods and procedures. I provide an overview of the research setting, participants, and measures for human subject safeguarding, and finally, I discuss data analysis procedures.

In Chapter five, *The Spark of Mindful Design*, I begin with a brief discussion of the communities of practice at Bricolage Academy to make a connection between the term *Krewe*

and the concepts that emerged from my data. This chapter discusses the sparks of ideas that lead to the design of a school. I describe how and why Bricolage Academy of New Orleans came to be. I begin with an introduction of Mr. Josh Densen, CEO and founder of Bricolage Academy. I describe the journey taken from a spark of an idea to the mindful design of the overall school environment. Then, I provide an overview of the curriculum, which helps create and support educational environments that value a wide range of literacy practices, a collaborative culture, time and space, and a design/tinker/make framework for play. Finally, I draw some parallels in thinking between Mr. Densen and historical play theorists.

In Chapter six, *The Wonderings of the KREWE*, I discuss findings relevant to the enactment of multiliteracies pedagogy during a reading and writing workshop. This chapter pays particular attention to critical framing and how children understand the context of their learning as related to the world around them. Critical framing includes questioning and children's wonderings as they consider, interpret and form meanings of their textual practices in relation to their cultural and social context. I provide findings from a reading workshop in Ms. Lorio's kindergarten classroom and from a writing workshop in Ms. Turner's first grade classroom. The examples illustrate how teachers provide scaffolding and support to help children conceptualize, analyze, *wonder* and think differently about signs, symbols, and textual meaning making. The children's *wonderings* paint a portrait of how questioning, embedded in the reading and writing workshop model, helps lead to creativity and innovation by connecting children's individual ideas and interests to the collaborative culture of the Krewe.

In Chapter seven, *The Whimsy of the Maker*, I focus on findings to highlight how play and tinkering can extend literacy possibilities for children and how children make meaning

through enactive, iconic, and symbolic modes of representation (Bruner, 1996). The play/work in this mini-maker space context is both whimsical and guided and valued as a way to give children a chance to improvise and innovate (Sutton-Smith, 2001). The innovation room space was social and the artifacts created by the children functioned as real, workable designs of creative representations of meaning about the world around them. Insight into a design/tinker/make framework and Bruner's (1996) three modes of representation refine ideas about tinkering and play within the larger scope of multiliteracies.

In Chapter 8, *The Cleverness of Innovation*, I provide findings on how the innovation classroom environment embraces the pedagogy of multiliteracies to promote a culture of creativity, innovation, and flexibility and regards all forms of representation as a dynamic process of meaning making. I illustrate how children's explorations, play, tinkering, and progress toward understanding complex concepts through transformative practice are represented in the artifacts they create.

In Chapter 9, I provide an integrated overview of the findings from my research followed by a theory of literacy that combines the theories I have relied upon with the practices I documented. I discuss implications of this dissertation study for expanding new literacies to include tinkering/bricolage. I discuss how thinking about literacy as tinkering/bricolage is a useful way to understand how meaning extends boundaries of modes and multimodal connections. I conclude with final remarks, limitations of my study, and future directions for research.

CHAPTER 2 - LITERATURE REVIEW

To promote greater discussion about the possibilities for play and tinkering as forms of literacy in early childhood environments, the following review of literature discusses and evaluates the historical discourses, conflicting definitions, and implications the role of play has for current early childhood literacy. This literature review reveals that play, historically, has cultivated children's participation and dispositions toward culturally diverse societies, challenged equitable education, and was central to constructing knowledge, gaining meaning, and understanding of how teachers and children interact to design and connect literacy to their lives and the world around them (Jewitt, 2008; Kress, 1997; Wholwend, 2011).

Sociocultural Theories

While sociocultural theories of literacy do not always engage with definitions of play, I use a sociocultural lens as my theoretical framework for this literature review. Sociocultural theories focus on how children understand and make meaning in relation to the cultural context in which they have developed and grown, emphasizing the interdependence of social and individual processes in the construction of knowledge. Sociocultural theories "seek to understand how children interpret who they are in relation to others, and how children have learned to process, interpret and encode their world" (Perez, 1998, p. 4).

In this literature review, I bring together the work of historical play theorists to underpin play research and to provide a starting point to extend the argument that play is important in the design of social futures and cultures of innovation. As research literature points out, while play may not be able to be defined in concrete terms, viewing play through multiple theoretical

perspectives may provide insight into a re-vision of play characteristics and theories that align with contemporary childhood activities and literacies.

Historical Discourses of Play

The purpose of identifying historical discourses of play is to provide an overview of the foundational theoretical approaches to children's play that have contributed to the characteristics which outline essential elements for the development of young children. Historically, play activities have always been part of early childhood education programs and are supported by dominant theories of the pioneers in educational play such as Friedrich Froebel (1782-1852), Maria Montessori (1870-1952), Jean Piaget (1896-1980), and Lev Vygotsky (1896-1934).

Historical theorists view play as a form of meaning making and understanding of the world through cognitive construction of knowledge with the help and guidance of adults. From a constructivist lens, children individually construct new knowledge in their minds in developmental, systematic ways by combining their prior experiences with new situations (Spodek & Saracho, 1995).

The work of historical play theorists provides supporting evidence and underlying significance to the topic of play in our current time. However, the dominant constructivist framework rooted in developmental psychology reveals a narrow conceptualization of play over the past century. For example, contemporary theorists, such as Jerome Bruner and Seymour Papert, whose work is not solely or explicitly related to child's play, underscore the importance of drawing upon social worlds and multimodal experiences to create meaning through production of artifacts or products. Papert's work in particular extends the constructivist framework and sets the stage for both a theory of learning and a strategy for education called constructionism - the

idea that children construct personally meaningful products, and that this construction of products may come about through play/tinkering (Resnick, 1996). There has been very little research conducted that extends historical theories of play and how play contributes to literacy in contemporary times, a gap which this dissertation aims to address. Viewing play from a sociocultural perspective offers unparalleled opportunities to transform and extend constructivist based learning environments to include constructionist theory, and helps set the stage for greater understanding regarding the explorations and multimodal experiences that may support children's play/tinkering with valued cultural tools and activities to promote literacy enactments in formal schooling environments.

The historical discourses of play in this literature review become an important narrative to my study as I aim to contextualize the cultural and ideological perspectives of the past with current sociocultural theories of early literacy in an effort to study children's enactments of literacies in spaces that foster play, imagination, and innovation in elementary school contexts (Martinez & Stager, 2013; Sheridan et al., 2014). Interestingly, all of these play theorists' created their ideological perspectives during times of societal upheaval and change, resulting in re-imagining educational environments for young children.

In the first section, I purposefully discuss each play theorist individually. My intention is to paint a clear picture of each theorist's historical, cultural and ideological perspectives and examine how social, cultural, political, and economic realities drove education and schooling. I further examine each theorist's educational theory, and ideas about play in relation to sociocultural theories. Specifically, I discuss how each play theorist sought to extend the lives of children by focusing on three themes associated with sociocultural theory:

1. The impact of political, social, and historical contexts and how they codetermine the design of learning environments and pedagogical practices;
2. How children make meaning in relation to their cultural context and how children learn to process and interpret their world;
3. Perspectives of the interdependence of social and individual processes to construct knowledge.

Friedrich Froebel. Friedrich Froebel (1782-1852) is noted as the most significant pioneer of early childhood education (Tovey, 2012). Froebel was a German educator and founder of the first formalized educational institution for young children, known as “a children’s garden” or Kindergarten – a place where young children could grow and develop (Froebel, 1891; Martinez & Stager, 2013). Impacted by political and historical contexts, Froebel’s ideas about educating young children came in response to his realization that the regeneration of German society could not be possible unless there were provisions for young children (Tovey, 2013). Froebel’s design of kindergarten stemmed from his belief that children should be educated in spiritual dimensions and he gave great consideration to natural activities children could encounter through engagement with the world around them (Allen, 1982; Martinez Stager, 2013). Culturally, Froebel’s ideas placed great emphasis on spirituality and were shaped by his own religious beliefs and experiences as a child. Based on values and principles of respect, connectedness, play, talk, first-hand experiences, and creativity, the Froebelian approach set out to “instruct human beings so that they may progress as individuals and as members of humanity in all its various relationships [and the] transformation of people’s way of life the family – ‘ the true root of human life’ –and the school” (Lilley, 2010, p. 98 & 121). Considered radical

concepts at the time, Froebel believed that children learn best through self-activity, play, and talk. Froebel argued the importance of education in the early years of a child's life as the foundation for later learning (Tovey, 2012).

Froebel's most important contribution to early childhood education was his perspectives and ideas on the social and individual processes of constructing knowledge through *gifts* and *occupations*. The *gifts* were series of categorical geometrical forms - objects that children could play and experiment with in multiple ways including: balls of yarn, wooden blocks, geometric shapes (sphere, cube, cylinder), planes, lines, and points (Stiny, 1980). Experimenting with the *gifts* encouraged and provided opportunity for children to discover geometric properties and create designs stemming from their creativity. Play with the *gifts* was encouraged so that children could discover new forms by trial and error. When children could no longer see further possibilities in their play, guidance from "his mother" (Stiny, 1980, p. 411) or teacher would facilitate the generation of new ideas or direction of play. According to Froebel, the *gifts* literally functioned as tools to develop the interconnectedness of nature and move a child's conceptual learning from simple to complex. Froebel's *gifts* helped children see cause and effect, possibilities for design, the interrelationships between living and inanimate things, all of which were considered to be appropriate in terms of the cognitive and developmental needs of children (Acevedo, 2008; Brosterman, 1997; Provenzo, 2009; Stiny, 1990). Froebel's curriculum also included handwork called *occupations*. *Occupations* included a series of devices and activities to introduce children to physical forms and relationships found in nature (Provenzo, 1990). *Occupations* were considered guided materials based activities that included molding, folding, beading, threading, and building.

Froebel's idea of play emphasized a child's mother or teacher as a guide in providing children with *gifts* and *occupations* to explore. Froebel's perceived adult interaction and explicit teaching as essential elements to move children's development and understanding forward from simple to complex. This was done by the adult showing children how things are connected with and through experiences with the *gifts* and *occupations*. Froebel theorized that through adult guidance and interaction with the world's objects, children learned (Provenzo, 2009).

Froebel's kindergarteners did not engage in free and expressive forms of play. According to Froebel, once children learned about the *gifts* in an orderly presentation (to ensure the child sees the object as a whole) they could be used in free play. The goal of free play was for the child to discover new ideas based upon trial and error.

Drawing upon sociocultural theory, Froebel believed the schooling environment should be made up of democratic communities of learners and be closely connected to the wider society of people and places. He created a learning environment that gave children freedom as well as guidance from adults. Well informed educators fostered positive relationships with children through trust and respect, building upon the positive characteristics of each child. Additionally, during play, importance was placed on children understanding and learning that there is unity in the universe, that materials could be used to create beautiful things, to be responsible and moral, and to understand the harmony that resides in ideal human relationships (Lilley, 1967).

Froebel's belief that both children and adults could learn from each other was a foreshadowing of ideas to come through the progressive education movement (Lilley, 1967; Tovey, 2012).

Maria Montessori. At the beginning of the twentieth century, Maria Montessori, an Italian educator, physician, and social reformer, created a movement in early childhood education known as the Montessori Method (Montessori, 1965, 1966). Political and socioeconomic changes during the twentieth century stemming from industrialization and technological innovation resulted in many middle class mothers becoming a part of Italy's working class. Considered a pioneer and supporter of the women's movement in Italy, Montessori recognized the need to create an educational institution that would make it possible for mothers to leave their children in order to enter the workforce. Bringing about social and cultural reform through educational means, Montessori founded the Casa dei Bambini, also known as a school-home (which later served as the prototype of the Montessori school), located in the working class area of Italy's developing industries. Guteck (2004) further states:

In founding the Casa dei Bambini, Montessori was guided by sociological and educational aims that she developed during the various states of her career. Located within the tenement, where the children's families' lived, the school was to act as a vital organic connection between education and society, represented by the family. Not only was her method a means to educate children more humanely and effectively, but it was intended to aid in social regeneration of San Lorenzo's impoverished residents...the school would contribute to the socialization of the family and household, which in turn would connect the household to the larger community. (p. 15)

Montessori's call for a revolution in society's approach to education and human development underpin her educational philosophies and method. The Montessori Method was premised on the idea that children pass through periods of sensitivity and that their minds are an

absorbent “instrument of tremendous vitality, capable by itself, given the proper freedom of action, of imposing order and meaning on the world” (Dennis, 1974, p. 5). This view challenged traditional education found in Italy in the 1890’s which placed the teacher in the center as a transmitter of knowledge and students as passive receptacles of information (Guttek, 2004). Montessori placed emphasis on engaging in and experiencing human interdependence to help children understand themselves and how society is organized. Her intent was for children to develop skills needed to solve the worlds’ challenges in positive ways.

Like Froebel, elements of Montessori’s educational method originated from the innate, natural play-like activities of children. However, Montessori believed that children thrived in environments that were both structured and unstructured: structured in the sense that the environment was orderly, and all materials within the environment were purposeful to a child’s learning; and unstructured in the sense that children were given the freedom to explore, problem solve, and engage with the materials at hand to assimilate many elements of their complex culture, as they saw fit.

Montessori recognized Froebel’s theory of learning as inadequate because she postulated that he relied solely on philosophical understandings of how a child developed and learned. Divergently, Montessori drew upon her clinical medical training and knowledge of physical anthropology and viewed a child’s development as a scientific process. She believed that clinical observation revealed when and how a child learned and that curriculum should be based on the science of education. Montessori’s philosophy developed into an educational principle grounding her theory of learning that children need to have freedom to act in order to achieve growth and development (Guttek, 2004; Lillard, 2005). The Montessori Method is rooted in the

belief that children develop and learn in a prepared, structured environment where they are free to explore, work, play, and select the materials with which they would like to engage.

Through her own observations, Montessori viewed children as innately curious about the world around them and that active curiosity led to intellectual and physical development through the manipulation of the materials in the environment. Accordingly, Montessori believed that children had an instinct to “work” to satisfy this innate curiosity and she recognized that children could gain a greater awareness of the properties that materials possess (i.e., color, size, shape, weight, sound) by working with them. The freedom to choose and children’s undertaking with materials, from an outside perspective, could have been interpreted as play because children found interest and delight in performing tasks, but a child’s exploration and engagement with materials from Montessori’s perspective was not considered to be frivolous. Rather, the activities and materials that children engaged with were purposeful and significant to the development of cognition, language, and the world around them.

The materials found in the Montessori classroom were intended for children to learn about practical life skills including: sensory education, language, math, and general physical, social, and cultural development (Gutek, 2004, p. 52). While children were allowed to engage in activities of their choice, they were only able to use Montessori materials or work in prescribed ways. She believed that it was demeaning to insist that the only thing a child wants to do is play.

In particular, play, from Montessori’s perspective, was viewed as “the lack of something better to do” (Montessori, 1966, p. 149). Montessori’s activities consisted of both the manipulation of materials to gain and organize sensory experiences as well as the carrying out of exercises involving practical life skills (e.g., pouring water, carrying items on a tray, sweeping

the floor). Montessori viewed the environment as significant in children's language learning and that it was the job of the teacher to provide children with wonderful sights, sounds, textures, and smells in order to "educate the senses" (Mooney, 2013, p. 41). While some researchers cite Montessori education as an example of playful learning – child centered including free play and guided play (Diamond & Lee 2011; Elkind 2007; Hirsh-Pasek et al., 2009), Montessori would have argued that her method was not playful but purposeful work.

The Montessori movement in education brought a new perspective to early childhood education. Montessori provided opportunities for children to process and interpret their world, not by thinking about it abstractly, but through manipulation of it. Montessori's philosophy of education and development, including freedom to choose, adult mediation, and scaffolding influenced the work of American play theorist John Dewey (1900). Her work also provided a foundation for the human development approach to children's play and learning of Jean Piaget (1962) as they relate to cognitive processes, and use of concrete objects (Mooney, 2013).

From a sociocultural perspective, Montessori's theory placed importance on environment and culture as essential components in a child's development. She believed that children learn cultural patterns and make social adaptations based upon what is learned through oneself, peers, and educators. The holistic approach of Montessori education helps children to develop productive dispositions toward nature and humanity and make meaning in relation to cultural contexts (Edwards, et al., 2014).

Both Froebel's and Montessori's theories of play and learning provide perspectives focused on the way in which social, political and historical contexts prompted change in terms of learning environments and pedagogical practices. While the traditionalist views perceived the

child and the environment as disconnected, Froebel and Montessori's ideologies of the use of tools, mediation of human action, and cultural experiences provide an interconnectedness whereby children seek to understand who they are in relation to others, and use the environment around them to transform their understandings to arrive at complex meaning making (Nardi, 1996). Froebel's idealistic and Montessori's empiricist philosophies of educating young children influenced the educational movement not only in Europe, but also crossed the Atlantic Ocean, making an impact on American schooling. Their philosophies also contributed to the conflicting definitions and distinctions between work and play.

During this point in the historical discourse of play, John Dewey extended Froebel's and Montessori's views of play/work and advocated that play is educationally significant to support the mental and moral growth in children (Saracho & Spodek, 1995).

John Dewey. One of the most rapidly changing times in American history was the thirty-year period from 1900-1930. A shift from Victorian ideas to modern industrial and technological advances brought about challenges to America and the public education system. Corporations formed that needed qualified workers in order to move the economy forward. This resulted in corporations looking to schools to provide an education that taught socialization and vocational skills, and brought about radical changes and challenges to public education (Dewey, 2001). Before the turn of the century, the purpose of education was to promote religion, utilitarianism, and social mobility (Semel & Sadovnik, 1999). The progressive movement created a dramatic shift in the way children were educated and transformed education from subject-centered rote memorization and passive reception of information to child-centered learning by doing, driven by real-life experiences.

The progressive kindergarten movement toward a more democratic and child-centered education headed by John Dewey (1900) caused children's play to become a widely accepted vehicle for learning. Dewey believed continuous growth, motivation, community, democracy, and experience shaped the educational process (Martinez & Stager, 2013). For the first time in the history of American schooling, children were the driving force behind teaching and learning.

In the late 1800's, Dewey founded the Chicago Laboratory School as a pathway to experimentations with creating a new child centered model of education. It was based on the idea of the child as a growing and changing being who required active involvement (Weiss, et al., 2005). The Laboratory School was a place where Dewey could test his theories and observe his ideologies of a child-centered, hands-on approach to pedagogical practice.

While play was never considered to be the only way for children to learn, natural play activities were considered to be educationally significant (Saracho & Spodek, 1995). From a sociocultural perspective, Dewey advocated for the education of young children to be embedded in their experiences with their world around them. He thought play could be used to help children reconstruct their experience and gain meaning from it and through playing, in essence, children would learn higher levels of functioning, consciousness, and action (Dewey, 1900).

Ideologically, Dewey perceived play as not a totally free activity. Instead, Dewey promoted pedagogical practices whereby teachers were to create a learning environment that nurtured play in support of children's cognitive, social and emotional growth (Dewey, 1916). Dewey's perspective of interdependence regarding social and individual processes to construct knowledge came from learning by doing and involved real-life material and experiences, which, he believed, encouraged experimentation and independent thinking (Mooney, 2013).

Dewey's central tenets that education should be child centered, active and interactive, and involve both the child's social world and the community is relevant in light of new literacies and creating a culture of innovation. Dewey's view that play for its own sake should be taken seriously as an important part of early-childhood education contributes to and supports open-ended explore-able environments and helps to legitimize play's role in current educational settings.

Ideological Shift

The nostalgic discourses of play transposed to early childhood educational pedagogy contribute to the understanding of play's existence. However, the classic theories of play of Froebel and Montessori are based on philosophical reflection rather than research (Ellis, 1973). Nevertheless, the historical perspectives of Froebel, Montessori, and Dewey provide a foundation for modern theories and current research on the practices and implications of play (Rubin, et al., 1983).

The cognitive psychological theories of Jean Piaget (1962) and the socio-constructivist view of learning and development of Lev Vygotsky (1978) expand historical discourses of play and continue to be the dominant theories that guide research and practice related to the development and learning of young children. Current research on literacy and play continues to build upon these theories and assists in providing an understanding of literacy and play in the capacity of children's development and cognition from either a psychological or socio-linguistic perspective.

In the next section, I examine Jean Piaget and Lev Vygotsky, two developmental psychologists who offer explanations for children's cognitive learning abilities and styles. They

share common beliefs that classrooms must be constructivist environments, individuals are central to the learning process, and learning involves real world situations.

Contrastingly, Piaget and Vygotsky's perspectives of cognitive development differ in terms of how constructivism should be carried out. Currently, both Piaget and Vygotsky's theories are embedded in educational environments and drive approaches to teaching and learning. These theorists will become important as I examine how the school participating in this study draws upon multiple approaches and perspectives in carrying out an educational philosophy and creating learning environments that value play and tinkering.

Jean Piaget. Jean Piaget (1965), a Swiss genetic epistemologist, is a major contributor to the knowledge base of educational psychology and early childhood learning. Piaget, a student of Montessori, was interested in asking how children arrive at what they know and how children create knowledge and interact with the world, from a cognitive perspective.

Contrary to behaviorists' views of stimulus and response, and that children's learning was either intrinsic (within the child) or extrinsic (imposed by environment or adults), Piaget devised a holistic model of learning that examined children's interactions and self-regulation within their environment. Piaget (1965) claimed that children construct their own knowledge through the interactions with their environment and learn best when they are working by themselves to create understanding instead of being instructed or taught by adults. As a student of Montessori, Piaget built on her ideas that meaningful work is important to a child's cognitive development (Hendrick, 2004). Like Dewey, Piaget believed that children are curious, wonder, engage in real problem-solving, and learn through symbolic play (Moody, 2013).

However, Piaget's (1965) theory of cognitive development asserts that all children pass through the same stages as they develop and acquire knowledge. This view provides a narrow conceptualization of children's abilities and potential learning. Piaget asserts that development happens through the dual processes of assimilation and accommodation. According to Piaget, *assimilation* explains how children take in information from their experiences in the external world and integrate it into existing mental structures, also referred to as schema. Since children's cognitive structures are often inadequate to incorporate new information, they must change or *accommodate* their mental structures to accept new information that is inconsistent with what they already know (Fein & Schwartz, 1982). Thus, according to Piaget, assimilation and accommodation must interact to stimulate mental growth (Elkind, 1967).

Equally important, Piaget (1952, 1973) asserts that children's cognitive development is contingent upon a sequence of cognition which appears in concrete stages based on age and behaviors these stages include, the sensorimotor, preoperational, concrete operations, and formal operational stages. For this reason, play requires levels of cognitive sophistication, but as Piaget (1965) argues, does not lead to further development.

Play, from Piaget's perspective, is an individual activity, without adult mediation, and occurs alone in the child's mind. He held the belief that how children play with materials and objects is reflective of the child's level of cognitive abilities (Saracho & Spodek, 1995).

Though Piaget's constructivist theory has had profound effects on the field of cognitive psychology and revolutionized the field of education, he does not view children as situated beings within a larger sociocultural context. Whereas Piaget's theory places emphasis on a

child's active engagement with the environment, his theories have been criticized for failure to include social and cultural influences on cognition (Fowler, 1994).

Lev Vygotsky. The theoretical framework of Russian psychologist, Lev Vygotsky (1978), adds an important dimension to Piaget's perspective by focusing on culture and social interaction. Most noted for his contribution to sociocultural theory, Vygotsky suggests that social interaction and tools, both of which vary from culture to culture, lead to step-by-step changes in children's development, thoughts, and behavior. He argued that cognitive functions originate in, and are products of, social interactions and that language and culture play essential roles in how humans perceive the world (Vygotsky, 1968).

Vygotsky's theory combines both the social environment and cognition, but is limited from a current-day perspective because emphasis is placed only on the use of language. Vygotsky's theory suggests three ways that language and cultural tools can be passed from one individual to another within cultural contexts: by imitation, instructed learning, and collaborative learning (Tomasello, et al., 1993).

According to Corsaro (2010), "Vygotsky saw practical activities developing from children's attempts to deal with everyday problems. Furthermore, in dealing with these problems, the child always develops strategies collectively – that is, in interaction with others" (p.16). Vygotsky's work provides an explanation of children's' interpretations about their culture through language acquisition and cultural tools or signs (such as drawing, objects). However, Vygotsky does not provide an expanded vision of how other modes contribute to a child's meaning making.

Kozulin et al. (2003) make clear how Vygotsky's work contributes to sociocultural theories of children's development and learning, thus pointing to a clear distinction from Piaget's theory of development:

At the heart of Vygotsky's theory lies the understanding of human cognition and learning as social and cultural rather than individual phenomena...Vygotsky strongly believed in the close relationship between learning and development and in the sociocultural nature of both. He proposed that a child's development depends on the interaction between a child's individual maturation and a system of symbolic tools and activities that children appropriate from his or her sociocultural environment. Learning in its systematic, organized, and intentional form appears in sociocultural theory as a drive force of development, as consequence rather than a premise of learning experiences. (p. 1)

Vygotsky's work encompasses the importance of children's interactions with cultural tools, mastery of play, development of imagination, and the significance of the role of *more knowledgeable others* (Vygotsky, 1978).

Four principles are derived from Vygotsky's ideas about how children construct knowledge and learn. The first principle places emphasis on the social nature of learning. Vygotsky proposed that children's learning takes place through interactions with adults and more capable peers. Through the interactions, children learn to talk through problems with others and become problem solvers.

The second principle is based on the idea that children learn concepts best that are within their zone of proximal development. Vygotsky (1978) criticized Piaget's theories of maturation as a precondition of learning, stating the following:

Learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers... Learning is not developmental; however, properly organized learning results in mental development and sets in motion a variety of developmental processes that would be impossible apart from learning. Thus learning is a necessary and universal aspect of the process of developing culturally organized, specifically psychological functions. (p. 90)

In order to further explain the way social and participatory learning took place, Vygotsky (1978) developed the concept of the zone of proximal development (ZPD), defined as “the distance between the actual developmental level as determined through independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86).

The third principle, cognitive apprenticeship, places emphasis on both the social nature of learning and on the zone of proximal development, whereby the learner gradually acquires mastery of learning through interaction with an expert.

The final principle places emphasis on scaffolding. Scaffolding occurs when the child is given complex tasks while simultaneously given enough help by a more capable other to achieve the task (Driscoll, 2000; Fountas & Pinnell, 1996; Slavin & Davis, 2006). Vygotsky’s theory of learning supports that children construct knowledge in socially situated environments with more capable others (Driscoll, 2000; Vygotsky, 1978).

Vygotsky (1978) viewed play, not as a product of cognitive development, but as an activity that directly supports the development of children’s language. According to Vygotsky,

play, within a social context, serves to extend children's cognitive development. Structured play, from Vygotsky's perspective, creates a zone of proximal development and when learning occurs within the child's zone of proximal development, it encourages and advances a child's competence level. Vygotsky contends that children most likely learn how to self-regulate through intentional make believe play (Bodrova & Leong, 2008). In this sense, play is seen as a mechanism for propelling child development forward (Bodrova, 2008). Vygotsky believed play to be a cultural-historical phenomenon largely dependent on the degree and quality of adult mediation (Karpov, 2005) and that children's spontaneous play is contingent on their previous experiences and the cultural tools they have appropriated (Vygotsky, 1978). Saracho & Spodek (1995) state,

Vygotsky went beyond nineteenth-century views by suggesting play experiences influenced children's cognitive development and that it was only in a social context that the cultural aspects of cognitive development take place...Play, according to Vygotsky, serves to extend children's cognitive development. (p. 144)

Overall, Vygotsky's sociocultural perspective helps provide an understanding of play as mediated through language use, adults, peers, and cultural tools. Forasmuch as beliefs, values, and tools of a particular culture play an important part in Vygotsky's theory, cognition is carried out in isolation in the mind of the child.

Both Piaget's and Vygotsky's theories have provided robust frameworks for understanding how play functions in child development and play's relationship to literacy and language learning. While both theorists have significantly contributed to the body of knowledge of child development, play, and conventional literacy skills, Piaget's and Vygotsky's theories

provide insight into how a child constructs knowledge inside their mind but neglects to take into consideration the construction of learning by making something shareable (Bruner, 1996; Papert, 1993). Thus, these theories do not account for the construction of artifacts as a production or demonstration of what a child understands outside of his or her mind.

Bruner (1996) extends Vygotsky's theory and underscores the importance of drawing upon social worlds and multimodal experiences to create meaning through the production of artifacts. This view moves away from the ideology that cognition occurs only within the mind of the child.

Jerome Bruner. Jerome Bruner is noted for his many contributions to the field of educational, cognitive and cultural psychology. Bruner broadened the scope of earlier themes found in Piaget's and Vygotsky's views of individual psychology by linking the cultural development of human societies to children's intellectual development (Bruner, 1996). Bruner's thinking regarding the cognitive development of children concentrates on the intersubjectivity of reality and that constructions of reality are based on cultural narratives, tools, symbols and social interactions (Bruner, 1996). Differing from the assumptions that the mind is a mechanism for information processing, and that learning is an external or objective individual experience, Bruner views children as social beings who make meaning from social interaction. Derived from his research, Bruner developed a psycho-cultural approach to education with underlying tenets that context, beliefs, values, symbols, and narratives of the culture aid in the process of meaning making. Bruner argues that although meanings form in a child's mind, they have origins and significance in the culture in which they are created. Cultural situated-ness provides

opportunity for humans to make meaning, negotiate, and communicate by utilizing cultural tools (Bruner, 1996).

Influenced by Vygotsky, Bruner claims that learning and development come from manipulation of reality, the formulation of hypotheses, and testing the hypotheses, which accordingly results in developing understandings. Unlike Vygotsky, Bruner posits that meaning making may only occur in cultural context, stating, “It is culture that provides the tools for organizing and understanding our worlds in communicable ways” (Bruner, 1996, p. 3). From this perspective, “Saying and doing represent a functionally inseparable unit in a culturally oriented psychology” (Bruner, 1990, p. 19). Bruner supported Vygotsky’s perspective regarding the importance of social environments and language narratives as important factors in a child’s development. However, he disagrees with Vygotsky’s externalist perspective, which places emphasis on what adults can do for children. Internalist theories, on the other hand, focus on what the child can do, what the child thinks, and how learning is premised on intentional states (Bruner & Haste, 2010).

Extending Vygotsky’s theory of social constructivism, Bruner suggests that humans have a predisposition to organize experiences into narrative form and, for the first time, narrative appears in the discussion of learning and development (Lyle, 2000). Bruner observed that the process of constructing knowledge is not done in isolation, but within a social context. Additionally, Bruner emphasizes the importance of narrative understanding, stating, “our capacity to render experience in narrative is... an instrument for making meaning that dominates much of life in culture... Our sense of the normative is nourished in narrative” (Bruner, 1990, p. 80). From a cultural psychology perspective then, language in use, collaboration, and negotiations

within cultural discourse provides opportunity for children to engage in social dialect and transfer their understandings into cultural representations (Bruner, 2010).

Piaget's theory of learning and development stating that all children pass through the same fixed series of stages (tied to age and maturity) and advance as they assimilate information and adapt to the environment was rejected and criticized by Bruner (Lyle, 2000). Bruner believed Piaget's research on perception and cognition to be artificial and alienated from human experiences and that learning and development are not linear and hierarchical. This position was confirmed by Donaldson's (1978) review of research, which demonstrates that children are not restricted intellectually, as Piaget claimed. Rather, children are competent thinkers and have the ability to make sense of the world around them when they are in an embedded context (Lyle, 2000). Rejecting the rigidity of Piaget's developmental stages, Bruner identified three modes of representation that children use to process information:

- Enactive mode, when children represent things through doing
- Iconic Mode, when children document experiences using media (e.g., photographs, pictures, videotapes)
- Symbolic mode, when children express themselves through drawing, painting, crafts, dancing, pretend play, language, and numbers

Bruner's work contributes to the conceptualizations of play which posit that within the context of the learner's own experiences, learning is an active, culturally, and personally mediated process (Bruner, 1966). Bruner believed that knowledge is situated in living contexts and that the classroom is a living context situated in a broader culture (Bruner, 1996).

Bruner (1966) theorized that children's play promoted problem solving abilities that would become important later in life. According to Bruner, play was viewed as an opportunity for children to take risks without fear of failure. In his words, "Play... is a means of minimizing the consequence of one's actions and of learning...play provides an excellent opportunity to try combinations of behavior that would, under functional pressure, never be tried" (p. 693). Bruner believed that creative and play activities are closely related and that if children explore and experiment in their play, they could test a mixture of behaviors and use their experiences to learn. Bruner believed that when children were engaged in play, they did not have to be concerned about achieving goals. In this respect, he viewed that, in play, the means are more important than the ends (Saracho, 2011). Bruner (1996) also advocated that play was beneficial for children as it helped them to become proficient in their social abilities and learn the rules and rituals of society.

Bruner's research on play over the course of his career, consisting of thousands of hours of observation, provides important insights regarding the value of rich and elaborate play in children's construction of meaning. Based on Bruner's findings, the episodes of play that were the richest and most elaborate included materials and activities for the children to construct something. Children exhibited problem solving abilities when they freely played, resulting in inventing something. Bruner also found that children do not learn by imitating adults. He argues that using imitation as the vehicle for teaching entails an additional assumption about human competence, namely that "it consist[s] of talents, skills, and abilities, rather than knowledge and understanding" (Bruner, 1996, p. 54). According to Bruner, learning by imitation suits traditional society but does not lead to innovation and advancement, which aligns with knowledge and

understanding rather than skills and abilities. From this perspective, the role of adults is to provide guidance and reassurance only when the child needs it.

In summary, Bruner sees children as thinkers, doers and producers, whose understanding is fostered through collaboration, exploration, and use of cultural tools in an interactional context (Lyle, 2000). The infant-toddler programs of Reggio Emilia, created by Loris Malaguzzi, provide a modern day perspective of Bruner's ideologies. Reggio Emilia programs provide the perspective of the importance of play, imagination, and discovery and allows for children to become thinkers, doers, and producers as they engage in meaning making and representations of literacies in multiple ways.

Loris Malaguzzi and the Reggio-Emilia approach. Social constructivist, Loris Malaguzzi (1920-1994) was the founding director of the Reggio-Emilia preschool. The fascist dictatorship of World War II brought suffering and destruction to the city of Reggio-Emilia, located in northern Italy. Rooted in democratic and empowering educational principles, the infant-toddler programmes of Reggio Emilia schools were created in response to the devastation and suffering endured by the community. Educators and parents formed a cooperative-like movement that envisioned reconstructing society and life for children through education. In this sense, the community supported and assumed collective responsibility for the education of young children (Edwards, 2003; Fraser & Gestwicki, 2002;).

Reggio-Emilia is not considered a formal educational model like Montessori. Instead, it is viewed as an approach that seeks to support children's explorations and investigations with the world around them through communication and relationships. The Reggio-Emilia approach provides a socially progressive vision that emphasizes individual ideas and metacognitive

development through play, social interactions, and the environment. The Reggio Emilia philosophy suggests that “the child is viewed not as a target of instruction, but rather as having the active role as an apprentice... learning is not something that is done to the child, but rather something she does” (Hewett, 2001, p. 96).

The Reggio-Emilia curriculum does not have a scope and sequence to follow, rather, the children’s interests guide instruction and learning. The teacher fosters a learning environment through negotiation with the children and supports children’s interests through in-depth exploration and investigation. Long-term, open-ended projects support student interests and promote collaborative work, giving children an active role as an apprentice, working alongside others in the discovery of solutions to meaningful questions and problems (Katz, 1998).

The classroom atmosphere is carefully prepared to offer tranquility, enjoyment, comfort, complexity and playfulness. The arrangement of space is carefully thought out and every part of the building serves a purpose. Piazzas, or public squares, are typical of Italian cities, and are places where people gather to linger and socialize. To mirror society and develop social relationships, Reggio Emilia schools are designed with a piazza like space, allowing children freedom of movement between classrooms and providing a place for children and teachers to meet, socially (Fraser & Gestwicki, 2002). Classroom environments are wide open spaces allowing children to have the space and work areas needed to support their collaborative project based work. Within the school, there is a purposeful studio-like space called the Atelier. The Atelier is a separate room that allows for experimentation. The Atelier is a space filled with a variety of materials and is typically equipped with clay, wire, paint, pens, paper, beads, shells, and recycled materials to be used by children with the purpose of expressing the “hundred

languages” of children -100 languages to discover, invent, and imagine (Edwards, Gandini, & Forman, 1998). Underpinning the Reggio Emilia approach, Malaguzzi believed that children have many ways to realize and express themselves when provided with an appropriate environment that allows them to transfer their concrete experiences to symbolic experiences (Arseven, 2014). As a result, the Atelier, as well as the classroom, serves the purpose of a third teacher. Supporting and valuing cognitive and symbolic expression, steps in the learning process are documented along the way by the teachers and posted on the classroom walls to tell the story of the children’s investigations.

The Reggio Emilia approach views the teacher as a collaborator and co-learner alongside the child. *Artfully balancing* between attention and engagement, the teacher is viewed as a sensitive listener who observes, documents, and reflects on children’s learning and only intervenes as a guide or to serve as a resource (Edwards et al., 1998; Rinaldi, 2001). Children’s ideas and interests drive projects and themes that are explored for a couple of days, weeks, or months, depending on the complexity and on children’s interests. During the learning process, the teacher serves as a guide or resource providing instruction as needed in tool and material use or to scaffold and extend explorations to help children problem solve. Edwards (2003) states:

In addition to ongoing projects, children engage in many other forms of activity, play, including pretend play, singing, group games, storytelling, reading, cooking, outdoor play, rest, and sociable meals together. They become a close-knit group, with their own unique rituals. (p. 37)

According to Edwards (2003), in the Reggio Emilia environment, children are viewed as active authors of their own development, so as to help children realize their full potential,

ultimately leading the way for growth and learning. The environment encourages children to explore expressive, communicative, and cognitive languages through systematic focused symbolic representation. Multimodal representations of understandings and communications serve as a form of graphic language children use to discuss, discover, and represent their learning and ideas to each other and adults.

In all, the Reggio Emilia approach stems from an eclectic mix of the philosophies and theories of Montessori, Dewey, Piaget, Vygotsky, and Bruner. Malaguzzi's philosophy of education identified what he claims to be the most important core principles of each theorist as they relate to the image of the child. Influenced by others, Malaguzzi encouraged and valued child initiated play and discovery and believed that open-ended creative play is essential in developing relationships and is central to physical, emotional, and cognitive growth (Fraser & Gestwicki, 2002). The Reggio Emilia philosophy expanded Dewey's emphasis on the role of play in the symbolic representation of children's ideas, which is found in the "hundred languages of children" (Edwards et al., 1998). Malaguzzi further encouraged children to be actively involved in play using real tools and materials. This view aligns with social semiotic approaches to understanding multimodality (Fraser & Gestwicki, 2002).

From a sociocultural perspective, Malaguzzi envisioned an education based on collaboration and placed emphasis on reciprocal relationships with the environment, people, and society (Rinaldi, 2001). The ideologies of Reggio Emilia provide implications for gaining an understanding of how a culture of innovation can be built and how we can begin to understand the complexities of children's access to forms of literacies and meaning making in environments that allow for play, exploration, and problem solving. However, this research has not been

extended beyond toddlers and preschoolers, revealing a gap in our current understanding of how the ideologies and practices of Reggio Emilia could be adapted and used with school aged children.

The Concept of Play

Over time, shifts in the conceptualizations of play, from anthropologists to philosophers, have added variation to its meaning and value in educational settings.

What exactly is play? Social scientists have provided an important narrative that reveals the complexity of play as a behavior, a process, and an approach to learning in early childhood settings. For this reason, play is considered so complex that it defies definition and is difficult to articulate in concrete terms; however, we know it when we see it or experience it (Johnson, Christie & Yawkey, 1987; Moyles, 1989). According to McLane (2003),

What identifies play as play is a particular *attitude* or *approach* to materials, behaviors and ideas and *not* the materials or activities or ideas themselves; play is a special mode of thinking and doing... That is, playing with materials, activities, identities, rules, and ideas *may*, over time, facilitate the development of nonliteral, abstract, hypothetical, experimental, and creative modes of doing and thinking. (p. 11)

The broad category of activities described as play include (but are not limited to): swinging, running, digging in the dirt, building with blocks, dancing, making up nonsense rhyming words, dressing up, pretending, games, sports, hobbies, art, and in our contemporary time, play with technologies (Wood & Attfield, 2005). While not exhaustive, the examples of what is considered play provide an illustration of the range of its many activities, facets, and complexities. Roskos & Christie's (2001) meta-analysis of play research best illustrates the range

and perspectives on the phenomenon of children's play. Play can be a state of mind (Dewey, 1938/1963); a mental assimilation (Piaget & Play, 1962), an internalization (Vygotsky, 1978); or from a more current perspective, a concrete and a visible activity that is enacted in a particular location, by a particular group, or with particular materials (Pellegrini & Galda, 2000).

Nonetheless, play is broadly defined as having the following attributes: play is voluntary; is intrinsically motivating – pleasurable for its own sake and not dependent on external rewards; involves active engagement; and is distinct from other behaviors by having make believe quality (Blanchard & Cheska, 1995; Pellegrini, 1995; Pellegrini & Smith, 1993; Rubin, Fein, & Vandenberg, 1983). One thing all of these hypotheses have in common is they all start from the assumption that play must serve something or have some kind of purpose.

The historical discourse of play found in Huizinga's work (1938, 2014) becomes an important narrative at this point to understand and extend ideas regarding the concept and revision of play in the design of social futures in our current time. Huizinga's (1938, 2014) seminal manuscript, titled *Homo Ludens*, argues for an understanding of play as a significant social function. First, Huizinga describes play as a social construction, beginning with communication through language, but the social construction is observed in play itself. Second, play "is a significant function-that is to say, there is some sense to it. In play there is something 'at play' which transcends the immediate needs of life and imparts meaning to the action" (p. 8). According to Huizinga, meaning is the imagination of reality and its conversion into images. Third, pure play is one of the main bases of civilization – play can be both serious and non-serious. "Play turns to seriousness and seriousness to play" (p. 8). Huizinga (1938, 2014)

provides a starting point for our understanding that the boundaries of work and play may be fluid based on cultural perspectives and play practices.

Seeing that the history of play and the philosophical assumptions of its role or value in learning and instruction have been dominated by historical contexts, political agendas, and educational philosophies during distinct time periods, examining play through a sociocultural lens provides opportunity to rethink what play is and does, and how historical, contextual, and cultural discourses of play shape approaches to children's enactments of literacies in our current time.

Play / work relationship. Play has often been characterized in literature as the opposite of work, which, according to Blanchard and Cheska (1985), is misleading. Further, the body of research that has been conducted with young children tends to be written from an adult perspective, thus limiting children's voices and perspectives about their play/work enactments, culture, and interpretations of the world (Corsaro, 2010; King, 1979).

Specifically, few researchers have examined children's ideas and perceptions about work and play in classroom environments. King's (1979) study with kindergarten children was one of the first studies to take the perspective of how children differentiate play and work. Through interviewing and informal conversations with children, King (1979) found that the more control a child had in the engagement with an activity, the more likely they considered the activity to be play. On the other hand, the more teacher or adult involvement in an activity, the more children described the activity as work. King's (1979) analysis revealed that children's definitions of play and work depended upon the context, the activity, and the amount of adult engagement. The

results also indicated that an activity categorized as play in one episode was categorized as work in a different episode, based upon the involvement of the teacher.

Closely aligned with King's (1979) study, Wing's (1995) qualitative research and in-depth investigation of kindergarten, first, and second grade children's perceptions of classroom activities revealed that children view work as something they "have to do" and play as something they "can do". Wing's research provides insight that some children view some activities as in-between work and play based on the context, teacher involvement, cognitive and physical effort, and how much fun or enjoyment they experience during the activities.

According to Goodman (1994), there are four distinctions that frequently appear in early childhood literature, which distinguish play from work. First, play refers to activities that are pleasurable, while work, on the other hand, is hard and requires effort. Second, play is nonconventional and creative, providing freedom and spontaneity, while work is constrained. Third, play is in the process, not in the outcome, while work, on the contrary, is outcome driven. Fourth, play is self-chosen, intrinsically motivating, and non-obligatory; work, contrastingly, is extrinsically motivated, forced upon us and required by our situation or authority. According to Goodman (1994), play scholars have limited themselves by making a distinction between play and work and argues that the characteristics of play may be different from work, but are not the direct opposite. Goodman (1994) further argues for a midpoint where play and work are joined along a continuum.

Blanchard and Cheska (1985) argue that the opposite of work is leisure, and that work has the potential to be considered play. Blanchard and Cheska's (1995) work provides an anthropological perspective of the play/work debate. Extending Goodman's (1994) argument

regarding the relationship between play and work, Blanchard and Cheska's (1995) model of the dimensions of human activity presents four quadrants for understanding the play/work relationship: Quadrant A, playful work; Quadrant B, playing at leisure; Quadrant C, non-play work; and Quadrant D, non-play leisure. This model reveals that a person may obtain pleasure in either Quadrant A (playful work) or B (playing at leisure), which is described as a person's *flow* state (Csikszentmihalyi, 2008; Reiber, Smith, & Noah, 1998). During *flow*, people experience deep enjoyment, creativity and total involvement with the environment around them (Csikszentmihalyi, 2008). Csikszentmihalyi's (1988) theory of optimal experience is centered on the concept of *flow* and is described as a process of achieving purpose, "where one must set goals for one's actions the goal in itself is usually not important what matters is that it focuses a person's attention and involves it in an enjoyable activity" (p. 216). In essence, flow is doing work that is enjoyable. According to Csikszentmihalyi (2008),

Unless enough people are motivated by the enjoyment that comes from confronting challenges, by discovering new ways of being and doing, there is no evolution of culture, no progress in thought or feeling. It is important, therefore, to understand better what enjoyment consists of and how creativity can produce it. (p. 8)

Flow, while mainly studied with adults, may contribute to our current thinking about play, design, and innovation in early childhood environments. Further, *flow* blurs the line between work and play and reveals that play can be hard/serious work. Moving our thinking to the idea that play can be work, and work can be play in contemporary classrooms may present a new model or pedagogical approach to the play/work debate.

Contemporary definitions of play. Providing one single comprehensive definition of *play* is complicated. However, historical and contemporary literature bring together different tenets of play, which may contribute to what play is and does in our current context. According to Saracho and Spokek (1994):

[T]he value of play is that it encourages children to inquire about and understand the role dimensions and interaction patterns, within will assist them in understanding their social world and build a realistic sense of self. Play provides children with an information seeking process (personal response), a means to interact with their environment (response to social environment), and a way of learning how to learn. (p. 15)

Yelland (2011) states that when the elements of play come together effectively, [t]eachers enable and support children's meaning making with interactions and resources that encourage them to make connections between the different modes of representations – through playful explorations adults can support and extend new play worlds by giving children opportunities to self-select but adults should give children a variety of materials in a shared learning context. (p. 11)

From this perspective, what children can and cannot do is dependent on the tools/technologies they interact with, as well as the context and cultural situations in which they find themselves. Environments that value play provide opportunities for children to realize their knowledge potential and illustrate their competence by showing or demonstrating their knowing, which may be associated with work (Hundeide, 1985; Schoultz et al., 2001).

Contemporary times provide new opportunities for children to make discoveries, develop knowledge, make inquiries, and be creative – all of which have the potential to impact historical

definitions and current perceptions of play. Computers, smart phones, the Internet, video games, digitized toys, DIY (Do-it-yourself projects), and makerspaces (physical spaces to create, design, and innovate) are impacting new possibilities for understanding play as a literacy and social function. Research reveals that children now approach meaningful situations and purposeful play-like activities as serious work (Gee, 2007; Reiber, 1998). Play that is serious and focused within a learning environment can help learners construct personalized and reflective understandings (Reiber, 1998).

Messing around (Ito et al., 2009), described as open-ended activity that involves tinkering, exploring, and extending understanding, provides insight into how exploration allows for serious play through trial, error, and even failure; all of which are characteristics of the process of design.

Serious play, described as an intense experience in which children “voluntarily devote enormous amounts of time, energy, and commitment and at the same time derive enjoyment from the experience” (Reiber et al., 1998, p. 29) also noted as *flow* (Csikszentmihalyi, 2008), has been explored in educational technology literature, specifically related to computer programming and video game play (Gee, 2007; Reiber et al., 1998). There is a gap in research literature on how serious play, *flow*, and tinkering may relate and contribute to our understanding of children’s enactments of new literacies. Even more, these topics have not been studied with young children and particularly in formal educational settings. The process of design may also contribute to our understandings of how to create a climate of innovation and meaning making through multiliteracies in formal classroom environments with young children and therefore an investigation of these topics is necessary.

Emergent literacy and play. Robust findings in play-literacy research spanning decades suggest that literacy rich play environments support progressive learning of difficult ideas and concepts. Play also provides children with opportunities to put concepts to practical use and transfer new ideas to purposeful, real situations (Morrow and Schickedanz, 2006; Roskos & Christie, 2001, 2007). Research findings support that the environment informs and shapes behavior (Gump, 1989), and that literacy enriched play environments remains critical in the developmental trajectories of language and literacy learning for young children (Roskos & Christie, 2011).

Contemporary researchers have extended the pedagogical frameworks previously discussed by bringing them into contemporary classroom settings. Dyson and Wholwend point out that in play children can accomplish important sociocultural tasks within their particular cultural identities as they explore, work, create, and perform (Dyson, 1993, 2003; Kendrick, 2005; Wholwend, 2007, 2008).

In particular, Dyson's work extends sociocultural theory related to literacy learning. Through ethnographic case study, Dyson addresses how official, home, and peer interaction contribute to the complex social nature of classroom environments. Dyson's work reveals that learning to read and write are social acts that draw upon diverse social resources. Dyson has found that children negotiate membership and establish relationships within their social spheres and demonstrate their understanding of the literacies around them (Dyson, 1988, 1993, 1995). While Dyson's work focuses on language and children's writing, her research reveals that the skills used in learning to read and write are observed in children's play. Dyson's work with

diverse learners helps us to understand that literacy is contextual and culturally situated (Dyson, 1993, 1995, 1997; Dyson & Genishi, 2009).

Wohlwend's (2008) case study of a kindergarten classroom over the duration of three years explores how play, as a form of literacy, shapes children's multimodal learning and participation in classrooms. Using ethnographic data collection methods and discourse analysis, the study illustrates how children combine modes and expand their meanings as they play. Wohlwend found that through play children engage in social practices, explore materials, and construct peer culture. This research reveals early learning environments have the potential to enrich meaning making and expand diverse ways of literacy learning. Further, when social spaces are created that allow for a blend of peer culture and a curriculum that infuses literacy and play practices as values, these practices demonstrate both interconnected and independent ways children make meaning.

Wohlwend's (2007) work is important to our understanding of play as a form of literacy. Over the past decade, a summary of Wohlwend's work provides insight as to how she investigated how play and design practices expand opportunities for diverse learners. Wohlwend's research draws upon cultural historical activity theory, practice theory, and is supported by critical sociocultural perspectives. Wohlwend's analysis of data through mediated discourse analysis, multimodal analysis, and critical discourse analysis illustrates play-integrated practices created opportunities for meaning making and transformations of texts, images, artifacts, identities, and spaces (Wohlwend, 2008, 2009, 2011, 2012).

While both Wohlwend's and Dyson's work provides important insights into play as a form of literacy, their studies are limited to children in kindergarten classrooms. While two

studies conducted by Wholwend looked at children in grades kindergarten through second grade, the body of research on the topic of play as a form of literacy in our current time is narrow. Furthermore, Dyson and Wohlwend sought out learning environments that valued play and provided the opportunity for children to engage in free play. Both researchers found that through free play children enacted literacies. Further, their findings are limited to examinations of children's language in use, discourse, and productions of writing (Wohlwend, 2008, 2009, 2011, 2012). My own dissertation research seeks to expand Dyson's and Wholwend's work by focusing on an environment that embeds play and tinkering within the formal schooling/classroom context. I seek to understand how children enact literacies through tinkering as they create and produce artifacts and what tinkering may reveal about multimodal literacy practices with children beyond kindergarten.

Literacy-play research has tended to rely on the work of Vygotsky. I seek to broaden the narrow conceptualization of cognitive psychology as the only theory that drives literacy research by suggesting we look to other perspectives of meaning making, which include constructionism and design thinking.

Seymour Papert and Constructionism

I bring Papert's perspective and learning theory into this section to illustrate Papert's fundamental belief that children need to be active in the learning process and that children construct knowledge from their experiences with the world. Seymour Papert, a mathematician, computer scientist, educator, and visionary thinker, brought about new understandings of how children think and learn. He is most known for his contributions and innovations in the use of digital technology, specifically, for his innovation of a computer programming language called

Logo, to help children learn how to use computers to make things via programming (Martinez & Stager, 2013). Scholars reference Seymour Papert for his contemporary vision for education rooted in progressive ideologies of children learning by doing. Papert believed that progressivists such as Dewey, Piaget, and Vygotsky all had brilliant ideas about how children learn; however, he argues that their thoughts never came to fruition because they lacked the ability to carry out their grand vision of empowering children to learn through lived experiences (Papert, 1993).

Based upon Piaget's theory of constructivism, Seymour Paper (1991) developed the theory of constructionism, which adds that people construct new knowledge when they are making meaningful products. Papert (1991) states,

Constructionism – the N word as opposed to the V word – shares constructivism's view of learning as 'building knowledge structures' through progressive internalization of actions... It then adds the idea that this happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe. (p. 1)

Constructionist learning theory suggests a connection between design and learning. According to Kafai and Resnick (1996), learning and design, historically, have not been viewed as connected. Design theorists place emphasis on the influences of the design of a product, while learning theorists focus on the learning process and not the product. More recently, design and learning have moved together to form constructionism – or the “construction of meaning as a core process” (Kafai and Resnick, 1996, p. 4).

According to Papert (1991), constructivism is both serious and playful. He states that constructivism is serious because learning is hard and it happens best when one is deeply

engaged in hard and challenging activities, and it's fun because it's hard. Papert asserts that kids prefer things that are hard (as long as they are also interesting) and that learning is hard and happens best when one is deeply engaged in challenging activities.

Papert (1980) stresses the importance of creating learning environments that facilitate acts of constructing, sharing, and presenting to others what is learned. This approach to design leads children to evaluate and reflect upon their own work and creates a sense of accomplishment. Papert's (1980) theory of constructionism in the design of learning environments is based on the philosophy that children are more successful in learning something when 1) they are given an active and creative role in the learning process, and 2) the results of their creativity are presented to an audience. This leads to a discussion of characteristics of learning environments that support constructionism and learning by design.

Jerome Bruner, Loris Malaguzzi and Seymour Papert's contemporary perspectives advance historical discussions about play and learning through the manner in which the social and cultural world codetermine the way people interact and construct knowledge in various settings (Bliss & Saljo, 1999). Taken together, these works suggest an implicit synergy among socially mediated learning, progressive education, sociocultural literacy development, and the changing culture of schools.

Design Thinking and Innovation

As we look to the future, early learning contexts must provide children with embodied experiences to play, tinker, innovate, and draw upon multiple literacies and modalities. Research is necessary to produce conceptual and functional frameworks that guide the complexities of "core spaces where play, language, and early literacy converge and interact" (Roskos & Christie,

2011, p. 207). Constructionist learning environments encourage multiple representations of knowledge and support learning by doing with activities that involve making, building, or programming. Resnick's (2007) research and work with the Lifelong Kindergarten Group at the MIT Media Lab provides insight into an ideology/framework called the "kindergarten approach to learning". This includes image, create, play, share, reflect, imagine - as an iterative process.

Resnick's (2007) work extends Papert's (1991) constructionism to include distributed constructionism, which "asserts that a particularly effective way for knowledge-building communities to form and grow is through collaborative activities that involve not just the exchange of information but the design and construction of meaningful artifacts" (p. 2). Kress (1997) argues that the future of literacy includes imagination. "Imagination is a form of sign-making in which boundaries to sign-making, the chains of signs, are potentially unlimited ... it is dependent on and enhanced by the ability to engage in free movement among forms of internal representation" (p. 108). Empirical findings of technology-based research suggest that tinkering plays an important role in the iterative process. Research on alternative programming environments that include the iterative process of design support explorations, tinkering, and progress toward understanding complex concepts through the refinement of ideas (Papert, 1980; Berland et al., 2013).

Research regarding design thinking in classrooms and schools is an emerging topic of interest. I argue that new perspectives and new approaches to educating young children need to include fostering the generation and development of ideas. In order to create future innovators, educators need to address design thinking as a pedagogical practice. The five phases of design outlined by the d School: Institute of Design at Stanford University (2015) includes discovery,

interpretation, ideation, experimentation, and evolution. The design process closely resembles Resnick's (2007) approach to learning and provides insight into how creativity and the generation of ideas can be cultivated. Together, the use of design thinking and allowing time for children to tinker may result in the redesign of school culture, provide opportunity for deeper learning, and prepare children for life in the real world.

Summary

To summarize, a traditionalist view of educating children, often referred to as the Industrial Revolution or factory method of schooling, whereby the teacher passes on information and skills to children necessary in order to survive in society, was rejected by the theorists of the progressive education movement. Progressivism's views of education support that children learn best by doing and that the teacher's role is to act as a facilitator who builds upon students' interest in learning and to create environments that foster exploration, discovery, and innovation.

Both Froebel's and Montessori's theories of play provide a perspective that discusses the way in which play promotes development. Froebel saw play as a valuable mode of learning for young children, while Montessori argued that play should be the child's work. Traditional views perceived the child and the environment as disconnected, although they interact with each other. The work of Bruner (1976) and Vygotsky (1978) provide foundational understandings of children's development through cultural contexts, use of cultural tools, cultural identities, and language interactions. Unlike Piaget, both Vygotsky and Bruner saw cognitive development to be a social process and emphasized the importance of the role of adults in extending children's learning beyond which they were capable independently. In this sense, "the social context where

playing occurs is just as important as the play itself, and adult or peer interactions provide the sociocultural context in which learning through play occurs” (Hassett, 2008, pp. 301-302).

Sociocultural perspectives consider that the environment and the child are not independent of each other. Participation in social interactions influences psychological development and further explains the relation of an individual’s mental functions to cultural, institutional, and historical contexts. Sociocultural theory thus attempts to find out the ways children interpret their experiences of the world through their play.

According to Labaree (2005),

Today progressivism means pedagogical progressivism. It means basing instruction on the needs, interests and developmental stage of the child; it means teaching students the skills they need in order to learn any subject, instead of focusing on transmitting a particular subject; it means promoting discovery and self-directed learning by the student through active engagement; it means having students work on projects that express student purposes and that integrate the disciplines around socially relevant themes; and it means promoting values of community, cooperation, tolerance, justice and democratic equality...this adds up to ‘child-centered instruction’, ‘discovery learning’ and ‘learning how to learn. (p. 277)

As technologies play an increasingly important role in young children’s literate lives, considering the creative processes and practices related to children’s cultural constructs will help to examine work/ play in relation to creativity, multimodality and culture in early child settings. In addition, examining play/work from the perspective of children above pre-school age will provide an important narrative regarding the importance of play/work in learning related to

sociocultural literacy perspectives. Labaree's (2005) view outlines a need for understanding and extending pedagogical practices that promote children's discovery and self-directed learning. Looking to bricolage/tinkering as a pedagogical practice may extend our thinking and place play at the center of more socially responsive design of educational environments and instructional practices.

To conclude, profound societal shifts that have occurred over time and qualitative shifts between historical and contemporary thought now place emphasis on children's cultural differences and cultural transmission, including diverse modes of representation and meaning making. By further examining literacy with the concept of 'bricolage' in mind, we can come to a more sophisticated theoretical framework to investigate pedagogical practices and children's play-literacy enactments from a sociocultural perspective. The following chapter provides the theoretical frameworks for this research study.

CHAPTER 3 – THEORETICAL FRAMEWORKS

This chapter provides an overview of the theories that will best help me answer my research question, which is: What types of literacy are young children enacting when they play/work in environments that support play/tinkering?

In this chapter, I will be reviewing sociocultural theories of literacy because they are necessary to situate literacy events historically and culturally. Additionally, sociocultural theories open up the notion of literacy beyond print and paper. In my work, I will continue to explore the multitude of ways that children make meaning.

While the term “new literacies” has been around for at least 20 years, I am going to expand what is regarded as “traditional new literacies” beyond the tool being used, such as a particular technology, or the product being sought, such as reading or writing something. These theories provide a lens by which I will view my data. In particular, I will be looking for ways in which children are enacting literacy and how children experience, conceptualize, analyze and apply literacies within their play/work. I will also use Bruner’s (1996) play theory to look for children’s enactive, iconic and symbolic modes of representation.

Sociocultural Theories of Literacy

Literature on sociocultural theories of literacy learning suggests that literacy is no longer viewed as a mono-modal static entity of learning to read and write print texts. From this perspective, literacy learning is viewed as an interactive process that is defined and negotiated as children transact with their environment and cultural tools (Perez, 1998; Vygotsky, 1978). Social construction of meaning as an active practice within one’s environment includes historical,

cultural, and ideological perspectives, and accounts for the purpose, use, and context in which literacy occurs (Lewis, Enciso, and Moje, 2007; Street, 1987).

A great deal of progress has been made in terms of our understanding of social and cultural approaches to language and literacy education. New literacy studies are well established and have become a standard perspective within the field of literacy learning. Current perspectives see children as members of a defined culture with a cultural identity and how they engage in learning or use literacy as a function is reflective of their cultural identity. Further, literacy is viewed as an interactive process that is defined and negotiated as children transact with their environment and cultural tools (Perez, 1998; Vygotsky, 1978). Social construction of meaning within one's environment accounts for the purpose, use, and context in which literacy occurs.

According to Perez (1998), "one brings the experiences with the world, the ways of interacting with text learned in the culture group, the knowledge and skills with letters, words, text organization as they interpret a written text" (p. 5). It is, therefore, the environment and purpose within which meaning is constructed. According to Jerome Bruner (1996), a learner's construction of reality and how they make meaning are mediated by the use of cultural tools (symbols, texts, process of meaning making). Literacy is therefore viewed as a cultural phenomenon and the construction of meaning includes multiple literacies (Scribner & Cole, 1981; Street, 1984) that are embedded within a sociocultural context and cannot be considered content or context free.

In our modern world, children need to be able to learn to be literate with new forms of literacy. Situated cognition and semiotic domains, therefore, best describe how children actively engage with, experience, and think differently about signs and symbols (Gee, 2007).

Sociocultural perspectives on literacy consider a collection of related theories which place emphasis on the social and cultural context in which literacy is practiced. Theories of literacy as social practice help to describe what types of knowledge are needed in order to engage in literacy practices and are “inextricably linked to culture and power structures in society” (Street, 1985, p. 433). From this perspective, literacy practices are shaped by values, attitudes, and social relationships and are practices of what people do with literacy (Barton and Hamilton, 2000).

Multiliteracies emphasize the real world context in which literacy is practiced and extends the definition of literacy from print and language to include multiple modes of representation or multimodalities (e.g., print, visual, audio, gestural, and spatial patterns of meaning) (Cope & Kalantzis, 2000). From a multiliteracies perspective, emphasis is placed on the changing nature of the world and the ways language and literacy are used and adapted to fit the ever-changing social, economic, and political world (Alvermann 2008; Cope & Kalantzis, 2000; Knobel & Lankshear, 2007). Kress’s (2000) theory of semiosis explains the action of socially, culturally, and historically formed individuals as the remakers, transformers, and re-shapers of representational resources available to them

Critical sociocultural theories emphasize power and empowerment, as well as agency and identity (Lewis, Enciso, & Moje, 2007; Moje & Luke, 2009). According to Freire (1973),

literacy is defined as a process of conscientização, or consciousness, and “to understand literacy as the relationship of learners to the world” (p. 173). He continues:

Understanding literacy as a socially-contextualized practice helps us understand the ways in which practice may vary across diverse communities, and the ways in which they also are dynamic and malleable. Understanding multiliteracies helps us understand the varied ways in which people communicate and make meaning, as well as resulting implications for language and literacy instruction. The focus on issues of power also helps us understand issues of access that people have, the ways in which social, economic and political structures may shape literacy practices, and the ways in which people may appropriate or reject certain practices. (p. 173)

Sociocultural perspectives of literacy learning focus on authentic and meaningful contexts and on purposeful ways in which literacy is used in real world contexts to engage children with real world texts (e.g., multiliteracies).

I argue that play mediated literacy practices, conceptualized in new literacies, allows for multiple, multimodal, and multifaceted literacy practices that involve new forms of multiliteracy engagement which take place in different social and spatial contexts (Coiro et al., 2008; Kress and van Leeuwen, 2001). I suggest these practices have the potential to impose new insight into children’s emergent literacy practices, play/tinkering, and innovation.

New Literacies

The aim of this section is to provide an account of the transformation literacies studies have undergone in the two past decades to gain a better understanding of the current context of literacy research. In order to situate current empirical research findings with regard to new

literacies theory, it is essential to understand how prior research has contributed to and continues to guide inquiry surrounding literacy pedagogical practices and student learning in contemporary times.

In the mid-nineties, a team of academics, referred to as the New London Group (1996), came together to consider how literacy pedagogy might address the rapid changes in literacy due to globalization, technology, and increasing cultural and social diversity. The group's work resulted in a new area of study called new literacy studies.

According to the New London Group (1996), a new common framework was necessary for literacy pedagogy due to the multiple modes of expression and forms of textual representation that were becoming increasingly available. The New London Group believed that a metalanguage "a language for talking about language, images, texts and meaning making interactions" (p. 15) would provide educators and students with a way to describe the multifaceted meaning making contexts with increased use of technology for literacy learning.

The New London Group used the term "new literacies," which they described as meaning digital literacies including engagement with online technologies, messaging, sms, phones and computers. The group further articulated that new literacies are not monomodal, rather they are multimodal (e.g., integration of multiple modes of communication and expression) encompassing and combining letters, symbols, colors, sounds and graphics to extend language, literacies, and the ways we communicate. Stemming from the New London Group's definition of new literacies, the term multiliteracies came to be used to describe the teaching of all representations of meaning including linguistic, visual, audio, spatial, and gestural, which are subsumed under the category of multimodal.

The New London Group's proposition regarding the pedagogy of multiliteracies focuses on modes of representation according to culture and context, and has specific cognitive, cultural, and social effects. Accordingly, the group presents two arguments, the first argument states that there cannot be one set of skills that constitute the ends of literacy learning and the second calls for literacy educators and children to see themselves as active participants in social change "as learners and students who can be active designers – makers-of social futures" (New London Group, 1996, p. 5).

The New London Group discusses the need to guide research and pedagogical practices and proposed explanations of the "what" and "how" of literacy pedagogy for the 21st century. A key element from their work includes addressing the question of the "what" of literacy pedagogy, and proposes a metalanguage of multiliteracies based on the concept of 'design' (New London Group, 1996, p. 12). Design is described to include three elements that together emphasize meaning making as an active and dynamic process: designs, designing, and redesigned. This framework is built upon the theory of discourse to explain how multiple semiotic systems combined with language enable a learner to make meaning.

Gee (2005) developed the concept of big D and little d discourses to explain the dissonance between literacy experiences across domains. "Little d' refers to language in practice, while 'Big D' refers to ways of combining and integrating language, actions, interactions, ways of thinking, believing, valuing and using various symbols, tools and objects to enact a particular sort of recognizable identity" (Gee, 2005, p. 21). Gee's work supports the notion that even if children have understanding of the use of little d discourse, a lack of congruity

within the big D discourse may exist due to different practices and understandings within different contexts.

The “how” of multiliteracies pedagogy takes on the perspective that “human knowledge, when it is applicable to practice, is primarily situated in sociocultural settings and heavily contextualized in specific knowledge domains and practices” (New London Group, 1996, p. 21).

Sociocultural theories, therefore, call for the hybridization of home, cultural practices, and classroom spaces, re-conceptualizing learners’ knowledge (Gutierrez et al., 1999; Moje et al., 2004) as a means to analyze the ways in which literacy instruction can be shaped to inform pedagogical practices that align with emerging technologies.

The work of the New London Group (1996) provides important insights about literacy pedagogy and student learning and suggests educators develop ways in which students can demonstrate how they are able to design, carry out, apply, and revise what they have learned. An expanded view of “traditional” new literacies is necessary in our contemporary world. In response to the social and cultural reshaping of globalized societies, a focus on representational resources and the design process will provide an expanded view of how tinkering/bricolage can be thought of as a form of literacy.

Bricolage-Tinkering

While the idea of bricolage and tinkering is not thought of as a theory of play or literacies, I propose that by interpreting play through a broader lens, with children who are using their play as “literacy possibilities” (Wohlwend, 2008), presents opportunities to create spaces for them to draw on multimodal resources and engage in transformational semiotic practices. For this reason, bricolage and tinkering become important concepts of how and why

tinkering/bricolage as a form of literacy might facilitate a (re)vision of play in early childhood classrooms.

Bricolage, the French word for tinkering, was introduced as a concept by anthropologist Claude Levi-Strauss (Strauss, 1966). According to Levi-Strauss (1966), bricolage is interpreted as “making do with what is at hand.” He used bricolage to explain two phenomena; *ideational* bricolage and *material* bricolage. *Ideational* bricolage helps to understand the process by which members in a society recombine elements to create new functions. And the second, *material* bricolage, as the process through which people use and combine resources they have “at hand” as a means of finding workable, imperfect approaches to a variety of problems or opportunities, tinkering, thereby, “being a process by which individuals and cultures use objects around them to assimilate ideas” (Repenning & Ioannidou, 1997, p. 403). Levi-Strauss contrasts bricolage with “engineering,” in which case a designer creates specific solutions for specific tools, skills, and materials. Unlike the engineer, a bricoleur or tinkerer makes do with whatever skills, tools, and materials are at hand. Levi-Strauss suggested that material bricolage was a characteristic of resourcefulness and served as a function of knowledge of one’s environment. He argued that utilizing the resources at hand contributes to the development of deeper social knowledge (Levi-Strauss, 1966).

The phenomenon of bricolage appears in a broad range of scholarly fields, ranging from anthropology, education, and sociology, to political science and economics. However, bricolage is not talked about in relation to children’s play and minimally in relation to technology and multiliteracies in early childhood settings (Lankshear & Nobel, 2005; Marsh, 2006). Baker and Nelson (2005) conducted an extensive literature review and offered an integrative definition of

bricolage based on themes that were found across disciplines. They defined bricolage as “making do by applying combinations of the resources at hand to new problems and opportunities” (Baker, 2007, p. 698).

While bricolage is used more as a metaphor than as a concept in literature, its meaning is derived from and dependent upon the contexts and circumstances in which it is used. But at its very basic interpretation, it seems very close in meaning to creativity and innovation and provides an explanation of how a person may converge resources to assimilate and recombine them (LeLoarne & Maalaoui, 2005) to produce something new.

Research in the field of educational technology, specifically computer programming, refers to bricolage as an “organizational style what can be described as negotiation rather than planned in advance. Bricoleurs are ‘tinkerers using what they got, [to] improvise, and make do’ ” (Repenning & Ioannidou, 1997, p. 3).

According to Berland et al. (2013), tinkering,

Is considered divergent as it describes both an orientation and a set of activities. As an orientation, tinkering describes the act of playful experimentation. As a set of activities, tinkering includes experimentation, messing around, fussing, or a combination - ultimately leading to engagement of trial and error. (p. 5)

As cited in Berland et al. (2013), tinkering is described below:

1. A non-goal-oriented (or a theoretical) exploration of problem space (Petre & Blackwell, 2007)
2. Creating a working version of a product/program without necessarily understating all of the things done to make it work (Hancock, 2003)

3. Playful experimentation (Beckwith et al., 2006)
4. A process of testing minor changes (Brandt, Guo, Lewenstein, Dontcheva, & Klemmer, 2009)
5. A process of trial and error (Dorn & Guzdial, 2010; Law, 1998)
6. *Bricolage*: a process described by Turkle and Papert (1990) as conversation between programmer and program, navigation through missteps, and planning little more than a step ahead- a description that aligns strongly with Clegg and Kolodner's (2007) description of bricolage in scientific inquiry as direct interactions with objects, rather than more distant, planning-oriented approaches
7. *Fussing*: a process of minor change that leads to improved products, arising from serendipitous variability in students' actions and ideas while engaging with learning activity (Martin, 2009)
8. Just-in-time activity (Petre & Blackwell, 2007; Suchman, 1987; Turkle & Papert, 1990), whereby just-in-time research (such as Wikipedia searches) among programmers has also been noted as an aspect of tinkering (Brandt et al., Dorn & Guzdial, 2010)

Borrowing from Berland et al. (2013), I suggest tinkering may yield positive implications to better understand whether and how tinkering supports children's play and engagement with multiliteracies, as well as the potential to provide a social perspective to tinkering/bricolage – (using resources at hand) that may be useful in a (re)vision of play as children innovate.

Resnick and Rosenbaum (2013) argue that rich experiential learning opportunities situated within specific cultural contexts align with progressive-constructionist tradition and reflect different approaches to learning that are needed to prepare children living in today's

society. They argue that tinkering, defined as a playful, exploratory, iterative style of engaging with a problem or project, closely aligns with play and allows for designing, making, and experimenting with new possibilities. Situated cognition and semiotic domains, therefore, best describe how children actively engage with, experience, and think differently about signs and symbols (Gee, 2007).

Multimodal Literacy

The representation of modes and media available to young children in classroom environments is central to constructing knowledge, gaining meaning, and learning how the teacher and children interact to design and connect literacy to their literate lives and the world around them (Jewitt, 2008).

Multimodal theory (Kress and Jewitt, 2003) suggests a complex relationship between modes and acknowledges that there are many modes involved in meaning making (language, visual, spatial, digital, etc.). Integral to the representation of meaning are materiality, framing, design, and production. According to Albers and Harste (2007), “Design is one of the most important parts of multimodal expression because it encourages imagination, vision, and problem solving, when learners become the designers” (p. 13). Children who engage in multimodal literacy will have the potential to communicate their message through the use of multiple modes. Multimodal literacy has the potential to help children make connections, build on existing knowledge, collaborate with peers, and make transformations (Jewitt & Kress, 2003; Kress, 1997).

Literacy, from a multiliteracies perspective, is not about skills and competence, but instead recognizes that meaning making is an active, situated practice that includes overt

instruction, critical framing, and transformative process (New London Group, 1996). Cope & Kalantzis's (2009) examination of the constructs and pedagogical implications of developmentally appropriate practice for young children resulted in four dimensions of transformative pedagogy of multiliteracies (pp. 17-19):

- 1) Experiencing, between familiar and unfamiliar literacy experiences;
- 2) Conceptualizing, requires that learners be active, weaving concrete and abstract thinking to derive meaning;
- 3) Analyzing, learners explore causes and effects, develop webs or reasoning, and interrogate the interests behind a meaning or action, and their own processes of thinking;
- 4) Applying, application of knowledge and understandings to the complex diversity of real world situations and transfers previous knowledge into new settings.

Environments that embrace the pedagogy of multiliteracies promote a culture of creativity, innovation and flexibility and regard all forms of representation as dynamic processes of meaning making. Literacy teaching, from this perspective, aims to create active designers of meaning, who are open to differences and innovation.

According to the New London Group's (1996) pedagogy of multiliteracies, I will look to the following four components as I analyze my data.

- 1) Situated practice: explains how teachers engage children in learning that is meaningful and connects to what they already know. This will help to reveal how teachers and peers help children guide and expand their learning.
- 2) Overt instruction: includes how activities help students build on existing knowledge and transform learning to new situations. This also includes the

metalanguage of literacy to help students understand how to engage in multiple modes to communicate their ideas (p. 86).

- 3) Critical framing: includes helping children understand the context of their learning in the world around them.
- 4) Transformed practice: this explains how children will explain their knowledge and understanding of the world and how they make meaning within different cultural contexts and environments.

Together, I will use the four dimensions of the transformative pedagogy of multiliteracies: experiencing, conceptualizing, analyzing, and applying, as literacy enactments, and the pedagogical components of situated practice, overt instruction, critical framing, and transformed practice, to describe and analyze my data.

Semiotic Domain

One of the most recent shifts in early childhood literacy has been a result of social semiotic theory. Social semiotic theory is concerned with the ways in which meaning is made in social contexts (Halliday, 1975). While much is known about the semiotic resources of language, considerably less is understood about the semiotic potential of other forms of representation (Jewitt, 2008). Social semiotic theory points out that people are always investigating the relationship between signs/symbols and meaning, and modifying signs/symbols or/and meaning to make them correspond more closely to the history and ideology that is assigned to the particular values in a personally significant form, resulting in sociocultural knowledge-production (Hall, 1997; Van Oers and Wardekker, 1999).

According to Gee (2007), the term “semiotic domains” helps to explain how things take on meaning. *Semiotic* means “signs” such as images, symbols, words, movements, gestures, objects, and artifacts. These signs, however, only take on meaning when they are embodied in a *domain*, explained as a context, practice, culture or historical period. Gee (2007) argues that for learning to be critical as well as active:

The learner needs to learn not only how to understand and produce meanings in a particular semiotic domain but, in addition, needs to learn how to think about the domain at a “meta” level as a complex system of interrelated parts. The learner also needs to learn how to innovate in the domain – how to produce meanings that, while recognizable to experts in the domain, are seen as somehow novel or unpredictable. (p. 25)

Living in a multimodal world helps us link the use of technologies and cultural tools with our experiences in the real world (Yelland, 2011). According to Hall et al. (2003), “Children from very early on utilize a rich range of ways to make meaning and, while they might be able to distinguish between them as forms, they utilize whatever they feel is appropriate in whichever ways they want to intend a meaning” (p. 9). Kress (1997) points out that children transform the world while operating within in it. He argues that children use multiple modalities strategically to represent what is important to them.

Transformative Literacy

Transformative pedagogy allows for alternative pathways and comparable destination points in learning (Kalantzis & Cope, 2004, 2005). The measure of student success of transformative pedagogy is “high performance learning outcomes that can produce comparable social effects for learners in terms of material reward and socially ascribed status” (Kalantzis &

Cope, 2006, p. 188). Early childhood literacy, therefore, should be regarded as a dynamic process of transformation rather than processes of reproduction. According to Kalantzis and Cope (2001):

Meaning-making resources may be found in representation objects, patterned in familiar and thus recognizable ways. However, these objects are reworked. Meaning makers do not simply use what they have been given: they are fully makers and remakers of signs and transformers of meaning. (p. 175)

Following Kress (1997) and Jewitt (2008), this study examines how bricolage/tinkering, as a form of literacy, allows for children to use multiple modes to construct meaning as re-makers and transformers of literacy, along with the process and the types of artifacts/texts they create and produce.

Summary

Play in environments that facilitate explorations of the visual, aural, social, gestural and linguistic modes enables children to build representations to form new understandings. From this perspective, technologies can be seen as mediating tools or conductors of culture (Auld et al., 2012; Vygotsky, 1978), language, literacies, and play.

From a new literacy theory (New London Group, 1996; Street, 1995) perspective, the term literacies includes the use of various practices (e.g., including discourses, pretend play, drawing, writing) and an abundance of materials (e.g., pencils, puppets, toys, cameras, paper, tablets, toys) to make meaning and enact literacies. Research shows that technologies and cultural tools have the potential to increase children's social, cognitive, and literacy skills

through interaction with peers as the children share and help one another, ask and provide information and explanations, and collaborate (Heft & Swaminathan, 2002).

As cultural technologies play an increasingly important role in children's literacy practices, there is a need to identify the contributions these cultural tools make to a child's play and literacy practices. I believe that children's play is a natural starting point for developing understandings about their world and effective literacies for communicating. The pace of technological innovation makes it difficult to study its effects on child development, but it is increasingly important to study the ways in which children make meaning and translate ideas between mediums and utilize literacy resources at hand. In accord with multiliteracies theory, I argue that within semiotic domains, children draw upon the resources at hand (tinker) to enact meaning through "loopy transversals – zigzagging or spiraling across modes" (Wohlwend, 2013, p. 44) that become key elements as the children develop and construct play narratives and become designers of meaning.

To conclude, profound societal shifts that have occurred over time and qualitative shifts between historical and contemporary thought now place emphasis on children's cultural differences and cultural transmission including diverse modes of representation and meaning making. By further examining literacy with the concept of 'bricolage' in mind, we can come to a more sophisticated theoretical framework to investigate pedagogical practices and children's play-literacy enactments from a sociocultural perspective. The following chapter will set forth and detail the methodology for this research study.

CHAPTER 4- METHODOLOGY

The study of children's design thinking and innovation in spaces that foster play is necessary to build conceptual models of bricolage/tinkering as a literacy practice. Documenting instances where play, innovation, and literacy are bound together may guide teachers and researchers to (re)envision new literacy practices in elementary school contexts. My research question guided my inquiry and choice of methodology: What types of literacy are young children enacting when they play/work in environments that support play/tinkering? This chapter describes my research methodology, the research participants, data collection, and analysis procedures. The chapter ends with a discussion of trustworthiness and the limitations of my study.

Bounded Case Study

I chose to conduct a bounded case study (Creswell, 2013; Merriam, 1998; Stake, 2005) of Bricolage Academy because this method enabled me to provide a detailed account of children's and teachers' social activities, experiences, and meaning making, including the historical, economic, and cultural forces that shape the environment (Dyson & Genishi, 2005). This type of qualitative research allowed me to gain understanding of the phenomena of play, tinkering, innovation, and how children enact literacies (Gall, Gall & Borg, 2007). To understand how children play, from their own perspective, spaces, language, and the sociocultural contexts that govern their actions, using case study methodology best helped me tell the complex stories of children's lived literate experiences. The relationship between the particulars of play, tinkering and innovation, and multiliteracies suggests key theoretical assumptions of the intended case

study, involving the “production of meaning and its dependence on context” (Dyson & Genishi, 2005, p. 4).

Yin (2013) claims that the definition of case study is twofold; the first part begins with the scope of a case study and the second, with features of a case study:

1. A case study is an empirical inquiry that
 - investigates a contemporary phenomenon (the “case”) in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident.
2. A case study inquiry
 - copes with the technically distinctive situation in which there will be many more variables of interest than data points, and, as a result,
 - relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and, as another result,
 - benefits from the prior development of theoretical propositions to guide data collection and analysis. (pp.16-17)

Case study, therefore, is done to shed light on a complex social phenomenon (Dyson & Genishi, 2005; Gall, Gall & Borg, 2007; Yin, 2013) and the focus on a specific “bounded case” allows for holistic and real world perspectives of a particular instance of the phenomenon, bounded by time and place (Yin, 2013).

A bounded case study design allowed me to understand significant characteristics that make Bricolage Academy unique as an elementary school, as well as gain an understanding of play/tinkering through the literacy experiences of the research participants. Over time, within

the specific unique and natural context of the kindergarten, first grade, and innovation classroom environments I captured the details of meaningful interactions and activities.

According to Stake (2005), the size of a case study distinguishes and determines the type of case. An instrumental bounded case study (Stake, 2005), as a qualitative research approach, best guided my inquiry. To “fence in” and identify the boundaries for this case study, I define the context as the classrooms and the school environment as a whole. The focus of my study was play/tinkering and multiliteracy episodes in kindergarten, first grade, and innovation classroom environments (Merriam, 1998; Miles and Huberman, 1994). The advantages of a bounded case study design were that I specifically explored the case of the environment, play/tinkering, design, and the sociocultural activities that were visible and implicit. The research participants (teachers and students), helped me to gain a better understanding of the complex social happenings through “close analysis of fine details of behavior and meaning in everyday social interaction with analysis of the wider social societal context – the field of broader social influences within which their everyday interactions take place” (Erickson, 1986, p. 120). As a researcher, I sought to figure out what it’s like to be a young child who plays, tinkers, and innovates, how a child utilizes literacies when engaged with multimodality and multiliteracies in their play, as well as how the sociocultural underpinnings of literacy help shape children’s literate lives. While important data was gathered in the kindergarten and first grade classrooms, the most relevant data around multiliteracies came from the data collected in the innovation room.

Case study, as an empirical form of inquiry, presents some limitations. According to Yin (2013), case study research has been viewed as an approach that lacks rigor and does not follow systematic procedures, resulting in a weakened influence of the findings and conclusions.

Further, other limitations include the inability to make generalizations and comparative claims due to limited evidence, as well as the subjectivity of data. Contrary to the limitations articulated by Yin (2013), Stake (2005) argues that objectivity of data can be achieved using replicative, falsification, and triangulation methods, as well as continuously making descriptions and interpretations during the period of the study. According to Dyson & Genishi (2005), “the aim of such studies is not to establish relationships between variables (as in experimental studies) but, rather, to see what some phenomenon means as it is socially enacted within a particular case” (p. 10). School and classroom environments have their own culture that shapes behaviors and experiences as well as influences the way individuals generate meaning and make sense of their world. Case study has helped me to gain others’ perspectives and to uncover the process through which the participants enact language and literacy and how teaching and learning happen through the flow of social participation (Dyson & Genishi, 2005).

The Place and the Players

During the summer of 2014, I initially contacted Josh Densen, CEO and founder of Bricolage Academy, by email. After our initial correspondence, I sent a research proposal to him, specifically outlining the study. By phone, I clarified and discussed the goals of the study and my role as a researcher. Mr. Densen was supportive of my work and was willing to allow me to conduct my research study at Bricolage Academy. Through a bounded case study, I documented, over the course of sixteen months during the 2014-2016 school years, how three classrooms, a kindergarten, first grade and a “mini”-maker space referred to as the *innovation room*, functioned as playful, transformative, literacy learning environments. I collected a range of data for this case study, which resulted from twenty-five site visits and over 80 hours of field observations,

including interviews. My goal throughout this study was to accurately and systematically document the pedagogical practices of four teachers working within a school context specifically designed to foster children's literacy through play and tinkering.

Bricolage Academy, 2014-2016. As noted, Bricolage Academy was purposefully selected because of its commitment to equity, opportunity, and fostering innovative thinking and learning for all children. When I began the study in the 2014-15 school year, Bricolage was a K-1 school with 150 students enrolled: 43% girls; 57% boys; 48% White; 42% African American; 5% Hispanic; 2% Pacific Islander/Asian; 3% Multiethnic. Approximately forty-six percent (46%) of all students were, and still are, economically disadvantaged. Bricolage adds one grade level each year and will continue to do so until it becomes a kindergarten through 8th grade school, so during the 2015-16 school year, Bricolage Academy served grades K-2 and grew to 240 students. The population then included approximately 43% girls; 57% boys; 51.3% White; 39% African American; 3.4% Hispanic; 3.8% Multi-ethnic; 2.1% Pacific Islander/Asian; and .04% Native American. Approximately forty-six percent (46%) of all students are economically disadvantaged. Currently, there are 27 full time staff members: 26% African American; 67% White; and 7% Biracial.

Prior to participant recruitment efforts for this study, official approval from the Institutional Review Board (IRB) and Bricolage Academy were obtained. All IRB and Bricolage protocols were followed carefully throughout the study, including when new sites, new teachers, or new students were added to the study over time.

Adult participants. The research participants include the CEO, the director of curriculum, a parent volunteer, and four teachers. Teachers were recruited through a paper

invitation, and the parents of the children in their classes received a newsletter explaining the research study. After my first visit to Bricolage Academy, I requested half-hour to one-hour interviews with the key respondents, at their convenience. The interviews provided a rich source of data as each person provided valuable insights into their expertise, perspectives, the school's culture and their personal experiences. Next, I will provide an overview of each participant, including their role, years of teaching experience, and self-described beliefs about Bricolage Academy's integration of innovation through play/tinkering.

Josh Densen, CEO and founder of Bricolage Academy, a European-American male, has 16 years experience in education, ranging from being a classroom teacher to school founder.

I believe innovation is solving a problem creatively. Creative problem solving. It is understanding what the challenges are in front of you either through empathy for a person or yourself experiencing a challenge and creating or finding a way to solve the problem through trial and error. Play is creation – when you play you are creating something. You have to learn how to create things – that playful – whimsy – imagination. (Josh Densen, Interview, 12-15-14)

Michele Murphey, Director of Academics, a European-American female, with 15 years of experience in education ranging from being a classroom teacher to director of academics. She has worked at Bricolage for close to four years.

Broadly, I see [innovation] as creative problem solving...our learning and our work is play. It may not be skipping rocks, it may not be devoid of cognitive work...it's when they get lost in it... that their learning seems less like work and more like play. (Michele Murphey, Interview, 12-16-14)

Erin Densen, parent volunteer, a European-American female. Ms. Densen has approximately 9 years of experience in various educational contexts. She has been a parent volunteer at Bricolage for three years. Her perspective on innovation is:

In innovation they take things to a very different level. It is very creative, new, and a lot of imagination and collaboration. There is this sense of persistence with the children and trying and trying - and really being okay with failing. (Erin Densen, Interview, 2-4-15)

Megan Lorio is a kindergarten teacher and a European-American female. Ms. Lorio has six years of classroom experience as a kindergarten teacher and is in her third year at Bricolage Academy. Her perspective on innovation is:

I end up feeling like innovation is throughout the structure of our day. The children are making very deliberate choices for themselves - for whatever they are doing. Whether it is academic, content, play - whatever they are applying it to it ends up being the students making choices for whatever they are doing ...they drive that choice and if they hit a road block...supporting them and trying to figure out how to do it going forward. It is so much for about the process than the product. (Megan Lorio, Interview, 12-16-14)

Diana Turner, first grade teacher, is a European-American female. Ms. Turner has eight years of experience in education and is in her third year as a classroom teacher at Bricolage, where she taught kindergarten for one year and first grade for two years. Ms. Turner's perspective on innovation:

I think it's about awesome creativity, higher level thinking, resilience to failing, and kids taking ownership in what they are doing. So trying to get kids to interact with their own learning in a way that they get to make some choices, but also in a way that they

understand that their conversations with each other teach them the most and provide them with opportunity to discover most about teaching and learning. (Diana Turner, Interview, 2-5-15)

Paul Reynaud, a European-American male, is an innovation teacher. Mr. Reynaud is a veteran teacher with over 25 years of experience. He taught in a variety of public schools in New Orleans throughout his career. At the time of this study, Mr. Reynaud was the innovation teacher for two years at Bricolage and left at the end of the 2014-15 school year. According to Mr. Reynaud, innovation is about “What do you do with an idea?” For him, it is about giving children time to work with their hands and think about the problem they are going to solve.

I am taken with the whole idea of Bricolage, everything around us is not new – there are materials you are familiar with but there are ways that you can put something together and come up with new uses for it or new inventions for it... innovation is like a metamorphosis – they are taking old stuff and making it into a new thing. For us it is about imagination. (Paul Reynaud, Interview, 2-4-15)

Alex Owens, a European-American male, is an innovation teacher who has five years of experience in a variety of educational context. The 2015-16 school year was his first year at Bricolage as the *innovation* room teacher. Mr. Owen’s perspective regarding innovation is:

It is a space that allows for children to engage with materials in meaningful ways. It is about trial and error, problem solving, playing, tinkering, discovery, experiencing, making, creativity and imagination. (Alex Owens, Interview, 1-28-16)

Children in the study. The children in my study were those in the participating teachers’ classrooms. They were 6 to 8 years old (n= 40; 18 girls and 22 boys) who identified as 45%

White and 55% African American/multiethnic. The children and their families lived in neighborhoods throughout the greater New Orleans area and were representative of middle and upper middle class SES families, and low-income SES families. Children were included in this research study because the research was conducted in classroom environments. Further, including children in this study was essential to understanding children's enactments of literacy as well as their perspectives of play as they engage in tinkering.

An overarching theme that grew out of my data was community (community of practice, participatory culture and collective collaboration). The peer culture that became evident in my analysis shifted my focus from children's individual cases to a group case study perspective. I began with the group as a whole, then investigated the ways in which the pieces came together: the children, how they interacted with their peers, the environment, and teacher. Children were not formally interviewed, as originally intended, but were asked about their experiences and questioned about their activities, understandings and participation during classroom and innovation time. These conversations were detailed in the field notes.

Research Design

My research design used various sources of data collection to create an in-depth picture of the case including: in-depth description of the environment, direct observations by examining children's activities during play, reading, and writing, for mediation (teacher-led, tools, and child-led) and processes (playing, talking, collaboration, and production); observational field notes; memos; video and audio recordings of children during play and literacy activities; semi-structured interviews and informal talk with both teachers and children, as well as children's artifacts and productions (Merriam, 1998; Yin, 2013).

Yardley (2008) suggests that the multiple sources of evidence in case study research allows researchers to discover converging lines of inquiry, which aids in triangulation of the data and supports the case study's findings. To strengthen the validity and increase the reliability of the case, convergent evidence using multiple sources of data, and data triangulation, provide multiple measures of the same phenomenon for analysis (Yin, 2013).

Since my research goals were dependent on the classroom environment, establishing relationships with teachers and children allowed me access to the daily "goings on" (Dyson, 2013, p. 180). I viewed the research participants as individuals who brought a perspective formed by their social, cultural, and historical lens. I valued both their etic and their emic perspectives of literacy, play, and innovation in order to present multiple perspectives and paint a complex picture of the phenomenon being studied (Creswell, 2013). My understandings and interpretations of the happenings and events from the participants' perspective were derived as an insider. Further, both cultural and contextual factors matter, and were integral to the exploration of play and enactments of literacy. I brought an emic perspective to my understanding and interpretations by sharing my views and findings with the research participants (Stake, 2005).

In order to gain an in-depth understanding representative of the lived experiences of the study participants, as well as enhance the internal validity of this study, I employed the following six basic strategies proposed by literature on qualitative research (Merriam, 1998; Stake, 2005). First, I used triangulation. Second, I conducted member checks. Third, I engaged in long-term observation. Fourth, I asked colleagues to comment on findings as they emerged to engage in peer examination. Fifth, I involved participants in all phases of the research to engage in

participatory or collaborative modes of research. And sixth, I clarified my biases, assumptions, worldview, and theoretical orientation at the outset of the study.

Data Collection Procedures

From October through May of the 2014-15 school year, I gathered observational data in the kindergarten, first grade, and the innovation classroom. During the summer of 2015, Bricolage Academy moved across town. Data were collected at the new school site from September through January of the 2015-16 school year. Data about the second grade classroom context are not reported in this study due to insufficient data collection. However, second grade students were observed in the innovation room during the 2015-16 school year. Throughout the study, I observed the classroom environments and activities of kindergarten and first grade, primarily during the morning hours. Each observation lasted at least 1-2 hours in duration. Mid-morning and during the afternoon, I observed the environment and activities in the innovation classroom. My observations would sometimes last up to 5 hours. During my observations, I concentrated most on literacy activities and children's play/tinkering within the innovation classroom context. (See Table 1: Data Collection Timeline and Procedures.)

My stance in the classroom spaces was that of a friendly participant observer. I typically positioned myself in the classroom alongside or behind the children making every attempt to not be a distraction to or intrusive on the children or the teacher. As a new charter school, Bricolage Academy had many visitors, who popped in and out of the classrooms, sometimes on a daily basis. These visitors included potential new parents, educators, administrators from other schools, and charter review members. The children were used to and comfortable with people

observing their activities and classrooms. From my perspective, the visitors did not appear to interrupt the children or the teacher's instructional flow within the classroom space.

The children were particularly enthusiastic in sharing their work and they could see my interest in what they were doing. Photographs were regularly taken in the classrooms of Bricolage and children were not hesitant to approach me to ask if I could take a picture of their activities or products (e.g., reading, writing, creation in innovation). As I observed, I typed field notes on my tablet and inserted photos to capture the essence of what was going on during classroom literacy, play/tinkering, and innovation time. Immediately after each observation, I elaborated on my notes. From time to time, spontaneous audio or video recordings were captured. I transcribed and annotated these episodes using my field notes. All semi-structured interviews with the participants in the study were recorded, transcribed, and shared with the interviewees to ensure accuracy of perspectives and information.

Data Collection Methods

I documented my observations as a participant observer within classroom environments. I used a mix of data sources including field notes, digital photographs, video recordings, audio recordings, semi structured interviews, classroom mappings, artifacts (e.g., student work/productions, lesson plans, newsletters) and children's interactions with each other as they engaged in play/tinkering activities. A digital research portfolio was created in an encrypted cloud-based storage system to retain data from all of the sources along with documented analysis, emerging theories, interpretations, and assumptions regarding developing data patterns and analysis decisions.

Participant observation. Since this research was conducted with young children, my involvement was that of a participant observer. Participating in the activities in the classroom contexts allowed me to establish greater rapport with the study participants as well as helped me gain insider views regarding the phenomena of study. Gathering field notes by conducting observations as an observer allowed for an outsider perspective without direct involvement within the environment. During observations I kept my research purpose and question at the forefront as I watched the physical setting, activities, interactions, and conversations (Creswell, 2013). To provide a thick description (Geertz, 1973) of children's use of literacies during play, tinkering, and innovation, I observed the research participants, both teachers and children, in their classrooms.

Field notes. Two column field notes were taken each time a classroom was observed. Taking two column notes helped to separate my observations from interpretations as I documented classroom activities. After observations I expanded on my field notes by writing memos.

Digital photographs. Photographs were used to capture the school and classroom environment, children's interactions with materials, as well as the artifacts they produced. Photographs were used to capture participation, artifacts, and the social environment of the particular groups of participants (Charmaz, 2006).

Video and audio recordings. Classroom activity was selectively recorded during literacy, play, tinkering and innovation periods. I targeted specific types of activity that related to my research question. Both video recordings and audio recordings were balanced with

observations and written descriptions through field notes that captured the larger contextual environment.

Semi-structured interviews. Interviewing participants was important to gain multiple perspectives from the interviewees about what I was seeing during my field observations. Creswell (2013) suggests that researchers determine the type of interview based on the research question and the type of interview that has the potential to obtain rich valuable data. I used semi-structured interviews as a procedure that allowed me flexibility as I asked open-ended questions and probed further to explore the phenomenon of literacy, play, and tinkering/innovation. From the interviews, I gained insight into the stories of the participants and gathered information based on the interpretations of others about things I missed during observations. The interview protocol for administrators, teachers, and children included open-ended questions that invited the participants to engage in conversation and asked specific central questions designed to help me answer my research question (See Appendix B, C, D).

Classroom mappings. Classroom maps and diagrams were used to capture how space and materials were arranged and used by teachers and children.

Artifacts. The materials, documents, and archival records (Stake, 1995; Yin 2003) that I gathered from both the children and teachers were considered artifacts. As Creswell (2013) notes, artifacts are things that humans create and use. In this study, these artifacts included the teacher's lesson plans, materials the teacher or children use, and products created as they relate to my research question. Artifacts provide descriptive information, verify emerging themes, and act as an objective source of data. Artifacts also aid in grounding the investigation in the environment (Creswell, 2013).

Close examination and review of all data collected helped to paint a vibrant picture of the case being studied.

Data Analysis Categories

After each visit to the school site I examined my data for emerging themes. My research question was always in mind: What types of literacy are young children enacting when they play/work in environments that support play/tinkering? I examined my field notes, interview transcripts, and other relevant data to gain insight into the types of literacy episodes that were both explicit and implicit in the classroom environments. My on-going analysis of observational data led me to concentrate on coding for evidence of literacy through children's play and tinkering. I used the following definitions to guide my analysis:

Literacy. Diverse set of semiotic practices for producing texts (reading, writing, play, tinkering, design) that are valued and recognized within a cultural context.

Play. Foregrounded action modes (gesture, posture, movement, and manipulation of objects) that lead to new ways of making sense of each other in a community of practice. Kress (1997) sees play as a transformative action in which the child makes sense of the signs provided to her or him within the frames of reference of the child's own experience and her or his interest in the present moment (Kjallander & Moinian, 2014, p. 14). Play is viewed as giving children a chance to open up for learning, improvisation, innovations as well as challenging adults' authority and power upon children (Sutton-Smith, 2001).

Tinkering. Creative problem solving using materials that are right there to think about in new ways.

Through my analysis, I studied all of the diverse sets of semiotic practices – the literacy events – and all the elements they contained. I selected literacy events to share in this dissertation that captured children's use and demonstration of literacies, and paid particular attention to the children's products.

The process of coding the data was both inductive and deductive. Open coding was applied initially to identify themes. The codes were then reorganized and merged as connections between the codes were made. The codes that emerged from the data were not uninfluenced by pre-existing theories outlined in Chapter 2 and 3. Together, the themes from the literature and the data collected created a point of intersection to help achieve theoretical saturation.

Overarching themes. Merriam (1998) states that ethnographic analysis should focus on the sociocultural context and include rich, thick description in order to gain conceptual and theoretical meaning using multiple sources of data. To make sense of the field notes, transcripts, and artifacts, first, I grouped the data into overarching themes. They include context, instruction, play, literacy, and inventions. I began to analyze data using the overarching themes to derive open codes or In vivo codes, which are concepts that explain what is stated. During open coding, I coded for anything and everything. I examined the In vivo codes for patterns, which led to the discovery of core variables as they relate to my research question; they include design, wonderings, whimsy, and cleverness/innovation. These core variables became the focus of the research. Next, I began the selective coding process, which collapses codes based on patterns and properties into theoretical codes. Theoretical codes implicitly conceptualize how substantive codes relate to each other as interrelated, multivariate hypotheses in accounting for resolving the main focus and must be patterned out to be verified to provide grounded integration (Glaser,

1998). Glaser and Strauss (1967) convey that grounded theory is not a verification of existing theory, but rather a way to discover a general method of comparative analysis or discovery of theory from data. Glaser and Strauss (1967) also assert that grounded theory research provides relevant predictions, explanations, interpretations and applications of a basic social process.

I looked to sociocultural theory as a tool to analyze the design of the school context and curriculum. This helped me to understand how Bricolage built off of the historical underpinnings and theories of play and early childhood literacy environments in the overall school design. Next, I looked to new literacy studies; specifically, the pedagogy of multiliteracies, to interpret data related to the theme *wonderings*. Here I focused specifically on critical framing and semiotics to interpret my data. I looked to play theory, including work and flow, to analyze the data that aligned with the code *whimsy*. I draw upon Bruner's three modes of representation, enactive, iconic, and symbolic modes. Finally, for the theme *cleverness of innovation*, I identified events in which the children's artifacts and transformed practices were characterized by multiliteracies theory.

Throughout the data analysis, I used constant comparison to analyze the data for fit, workability, relevance and modifiability. I went between bottom-up coding and top-down coding to refine my ideas about the codes and their relationships and patterns. Setting out to discover something new, the inductive and organic nature of grounded theory methodology with regard to the emergence of data versus forcing the data to fit pre-existing theories seemed to be an appropriate fit for this research study. The theoretical frameworks of sociocultural theory, play theory, and new literacy theory helped locate the specific argument that I am trying to make and

informed my analysis of the data. The codes and concepts that emerged from the data conceptualized the key ideas in the relevant disciplines and discourses (Charmaz, 2006).

The findings will explicate my conceptual logic and direction, engage leading ideas, acknowledge prior theoretical works, position my new theory in relation to these theories, explain the significance of my original concepts, and provide an in-depth analysis of the case studied (Charmaz, 2006; Creswell, 2013).

Trustworthiness and Limitations

I took the following measures to ensure trustworthiness. The trustworthiness or validity of the data collection and analysis was strengthened by reaching theoretical saturation before exiting the research site and before coding was completed. First, I spent an extended time in the field. This was an attempt to understand the context and culture of the school and develop relationships with the participants. Throughout the data collection and analysis, steps were taken to check for the accuracy of the dataset as well as the accuracy of its analysis. To check for validity, I conducted member checks by taking my data and interpretations back to the teacher participants to ask if my findings were credible; this occurred during the last part of the data collection. Collaboration with the participants helped strengthen the findings from my interpretations of the data. To ensure triangulation of methods and data, I used multiple data sources for finding patterns and themes. During the final interviews, I shared my understanding and emerging theories with the participants, providing an opportunity for them to provide verification and clarification. Finally, I personally transcribed the data, which strengthens the validity and allowed me to accurately capture and understand the pedagogical practices, the environment, and the children's literacy-play enactments of the data collected.

In reporting this research, I acknowledge that the results were selective in nature and not completely objective. As a researcher and educator, I recognize that I brought my own beliefs about early literacy practices and play to this study. Not only did my experiences with the study participants shape my interactions, they also influenced my interpretation of the data and analysis. Finally, sociocultural theory, play theory, and new literacy theory held a degree of influence over my interpretations of the data. Further limitations of this study are discussed in the final chapter.

CHAPTER 5 – THE SPARK OF MINDFUL DESIGN

There is a spirit dwelling somewhere deep in New Orleans, which seems embedded in everything about the city: its buildings, its sediment, its cemeteries, its levees. But make no mistake, it's the people and culture of New Orleans that make the city come alive: its music, its gumbo, its masks, its Mardi Gras. There are multiple communities that interact, where people find strength in kinship. For example, Mardi Gras carousers and revelers band together into *Krewes* to ride on Mardi Gras floats, and host Mardi Gras balls. These Krewes last all year long, holding humanitarian events and community get-togethers.

The larger cultural/historical context of New Orleans, especially the community of the Krewes, influenced me as I began to analyze my data for overarching themes and derive key concepts through open coding. The patterns that emerged as related to my research question included *design*, *wonderings*, *play*, and *innovation*. While there are over fifty Krewes in Louisiana, there were just four within the school I was studying: *Spark*, *Wonder*, *Whimsy*, and *Clever*. As a way to create communities of practice within the larger community of the school, children are assigned a Krewe when they enter kindergarten, and they stay with that Krewe from that point on. It was relatively easy to make a connection between the names of the Krewes and the concepts that emerged from my data. This chapter is about the sparks of ideas that led to the design of a school.

In this chapter, I describe how and why Bricolage Academy came to be. I begin with an introduction of Mr. Josh Densen, CEO and founder of Bricolage Academy. I describe the journey taken from a spark of an idea to the mindful design of the overall school environment. Then, I provide an overview of the curriculum, which helps create and support educational

environments that value a wide range of literacy practices, a collaborative culture, time and space, and a design/tinker/make framework for play. Finally, I draw some parallels in thinking between Mr. Densen and historical play theorists.

Josh Densen

Josh's motivation as an educator is driven by the guiding question, "Are we making progress toward greater equity?" (John Densen, Interview, 4-22-15). Josh Densen started his career as a special education teacher in a middle school in Oakland, California. After two years, he returned home to the east coast, and after a nine-month public policy internship, he took a position with the Department of Education in New York. Working in this position led Josh to realize that he wanted to be closer to kids and schools and become a principal. He felt he needed more years of teaching experience and decided to go back into the classroom. He became a teacher at a KIPP charter school in Harlem, New York, where he taught fifth grade math for three years. At KIPP, he was provided with an opportunity to become the school's principal but turned the offer down to attend graduate school. This decision was also influenced by the fact that Josh and his wife were expecting their first child and he did not want to be a new father and new principal at the same time. Josh obtained his M.B.A from The Wharton School at the University of Pennsylvania, and shortly thereafter moved to New Orleans. Josh originally came to New Orleans to open up a local office for a national non-profit called the Achievement Network.

After several years, when it was time for Josh's daughter to apply to kindergarten in New Orleans, there were only a handful of schools that he and his wife were interested in, and only one school that they wanted their daughter to attend, with a waiting list a mile long. Josh noticed

that there were so many other parents who wanted to get their kids into a select few schools.

And as parents and educators, there were some elements they were hoping to find in the schools for their children - that weren't even in the schools that everybody wanted to get into. Josh expressed that if charterization and decentralization of New Orleans public schools did not happen, it would have been highly unlikely he and his family would have stayed in New Orleans to send his children to an open enrollment public school. He, like other parents, would have chosen to send his kids to private school, thereby perpetuating inequities and separation. Caring deeply about kids, classrooms, schools, parents and teachers, Josh realized he wanted to make his home in New Orleans. He looked at the inequitable school system and asked himself, "Do I want to be complacent in it or do I want to take action that could move the needle a little bit in the direction of equity?" (Josh Densen, Interview, 1-29-16). Fortunate to live in the city of New Orleans as an educator, parent, and resident, Josh took advantage of the opportunity to pursue an entrepreneurial new idea in education.

Josh believes in two things: that parents should have preference to select the school their child attends, and that every city needs to have opportunities for entrepreneurs in education to bring their ideas in education to fruition. Josh is clear that his goal is not to be provocateur or to shake up public education in New Orleans. His goal is to serve the needs of the public. Making a bold decision, Josh embraced the idea of creating a school and began to talk with parents on the topic of education in New Orleans.



Playground Talk, Living Room Conversations, and Community Meetings

“Tell me about your hopes and dreams for a school for your child” (Josh Densen Interview, 12-16-14). In 2010, this was the initial question Josh posed to parents at the local playgrounds where his children played. This playground talk eventually led to more purposeful living room conversations. In the initial stages of thinking about a school, and following a lean start-up business model, the question, “Who are my users and what do they want in a school for their children?” guided Josh’s thinking. In 2011, Josh went door-to-door seeking input from the surrounding neighborhood community regarding the school they envisioned for their children. Some questions included: What are three things you think all great schools should have? And what are three things you would like to change about the schools in New Orleans? Initial survey results revealed parents wanted a diverse school with teachers who have a track record of academic excellence and who know how to build great relationships. This was a starting point to move conversations along. The conversations that once began on the playground and among the parents of young children in the Densen’s social circle eventually evolved into community meetings held all over the city. Josh began to invite people whom he never met before to talk about the topic of education. A solid *idea* for a school emerged out of those conversations and an *idea* for a two-part mission statement was created. The users (the parents) wanted *a school that was diverse, and a school that prepares kids for an ever-changing world.*

The Iterative Design Process

“The process of iteration – it’s messy. How to take something and make it better...”

(Josh Densen, Interview, 12-15-14)

The next step Josh took was to try out some instructional approaches with real children. He held a small pilot class at a local museum for a small group of children, ages 3 to 7 years old. As he observed their engagement with the instructional approaches, he quickly realized, “It was a failure!” Josh found that the students from different grade levels who did not have a shared classroom culture did not engage with the lessons as he had expected. What he did learn is that kids love to build and will grow academically and socially when they make things.

After thoughtful planning Josh tried again, but this time he recruited kindergarten children (which was the grade the school would begin with in the fall). Josh used classroom space at FirstLine Schools, a charter school in New Orleans, to conduct an eight-week after school pilot. Sixteen diverse students participated; eight students who were considered socioeconomically disadvantaged and attended a charter school, and eight students who were considered affluent and from local magnet and private schools. The afterschool sessions lasted two and a half months. Josh found that children who learn from various instructional models interacted with learning in different ways. The less affluent students demonstrated more technical skills, while the affluent students demonstrated more creative thinking. The pilot also revealed that students who were not familiar with the “workshop model of learning” needed more time to understand the expectations of that type of learning. This testing phase also revealed two important elements that informed his instructional design of a school. First, there is value in students’ making their own choices, and secondly, the importance of teachers supporting students to become problem solvers.

By 2012, Josh secured initial grant funds to obtain a pilot site. Michele Murphey, now Bricolage Academy’s Director of Academics, helped Josh pilot the instructional model based on

creative problem solving. The “pop-up” school allowed Josh and Michele to continually refine their ideas about the school with input from children, parents, and funders.

Realizing that inventors and designers create something in the future that is different from the present, Josh and Michele designed a curriculum and mindset that includes a blend of teaching practices that simultaneously build a unique culture. Through the spark of an idea and a mindful design process, Bricolage Academy became a reality.

Naming Bricolage

Josh explained that for the longest time when he was talking about the idea of the new school (which did not have a name yet) to people in the community or to parents, he would talk about it as either a school that was socially and economically diverse, or a school that was creative and innovative. But what was missing at this point was the school’s name. He needed one that would capture both diversity and innovation.



Through a process that could only be called thoughtful and thorough deliberation, *Bricolage* became the name of the school. Josh felt the word itself captured everything he hoped that the school would have and could potentially become. *Bricolage* is a French word based on the verb *bricoleur*, which means, “to tinker.” It’s a word that has been taken up in English to mean improvisation or the creation of something out of materials that just happen to be readily there. The contemporary English term DIY (“do-it-yourself”) is the closest equivalent to the contemporary French meaning of *bricolage*.

By February 23, 2012, Josh had created a prototype of the school's website.

Both there and in the very first parent letter, Josh explained:

The very first thing you may notice about this school is that it has an unusual name:

Bricolage. We have tried many names for the school – Orleans Academy, The Common School, The Caisson, to name a few – but Bricolage most perfectly represented the school's identity... We think it works well. The school's commitment to socio-economic diversity makes it something of a bricolage itself, and our students will be 'makers' and 'doers' who learn to solve problems by tinkering and experimenting. Its French etymology is a plus for a school in New Orleans, too.

Along with the name came the school's logo. The design behind the logo tells a story all its own.

Simple and minimalist, the logo designer explains the implicit meanings in the graphic representation:

The logotype strives for greater thinking



while elevating a zealous focus on tinkering at self-examination and failures.

The striped 'i' could be meaningless to some, but to the Bricoleur, they see innovation, growth upward, many parts as one, a literary beanstalk, stripes, or a ribbon at play in the wind. Whatever the graphic represents to its audiences, the examination of the logo requires thinking with no prompted rules or right answer.

(<https://www.behance.net/gallery/8267469/Bricolage-Academy-Logo-Design>)

Wanting a glimpse from the children's perspectives, I asked, "What does Bricolage mean?"

and I received responses that closely align with five, six, and seven year olds: "I think it means creative stuff; I think it means creative; Bricolage mean academy; Bricolage means solving problems with different problems and materials; I think it means innovating" (Field note, May 21, 2015).



With the charter approved in September 2013, Bricolage Academy of New Orleans opened its doors to welcome seventy-five kindergarten children, the "pioneer class" and the original makers of the school's culture and space. Using a lean business startup model, the long-term design is to add a new grade level each year, until it is a K-8 school.

Culture, Mission and Core Values of Bricolage Academy

Bricolage Academy's mission and core values encompass the sociocultural perspective and thread that is woven into the fabric of the schooling context. Presented below, the mission and core values of Bricolage Academy provide a lens that widens our understanding of how learning is valued as a diverse, complex social practice. The social fabric that makes up Bricolage Academy includes many pieces: children's and teacher's culture, ethnicity, language, race, social class as well as in and out of school experiences. Together, these pieces shape and influence the culture and lived practices of Bricolage's mission, "Bricolage Academy advances educational equity by preparing student from diverse backgrounds to be innovators who change the world" (BAPH, p. 5). As stated in the Bricolage Academy Family Handbook, it has three

core values: Integrity, Empathy and Innovation (See Appendix A). The mission and values guide the school's cultural understandings and provide a focus on a transformative vision of re-thinking schools in New Orleans. The mission also articulates how children are viewed as active members of their community and their own school experience.

Inspired by the learning theories of Vygotsky, Papert, Piaget, Montessori, Bruner, and Reggio-Emilia, Josh explained that the mindful design of the curriculum and mindset of Bricolage is like taking a scoop of each theorist and putting it into a *bricolage* of it all – the curriculum, context, philosophy, mission, core values – all of it comes from what we already know. The goal of Bricolage is to take what exists and make it better.

Inspired by school visits across the country, Josh took ideas and bits and pieces and infused them into the vision of what Bricolage is and continues to become. Elements of the maker – space movement, the apprentice model of learning, problem/project-based learning, as well as sociocultural diversity perspectives are present in both the school culture and curriculum. But there is something different about Bricolage Academy; unlike the schools Josh visited, where the majority are private and costly, Bricolage is a free public school open to any child in the city of New Orleans.

Summer Camp

At one point during our interviews, Josh exclaimed, “We are informed by summer camp!” He explained further:

I believe that when you feel like you belong somewhere, and when you feel like you are a part of something larger than yourself, but still honors who you are that increases your level of engagement – which increases your ability to learn. There are elements of play in

there. Student agency and student drive. I want to give kids control over what they learn and how they learn it. I want to give them the responsibility of their own learning. That takes a lot of independence and a lot of ownership and we don't have many opportunities for kids as young as kindergarten, first, second and third to have ownership, autonomy and agency. The school is really built upon that, responsible autonomy, learning from mistakes, and agency. (Josh Densen Interview, 12-15-14)

There are rules, there are expectations, and there are consequences, but compliance is not the goal – the goal is ownership and agency. The challenge then became the design of a curriculum that is rooted in Bricolage's mission and core values.

Curriculum Design



“Throughout the day some tasks are modeled by the teacher, some are supported by the teacher and others are done independently by students with the teacher as a guide”

(Bricolage Academy Family Handbook, 2014, p. 6)

The Bricolage curriculum is designed through the lens that the social curriculum is as important as the academic curriculum, and that how children learn is just as important as what they learn. The following description of the overall curriculum serves to illustrate how the

mindful design provides children with time, space and tools to understand themselves as learners and problem solvers, as well as collaborators and contributors to the culture and community of Bricolage Academy and the world around them. Embedded in the curriculum design is a wide range of literacy practices that are emphasized through a design/tinker/make framework. Additionally, there is an implicit focus on self-management, social awareness, relationship building, and responsible decision-making. Together, these elements create the *metalanguage* of Bricolage Academy.

Literacy Curriculum

The literacy curriculum follows the reading and writing workshop model of instruction. The reading workshop model teaches children strategies to help them learn decoding skills, strategies to improve comprehension while fostering a love for reading. The daily reading workshop consists of a mini lesson from the teacher on a specific reading skill or strategy; children then have the opportunity to engage in independent or partner reading time, as well as one to one or small group instruction guided by the teacher. There is also “share time” during which student express what they worked on during the reading workshop (BFH, 2014, p. 6).

Topics explored in the kindergarten reading workshop include: exploring the world of books, emergent stories, developing “super powers” to help read and talk about books, exploring informational books, character study-pretending and performing our books, and reading across genres. Topics explored in the first grade readers’ workshop include: word detectives, reading informational texts to learn about the world, deepening comprehension in reading clubs, poetry book clubs, and reading across genres.

Writing workshop provides opportunity to give children “unbelievable power as readers, thinkers, and makers of meaning” (BFH, 2014, p. 6). The classroom teacher begins with a mini lesson focused on elements of writing. Students have a structured and responsive environment to work on planning, drafting, and revising their writing pieces to transfer the instruction from the mini-lesson. Throughout writing workshop, the teacher confers with students individually or in small groups. Finally, at the end of writing time, children share their work with their peers. “By creating an inviting environment with an abundance of supplies, and giving students the freedom to write about what matters to them, we hope they fall in love with writing” (BFH, 2014, p. 6).

Topics explored in kindergarten writing workshop include: writing for readers, informational writing, and persuasive writing. Topics explored in first grade writing workshop include: writing with focus, detail, and dialogue, realistic fiction, writing reviews, informational writing, poetry, and cross genre writing.

Math workshop is designed to inspire engagement and curiosity, as children are encouraged to be mathematicians. Discovery is the goal; children to use manipulatives, investigate ideas in their environment, and apply their knowledge to question and focus on deeper understandings with shapes, numbers and problem solving.

Topics explored in kindergarten math workshop include: numbers, space and shape, measuring and data, and addition and subtraction. Topics explored in first grade math workshop include: number work and fluency, addition and subtraction, measurement, place value, and geometry.

Content Curriculum

Content area studies include science and social studies. The content area studies are structured in three ways. First, students engage in comprehension lessons that help them to research and think deeply about a subject while simultaneously providing children with the opportunity to identify and pursue their own interests and questions. Second, children engage in collaborative work. Collaboration provides students with opportunities to learn from one another and share in the learning process. Together they work through problems and work on communication skills. Thirdly, students engage in open-ended inquiry projects that allow for them to follow their natural curiosity, develop questions, formulate a plan, and present their findings to the group. The science curriculum for kindergarten and first grade includes topics of life science, physical science, and earth science. The social studies curriculum engages children with topics of self – who am I and why is it important to learn from each other, all about community, and the world.

Innovation

Innovation class is a separate space from the classroom context. It is a place where children are provided the opportunity to learn by tinkering, playing, working, and making.

Several days per week, students meet for 45 minutes in the innovation room to play, create and invent with all sorts of materials – blocks, Legos, tiles, cardboard, sticks, straws, and more. These experiences are structured around a project or challenge of some kind. Students share what they make, photograph their creations, write about them, and discuss them. Through these experiences, students learn how to find and develop ideas, problem-solve, collaborate and share, and to show off what they make! (BFH, 2015, p. 8)

The innovation curriculum explores topics such as: creating a new school building, solving human problems, building bridges, lifting things up, playground design, creating motor vehicles, coding, and independent projects for a community maker faire.

The curriculum is purposeful and is driven by an innovation mindset. In this context, innovation is viewed as creative problem solving. Guidance from adults, time, space, and collaboration with peers help provide children the opportunity to understand the problems they are solving, come up with questions they need to ask, as well as find solutions to the problems. In this context, a child could be innovative in reading, writing, socially, and/or emotionally - the underlying idea is empowering children to solve their own problems and helping them realize the problems they are trying to solve. This ideology permeates the classroom environments and drives teacher and student interactions with the curricular content.

After three years, the curriculum continually evolves and is a work in progress. The classroom teachers independently and collaboratively design the day-to-day lessons for all the content areas. Teachers, children, and parents provide input regarding the curriculum, and the iteration process is constantly taking place as teachers continue to refine the lessons they teach and the learning environments that are created for children's learning experiences. The design of the curriculum and instructional model is an interwoven, intentional part of the culture of Bricolage. Three years later, Bricolage continues to do things slowly and at a small scale, iterating along the way.

The intention of the curriculum overview is to provide a snapshot of the types of learning and activities that take place in the classroom environments over the duration of the school year. The workshop approach as an instructional model provides children with the affordance to

play/tinker, explore, question, problem solve, collaborate, work independently, and learn from an adult as well as the environment around them. Simultaneously, an implicit curriculum that is aligned with Bricolage Academy's mission and core values is embedded in the instructional design; self- management, social awareness, relationship building, and responsible decision making, all of which contribute to the creation of an environment that is safe, positive, and encourages students to take risks. The overall goal of the curriculum is not only to produce readers, writers, mathematicians and scientists, it is to teach children vulnerability, to be open to mistakes, to learn from failure but be committed to getting better over time – to become innovators.

Summary of Findings: The Beginning of Bricolage Academy

Community, equity, educational advantage, and diversity are four themes that emerged from the data. The name/word Bricolage also is important to the context as it has both an implicit and explicit meaning. Explicitly, the word and all that it encompasses in this context not only guides the thinking of both the children and teachers, the logo itself declares and shapes the importance of the past, present, and future relationships including the culture of the community outside and within the walls of the school building (Dyson & Geneshi, 1994). Implicitly, the power of the word Bricolage represents a cultural storyline of social connections, embodied experiences, and opportunity through innovation. This can be seen as an “imaginative universe within which members’ acts are signs” (Geertz, 1973, p. 13), creating and shaping new experiences and opportunities to understand the lived worlds of teachers and children. As stated by Dyson (1993):

[In] their plurality, in their diversity, our children offer us the opportunity to widen our own worldview, to see aspects of experience that might otherwise remain invisible to us, to understand better ourselves as situated in a complex world of multiple perspectives. (p. 230)

Bricolage then becomes more than just a name or a word; it describes “the purposes, sociocultural-roots, and community-making powers of stories – with children, teachers, and parents from many backgrounds and in many present circumstances” (Dyson & Genishi, 1994, p. 6).

Carr (2012) notes, “as the history of [New Orleans] has shown, simply putting people of different colors and backgrounds beside each other is meaningless if their lives still never intersect” (p. 14). Josh’s spark took him in another direction. Bricolage’s demographics mirror the socioeconomic and racial makeup of New Orleans itself, and the school is mindfully designed to be a space where the lives of the students not only intersect, but also play off of each other. While Carr (2012) acknowledges that integrated schools could help to promote an integrated city, he also sees that “there’s plenty of potential to go wrong” (p. 14). He continues:

The first step for many New Orleanians is getting past a fear of the unknown... People are afraid. They are afraid to break down those walls. They are afraid to even challenge them. (p. 14)

Josh challenged the unknown with his vision for a new school design, and he intentionally designed a community and curriculum that broke walls through play. Mirroring the democratic principles of Dewey (1900), his vision for Bricolage includes continuous growth, motivation, community, democracy and experience – all of which shape the educational process (Martinez &

Stager, 2013). Drawing similarities to Froebel (1891), Josh places importance on values and principles of equity, diversity, and educational advantage and the idea that education is about creating democratic communities of learners that are connected to society. In a way, Josh brought about a type of social reform through education means like Montessori (1965, 1973), to help children develop skills needed to solve the worlds challenges in positive ways. Bricolage aspires to help children to develop a productive disposition toward society and make meaning in relation to cultural contexts (Edwards, 2014). It is through cultural contexts that children learn about cultural patterns and begin to make social adaption based upon what is learned through oneself, peers, and teachers. Like Reggio Emilia, Bricolage assumes an educational vision that places emphasis on collaboration and reciprocal relationships with the environment, people, and society (Rinaldi, 2001).

CHAPTER 6 – THE WONDERINGS OF THE KREWE



“Every child is full of wonder and curiosity”
(Erin Densen, Interview, 2-4-15)

In this chapter, I discuss findings relevant to the enactment of multiliteracies pedagogy (Kalantzis & Cope, 2005; New London Group, 1996) during reading and writing workshops. This chapter pays particular attention to critical framing and how children understand the context of their learning as related to the world around them. Critical framing includes questioning and children’s wonderings as they consider, interpret, and form meanings of their textual practices in relation to their cultural and social context. I provide findings from reading workshop in Ms. Lorio’s kindergarten classroom and from writing workshop in Ms. Turner’s first grade classroom. The examples illustrate how teachers provide scaffolding and support to help children conceptualize, analyze, *wonder*, and think differently about signs, symbols, and textual meaning making. The children’s *wonderings* paint a portrait of how questioning, embedded in the reading and writing workshops model, helps lead to creativity and innovation by connecting children’s individual ideas and interests to the collaborative culture of the Krewe.

The School Context: St. Charles Avenue

What does an environment of creativity and innovation look like? It was just about 8:10 in the morning, some kindergarten through first grade children arrived at school in cars and others by bus. Ready for their day, backpacks intact, children entered in clusters through the black wrought iron gates in front of the building located on St. Charles Avenue, while others made their way to the back of the building to the narrow, car lined, Pitt Street entrance.



The large building made of cream brick sprawled across about a quarter of the block on St. Charles Avenue and extended all the way to Pitt Street in the back. This was a shared space with Touro Synagogue; it is a common characteristic for charter schools in New Orleans to share space with a place of worship. Nestled in the Uptown neighborhood, the building aligned with giant oak trees and the vast and extraordinary plantation style mansions which are depicted as a symbol of generational affluence and wealth, a sight that attracts visitors near and far. Directly behind the building and several blocks deep was quite a different scene. Streets were lined with iconic shotgun houses adorned in palettes of color – each a unique art-like masterpiece. While the surrounding neighborhood provided vivid images of the social histories of generational affluence and generational poverty, inside the school building were culturally and ethnically diverse children side by side talking, singing, playing, emptying their backpacks to get ready for their day. The sounds of children's voices and teachers greeting children illustrated an interconnected rhythm

and melody that was created in the hallways and extended into classroom spaces – the Krewe of Bricolage.

Stepping up three concrete steps, I entered through the glass doors on Pitt Street. To my right there was a quaint desk where a staff member was sitting and welcoming parents and children. Directly above the desk was hung a bulletin board with reminders and parent information. To my right was a large, empty space with cream-colored floor tiles and cream-colored walls, referred to as the *community space*. This was where recess took place, as the property did not have a playground, and a space where all



children gathered weekly for community time- similar to all school meetings. Down the narrow hallway and to my right was a makeshift cafeteria or dining room, where some children gathered for breakfast and all children gathered for lunch. Lunch was served on reusable plastic lunch trays with individually wrapped items. Lunch was a time for all children and teachers to gather to share in talk and food. In the middle of each round table was a pitcher of water, condiments, napkins, and a list of students' names with assigned lunchtime responsibilities. The lunchtime jobs, such as water pourer, conversation starter, and table cleaner, were aimed to help children engage socially with others and to become independent and responsible for their needs and actions.

The kindergarten and *innovation* classroom were located on the second floor and the first grade classroom was located on the third floor. Ascending the stairs, the gray carpet provided a feeling of comfort and warmth. The cream colored walls leading up the stairs showed marks of

tiny fingers and hands. Once up the stairs, the walls were adorned in a minimalist way with selections of children's work and art creations. Lining the hallway were coat hooks where children store their backpacks and coats, wooden storage cubbies that hug the walls outside the kindergarten rooms for dream time (rest time) supplies of small blankets and pillows, and most importantly, the colored classroom doors of teal, orange, blue, and purple were open - inviting all the children into a space for learning.

It was time to begin the day. Passing by the classrooms, Ms. Lorio's kindergarteners were engaged in whimsical play with blocks, Legos, paper and pens, puzzles, plastic animals, math manipulatives, and storybooks.

Ms. Lorio's Kindergarten Classroom

Right from the beginning, the classroom environment gave a welcoming feel, warmed by natural sunlight shining through the white wood paned windows. I was drawn to photographs of the diverse group of children hanging on the wall. On the teal colored door was hung a poster signed by each child titled "Classroom Promises." It stated: be safe, be kind, and take care of each other and our space.

There was a small desk with a lamp against the wall, soft chairs to sit on, and space for the children to move about. Five small tables and 20 blue chairs that were just the right size for the children provided plenty of space for the children to work in groups or individually.

Children's artwork adorned the windows. To my left, there was a word wall and a space with children's self-portraits. Across the room was a writer's wall where books that the children wrote hung on display. Around the room, supplies were clearly labeled and organized in colorful bins. Bookshelves lined the carpet area and held books of various reading levels and genres,

representing a wide variety of ability levels and interests. In the beginning of the school year, the classrooms were essentially bare. A shared vision of shaping the classroom environment held by the Bricolage staff is that children will build and create their learning environment and take full ownership over it, the environment then becomes a space of creativity, innovation, and “third teacher.”

The children were putting away their free play materials and beginning to make their way to the rectangular carpet. Each child found a seat around the perimeter, ready to begin the morning routine. Written on the white board to the Krewe named “Clever” was the morning message. *Good Morning Clever. Today is Thursday. We will walk to the park today.* The children listened attentively as Ms. Lorio read the message. Teaching the basics, or the foundations of reading, was part of the morning routine. Children engaged in oral word play through phonological and phonemic awareness activities guided by the teacher. As the children engaged in listening, gesturing, talking, and movement they were afforded the opportunity to analyze letter sounds, word parts and basic understandings of the alphabetic system to help formulate the foundations of learning to read, write, and communicate meaning. The singsong and playful way the children engaged in phonological and phonemic awareness activities provided opportunities for them to practice multimodal literacies.

Ms. Lorio. Ms. Lorio started her career in Washington, D.C. teaching kindergarten in a neighborhood school that served socio-economically disadvantaged children. After a few years, she moved to New York and became a founding kindergarten teacher at a new elementary school in Harlem. A year later, Ms. Lorio moved to New Orleans and found a new home at Bricolage Academy as a lead kindergarten teacher and has been in this position for three years.

Ms. Lorio believes in the development of the whole child and takes a pedagogical perspective that what is meaningful and purposeful to the children is what matters in the kindergarten classroom context. The opportunity to engage in literacy and learning more broadly is about making the children aware of the world and people around them. It is not about the product, but about the process along the way and to help children find purpose outside of their selves. Creating an environment that fosters independence and collaborative work became a balance which Ms. Lorio strove to achieve within the classroom context. She provided opportunities for the children to play, explore, and seek out their interests (e.g., choice of text to read, choice of topic to write about, choice in their play). Creating independent and collaborative thinkers was important in this space. Ms. Lorio viewed herself as a coach or mentor who provided just in time guidance, as the children needed it. Ms. Lorio was not the only “teacher” in this space, the collaborative culture of the classroom equipped the children with the tools to provide guidance and support for one another. Five and six year olds, when given the opportunity, engage in collaboration, teaching each other, and collectively form ideas through questioning. Establishing a collaborative culture hands over the ownership of learning to the children and allows them to become contributors to their own understanding of the learning process. Knowing (how and why), thinking (about what is possible and questioning), and communicating for a purpose, were valued characteristics in the classroom space and carried through in Ms. Lorio’s pedagogical practices.

Kindergarten reading workshop. Daily, the workshop model followed a sequence of a mini lesson, guided practice, independent or partner application, and reflection.

Good morning readers!

Today in reading workshop we are going to work on fluency.

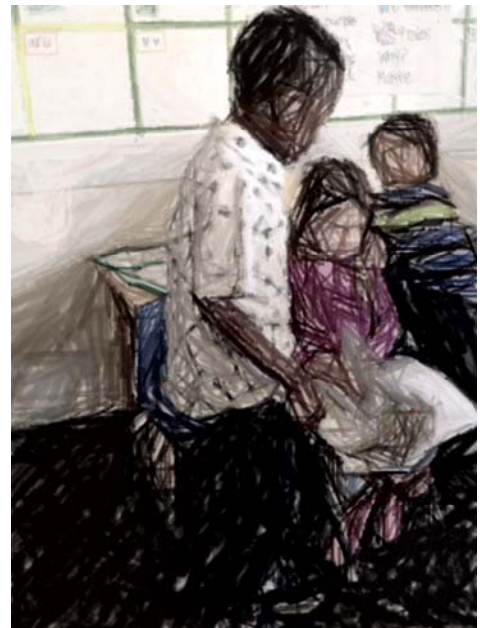
We are going to scoop up our words and read like we are talking.

We all have reading superpowers to read smoothly.

Sometimes we need to read word by word but other times we try our best to read like we are talking.

Let me show you how... (Field note, 11-16-14)

Reading aloud was an important element in the reading workshop, built upon the idea that children need to hear stories read aloud in order to become readers and writers themselves. In this way, Ms. Loiro explicitly communicated that reading and writing were reciprocal and valued equally. Reading aloud provided a pathway for Ms. Lorio to guide and build upon the children's understandings and experiences and allowed opportunity for the children to voice their opinions, wonderings, questions, and reflections.



Daily, reading workshop began with Ms. Lorio setting the purpose for the children's engagement with the texts. Where did the author get his/her idea? Who is the author writing for? What do you notice about this book? What do you think this book is going to be about? What is the problem? What is happening in the book? How did the author engage you as a reader? How did the book end? Using an interactive approach, Ms. Lorio engaged in dialogue with the children and provided opportunities for them to collaboratively produce understanding of the

texts. Purposeful modeling and teacher talk provided a scaffold to help the children begin to conceptualize, analyze, wonder and critically frame how books function. Providing opportunities for the children to experience and explore the texts, Ms. Lorio guided the children's understandings that each book they read has a purposeful message, and that applying comprehension strategies helps the reader to make meaning.

During independent reading or partner reading, the children were encouraged to constantly question and wonder about the text they were reading. Frequently, Ms. Lorio asked the children "How are you going to make meaning from the text?" Through wondering, trial and error, play, and tinkering with each other's ideas, the children learned that being a reader meant more than sounding out words. It meant being a "sense-maker," engaging with each other and the text to make meaning.

Ms. Turner's First Grade Classroom

Entering Ms. Turner's room, the children were ready at the carpet to begin their morning meeting. This was a collaborative, community time to talk, share, move and learn about the happenings of the day. Right from the beginning, the physical properties of the room looked just like the kindergarten classroom environment. Immediately, I noticed how warm, welcoming and inviting the space was. In Ms. Turner's room, the wood paned windows were filled with tools for the students to use: anchor charts, which make the thinking and learning in the classroom visible and "anchor" children's thinking around a concept; children's writing, to read and share together; and little square QR codes, which the children create themselves for others to scan, creating a link to their online projects. What I noticed most in comparison to the kindergarten room was the sophistication of the anchor charts, the words on the word wall, the posters that

elaborated math and science concepts and, from a quick glimpse, the children's writing.

What was the same as the kindergarten classroom was the ownership of the classroom space. It was evident from my examination of the artifacts that hung around the classroom walls that they were created by the children or collaboratively constructed with Ms. Turner's guidance.

To the left was a writer's wall, where the first grade authors' books hung on display. The children's published stories hung directly above the bookcase that held "first" grade books for reading workshop. Facing the windows to the right was a word wall used to remind students of all the sight words and onset rime words they have learned so far in first grade. On this half of the classroom, 5 tables each with 5 small chairs formed a free flowing working space for group work, individual work, or center activities. Smack dab in the middle of the room there was a wide-open space used to meet as a classroom community, a silent message that this was the center of it all. Behind the carpet space were soft chairs to sit on. Hiding way in the corner, a "think space" provided a place to retreat to if children needed a break, were tired, or needed time to think about a problem they were having. On the wall not too far away from the "think space" was a SMART board. Ms. Turner incorporated technology into her lessons whenever she was able. From playing music to transition to the next event, watching video clips to support children's understandings, looking at children's work on the "big" screen, or manipulating math problems, technology became a tool for learning. Around the room, supplies were clearly labeled and organized in colorful bins, just like they were in kindergarten.

Ms. Turner. Ms. Turner began her teaching career seven years ago in New Orleans with TeachNOLA. As a member of the Bricolage staff for the past 3 years, Ms. Turner taught kindergarten her first year and has been a lead first grade teacher for the past two school years.

Ms. Turner's classroom environment encouraged the children to take ownership in what they were doing and learning. In addition, she wanted the children to discover and realize that there was not just one teacher that guided their learning. Centered on the idea of a collaborative community, she provided the children with many opportunities to discover teaching and learning by encouraging thinking and communicating with others. With her guidance, she helped the children understand that their conversations with each other teach them the most. Thinking, problem solving, failure, and innovating a new way to approach problems, were essential components to the pedagogical practices and environment found in Ms. Turner's classroom.

Ms. Turner believed the workshop model helps with playful experimentation, of which tinkering is a part. She provided insight about literacy in her classroom context and took the position that literacy was not something you could always see a child doing. Expression through actions, talking, and writing helped the children to wonder about the world around them and question and understand their thinking. Ms. Lorio offered support through modeling and talking with the children to help them voice and explain how they were gaining meaning through their thinking, how they approached a text, or how they organized their writing. Ms. Turner believed that literacy was about helping children become wonderers, critical thinkers, and problem solvers.



First grade writing workshop. The children were seated around the rectangular carpet with calm bodies ready to listen to Ms. Turner. “Are you ready Writers?” At this moment, the classroom environment was transformed into a culture of storytelling filled with children’s oral and written stories. Ms. Turner drew upon the reciprocal relationship between reading and writing and how books that the children had previously read would help them to create their stories.

For example, Ms. Turner used a text with elements of writing that she wanted the children to think about and use. She read aloud to the students: “*Ingrid dashed across the floor, and Juana slid head first across the room to grab her ankles.* What do you think about that sentence?”

As she spoke, Ms. Turner sprang into action. She pretended to be Ingrid, dashing across the front of the carpet space and holding her hands out, pretending to grab Juana’s ankles. She then asked pointed questions about the action words the author used (dashed, slid, grabbed). The children physically acted out the action words, when Ms. Turners said: “Today in writers workshop you are going be adding action lines to your writing. The goal is to think of actions and action words that will bring your story to life!” She then called upon two more students to

continue demonstrating how action words bring the story to life (Field note, 12-16-14).

Ms. Turner then focused on how illustrations can demonstrate action. She read an excerpt from Mo Willems, *I Love My New Toy*, and asked the student volunteers to demonstrate the sentence "I am mad and sad." These actions weren't big and bold, they were small and specific, but the children could read each other's faces. Continuing on, Ms. Turner focused on the illustrations in the book: "How does the author bring piggy to life with the illustration?" If the children became wiggly or distracted, Ms. Turner focused on the importance of the learning, not the child moving around. "Check your bodies," she said. "I just want to be sure you are focused here so you are aware of what we are learning." She continued:

I want you to look at the ways you are bringing your writing to life through the action in your illustrations.

Touch your nose if you are excited about this work today. Some children touched their noses, other children gave a silent clap. (Field note, 12-16-14)

After setting the purpose of the writing workshop, Ms. Turner engaged in teacher modeling and thought aloud as she began to write her own piece. The purpose was to model for students how she engaged in the planning process and how she transformed the ideas in her mind to the written words on the page.

As the children got settled into their preferred writing spaces, Ms. Turner circulated around the room. She engaged in modeling using her own written piece for reluctant writers and provided scaffolding and support just in time.

During writer's workshop the classroom hummed. Some children thought aloud while others collaborated with the children around them. At the carpet, there was a girl using the book

Eloise Breaks Some Eggs to find words she needed to spell. “My book helps,” she said to another student who was also working on the carpet.

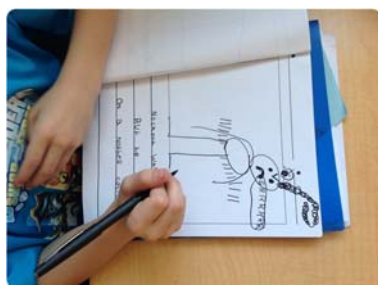
Ms. Turner looked for ways to engage the children in teaching their peers. After conferencing with a student she stated:

I would like you to share this piece. Do you feel proud of this piece? One thing I heard you say - is that you went back to your writing to make things better... would you be interested in sharing today?

As Ms. Turner circulated around the room, she also looked for opportunities to provide coaching to help the children with their writing:

We could use more action - how about adding some action lines. A mentor text will not help you as much right now.

A child went to the cozy corner to add some additional lines and touches to her writing in order to share with the class. (Field note, 12-16-14)



During writing workshop, the children became wonderers, problem solvers, and communicators, with a shared understanding of the metalanguage of “being a writer.” In Ms. Turner’s room, every child was viewed as a “professional writer.” Ms. Turner saw writing as a mode that gave the children a voice in sharing their own experiences and ideas and as a way for the children to make sense of their world. This mindset created an expectation by which the

children took their work as writers seriously. Writing, in this context, was purposeful, gave children ownership and autonomy of their own ideas, and provided time and space to write about what interested them.

Summary of Findings

Reading workshop allowed the children time and space to explore text structure, text functions, and textual messages. Ms. Lorio's situated practice and overt instruction introduced the metalanguage of being a reader, textual design and structure, and story grammar, as well as the processes of design the author engaged in to create the text. Through situated practice, overt instruction, and critical framing Ms. Lorio placed emphasis on the design of a text: Who is the audience the author is writing for? What is the author trying to tell us? What is the purpose? What steps did the author take in the writing of the text to help solve the problem or guide the reader through the text? How is the book structured? Is there a beginning, middle, and end? How does the author end the text? Ms. Lorio used these types of questions to draw the children's attention to particular design elements of the text. These types of questions aligned with empathy in the process of design. Ms. Lorio brought the children's attention to the author's purpose for writing the text, the audience, and the author's perspective. Critical framing and the knowledge process of analyzing text provided opportunity for children to make connections from the known to the new by looking at the intended audience, the structure of the story, and the meaning the story conveyed. This opportunity implicitly helped the children define the problem and begin to formulate ideas or ideate. Literacy was transformed in this space, as the children became readers who negotiated and navigated between images, text, icons, symbols, and animations to question and explain their knowledge, wonderings, and understandings in their

own way. Aligned with the process of design, this paralleled prototyping and the iterative process. In this context, all the children were viewed as readers – even if they were not really reading. The established cultural context revealed how reading was viewed as a multimodal activity.

During reading workshop, the classroom's peer culture became evident as the children negotiated relationships and responsibilities, engaged in play with texts, and responded to each other's ideas and meaning making from the texts. Language was an essential tool used to share ideas, take risks and scaffold each other's learning. During partner reading, some children were pretend reading with a partner. In some cases, it was clear that the text was memorized and the children used the illustrations to retell the story. Other children chose to act out scenes from their text, demonstrating their understanding of the illustration and the author's intended message through action and gesture. Other children chose to sing their book; particularly, two children were singing the alphabet song as they turned the pages of an alphabet book. Other pairs were reading the pages of their books word for word and used their voices to sound just like the characters in the text. These extended periods of time to read became playful and in a way allowed children to prototype and test their understandings.

The children's tinkering and play led to an expressive understanding of the text. This tinkering and play allowed for non-readers to be readers through pretend reading. Experiencing and playing with texts in their own unique form challenged the children to wonder, think in new ways, and take risks related to their interpretation and meaning making from the text. All forms of representation – linguistic, gesture, action, and symbolic modes were valued as literate understandings and reading of the texts. According to Cope and Kalantzis (2000), "Transformed

practice enables learners to transfer meaning making practice to work in other contexts or cultural sites” (p. 35). Through tinkering and play, the children exhibited embodiments of social and cultural relationships, playful conversations, and actions, which supported their understandings of the story. Literacy was transformed from the actual texts and words on the page into enactments of children’s meaning through their tinkering and play.

In like manner, the writing workshop was purposeful, to provide children with autonomy of their ideas – of what is perceived and imagined through playful experimentation. Aligned with pedagogy of multiliteracies, situated practice, of building on what the children already knew was evident during the beginning of writing workshop through Ms. Turner’s mini-lesson. The teacher offered situated practice and overt instruction, (scaffolding and guidance) – just in time- as the children engaged in the writing of their own piece. Through situated practice and overt instruction, the children were implicitly taught empathy – who are they writing for, who are the characters in their story, perspective taking, what is the problem that needs to be solved?

Critical framing was evidenced in the questions that were asked during Ms. Turner’s mini-lesson, coaching episodes, and peer collaboration, all of which helped the children to understand and evaluate their own piece of writing and perspectives with those around them. This aligns with the design feature of defining the problem and idea generation. Guidance from the teacher provided a scaffold to help the children find more story to tell. The children were encouraged to ask themselves the question, “what do you want to teach somebody?” or “what do you want to tell somebody?” As the children worked together, collaboration and a culture of peer mentoring became like the testing phase in the design process– reading their work to an authentic audience provided “user testing” – Was the story clear? Is there more information I

should add? Through oral language, the children discussed what they were imagining, talked about what they were drawing. This aligned with ideation and prototyping in the design process. Play with words through oral language and description was heard and symbolizes a transformation from what is perceived and imagined to written words on the page. Children played with words, broke them apart and attempted spelling utilizing their understanding of phonetic features to communicate their message. Some children engaged in role playing, pretending they were the characters in their story. Through gesture and sound effects, the children were making their stories come alive in a playful way. Related to design, the children were engaging in prototyping and testing.

Transformation of literacy practices occurred through the production of the children's writing, whereby they drew upon their understandings of texts and the world around them to tell a story using their own creativity. The children's writing was always purposeful as they established a routine and culture of sharing their work with authentic audiences. The audiences included their classroom peers, other first grade classrooms, or sometimes the whole school. In the classroom context, courage, confidence, imagination, and innovation were embraced, as children became risk takers, engaged writers, and ultimately, authors. Tinkering and play occurred during the children's drafting or iterations of their writing as they solved problems or made their writing better by adding words, taking words out, or making their message clearer for the reader. The children's thinking, tinkering, play and work used a combination of drawing, talk, gesture, and writing, all of which were valued modes of expression in this space. The iterative process embedded in the writing workshop model allowed a shift from getting words on the page to telling powerful stories through the revision process.

In sum, the classroom environments during the reading and writing workshop provided learning opportunities that were both serious and playful to help develop creativity, confidence and deep engagement through experimentation, exploration, problem solving and collaboration, which were supported by the design process. The process of design became an implicit component to transform the children's wonderings and meaning making and extend their individual thinking into the collaborative culture of the Krewe found in the classroom spaces. This implicit understanding was carried over to the innovation room, which will be discussed in the next chapter.

CHAPTER 7 – THE WHIMSY OF THE MAKER



“I am really creative and I like to do this stuff. It feels like play but I am making stuff”

(Field note, February 5, 2015)

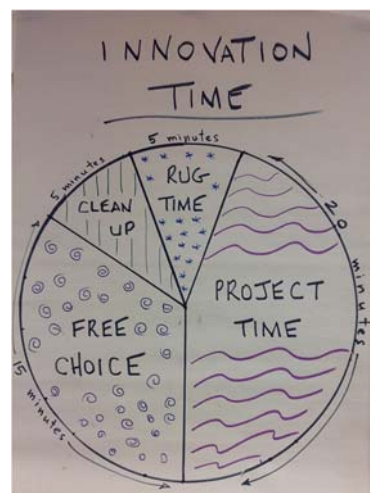
In this chapter, *The Whimsy of the Maker*, I focus on findings to highlight how play and tinkering can extend literacy possibilities for children and how children make meaning through enactive, iconic, and symbolic modes of representation (Bruner, 1996). The play/work in this mini-maker space context is both whimsical and guided, and it is valued as a way to give children a chance to improvise and innovate (Sutton-Smith, 2001). The innovation room space was social and the artifacts created by the children functioned as real, workable designs of creative representations of meaning about the world around them. Insight into Mr. Reynaud’s design/tinker/make framework and Bruner’s (1996) three modes of representation refine ideas about tinkering and play within the larger scope of multiliteracies.

The Innovation Room

Located on the second floor of Bricolage Academy at the St. Charles location, the *innovation room* could have been taken as a storage space. Mr. Raynaud, the innovation room teacher during the 2014-15 school year, described the space as being like a studio, but nonetheless a space that was messily organized, that had everything a child needed to produce something. In essence, it was a mini-maker space made up of the Krewe/community, including the teacher, and tools that were used to “make” or create innovations.

Upon entering, there was a short-carpeted hallway lined with cream-colored cabinets that housed supplies and materials and, up top, cardboard creations that the children were in the process of making. At the front of the room, there was a large white board that had questions, processes and plans of projects in process. There was a large rectangular carpet, a meeting space for the children to gather when they entered the room. Six rectangular tables without chairs were lined in columns of three toward the back of the room. The only place to sit in the innovation room was on the floor or on stools made from cardboard. The openness of the classroom allowed for children to move about freely in this space.

The room – empty without children, was quiet, spacious, and filled with materials that, without imagination and children – were just that, materials. Unlike traditional makerspaces, this space did not include a 3D printer, laser cutters or machines, but it did include paper, scissors, cardboard and tape. Additional materials included wood, plastic bins with blocks, play dough, plastic connectors, Styrofoam balls, straws, plastic wrap,



pegboard hardware, kinetic balls, wood planks, and shoe boxes, which were all lined neatly upon the wood shelves and available for children to use. An area in the middle of the wood shelves held space for “play” items such as Magnatiles, plus-plus tiles, plastic blocks, Legos, Keva, Brio, and electric circuits.

On the right side of the room, chart paper hung by staples lined the wall, providing a visual representation of the projects of inquiry the students were engaged in. Some of the projects included houses, school buildings, bridges, roadways, and towers. Hand drawings and essential vocabulary for each of the projects was clearly displayed as an anchor to support children’s conceptual understandings.

Each week, three times per week, in forty-five minute increments, the kindergarten children and first graders had the opportunity to experience the innovation room. The innovation room schedule was organized for the children to meet as a group, engage in tinkering or problem solving through making, and playtime, also referred to as free choice.

Mr. Reynaud. As a native of New Orleans, and an educator for over 25 years, Mr. Reynaud had seen many transformations in the educational contexts and landscapes of public education. He was drawn to Bricolage Academy because of the unique philosophy and belief that making, experimentation through tinkering, failure, and problem solving are important in the development of all children. Helping children discover tools they can use right now, as well as tools for the future, became an important underlying mindset that was incorporated into his pedagogical practice. Mr. Reynaud wanted children to look at the potentialities of the materials they had at hand. He did not want them to look at a cardboard box and see a cardboard box, he wanted them to expand their thinking and transform the cardboard into a car, boat, animal, or

robot. Through critical framing, questioning, and providing just the right amount of guidance, he helped children to understand what to do with their ideas and pushed them to begin looking at and using materials in new ways to solve problems. These discoveries came through in children's play, tinkering, and problem solving.

In the innovation room, Mr. Reynaud provided children with space, a long duration of time to work/play, tools, and materials, and helped foster a mindset that the end result of tinkering is a product that solves a problem and, in essence, tells a story.

Innovation time. The children entered and made their way to the carpet space at the front of the room, ready to engage in the challenge of the day. With an established routine, the children knew just what to expect of their time during *innovation*. Mr. Reynaud started each class session with a five to ten-minute mini-lesson or discussion, which was used to talk about a concept, a problem to be solved, or for Mr. Reynaud to provide insight into the children's designs in progress. From time to time, the five to ten minutes was used to teach and introduce essential vocabulary and to provide the children with a context and purpose, as well as to activate background knowledge regarding the project/problem at hand. After the collaborative meeting, twenty minutes was dedicated to design time. During these twenty minutes, children were encouraged to tinker, play, and construct prototypes of their projects or problems to be solved. Other times the twenty minutes was used for writing/drawing and planning in the children's design journals. Depending on the stage of the project, Mr. Reynaud would also use this time to check in with the children and have a conversation regarding the status of their project to provide just in time feedback regarding prototypes. At the end of each innovation class session, the children had fifteen minutes to "play," which was called free choice. During free choice, the

children could choose to continue working on their projects or “play/tinker” with the materials in the classroom.

In the innovation room, the metalanguage of “being an innovator” was embedded within the context of the environment and Mr. Reynaud’s pedagogical framework – design/tinker/make - these are words the children became accustomed to using and doing. The words collectively transformed the environment into a place where children became “innovators” and “tinkerers.” Children were afforded time, space, and tools to play and tinker with to transform their ideas and understandings through the act of making.

Design – Animal Adaptations

The design thinking process began with critical framing and defining a problem. This provided opportunity to draw upon children’s background knowledge, understandings, and expressive and receptive vocabularies. Collaboration and sharing of ideas as a Krewe or community provided insight into children’s wonderings as well as insights into literal, inferential, and evaluative understandings of the problem.

The children had design journals that were used to document their thinking and tell the story of their design process. With each new project, the children sketched out a prototype or their initial ideas or designs of what they thought they were going to make. During the course of the project (sometimes two weeks, sometimes a month), the children were given the opportunity to document how they thought their project was coming along and how it looked at different points in the prototyping process. When the project was finished, the children would return to their original idea and draw or write how their project turned out and reflect on how the final product was different from their original idea. At the very end of the project, when the children

had a real, workable design, Mr. Reynaud photographed and video recorded the children as they told the story of their design process and provided explanations of their final artifact.

Mr. Reynaud consistently demonstrated how one aspect of a pedagogy of multiliteracies, specifically, critical framing, is the starting point of the design process. Seated at the carpet, the children were intrigued by Mr. Reynaud's question, "What do you do with an idea?" This question drove the purpose and investigations during *innovation* time. Mr. Reynaud's overall pedagogical goal in *innovation* was to help children understand the following questions:

Where do you find an idea?

What do you do with an idea when you have it?

How do you share ideas?

Constant questioning provided opportunities for children to analyze and critically frame the problem or design challenge at hand as well as time and space to think of possible solutions. Guidance from both the teacher and the Krewe/peers helped the children navigate the generation of ideas and provided a way of expanding their knowledge through collaborative discussion and playful exploration with the Krewe. Exploration and opportunity to experience materials created a setting similar to "whimsical play," where children are allowed to freely explore materials. Aligned with their previous experiences and individual interests, the children's interactions with the materials transformed the cultural tools into textual designs or solutions to the problem at hand.

During the month of October, the children were learning about animals in their classrooms. They investigated fiction and non-fiction books during reading workshop, wrote about animals during writing workshop, and engaged in inquiry lessons during science to learn

more about animals and their habitats. Extending this theme, Mr. Reynaud began a unit called “Using Animal Adaptations to Solve Human Problems.” The objective of this unit was for the children to respond to the design challenge of using their knowledge and understanding of the physical adaptations of animals to make humans faster, stronger, or better.

Mr. Reynaud began the lesson by asking a series of questions and listening to the students respond to and with each other: *What kinds of abilities do humans have? What kinds of things can we do well? What kinds of things can we NOT do? What kinds of abilities do animals have? What can they do well, not so well, not at all? If you could be any animal, what would you be? Why? If you could be like an animal, what would you change about yourself? Why?*

Gathered on the rug, the Krewe engaged in collaborative discussion about physical adaptations of animals (the students were studying animals in the regular classroom).

Animals have amazing abilities that humans don’t have: the ability to fly, to go faster, jump higher, etc. than humans. Animals have sharper senses, better adaptations to heat and cold, better protection. For our project this week, we’d like to make the prototypes for inventions that would lend humans some of these amazing animal abilities.

Mr. Reynaud explained that many famous inventors from the past have used ideas from animal adaptations for their inventions. Using a variety of books, the children were given time to examine and research to find out about historical inventions and how well they worked. The children’s research revealed that many people tried to adapt the wings from birds to create flying machines so humans could go farther.

To conceptualize and analyze the problem, Mr. Reynaud provided the following problem statements for the children to tinker with in small groups:

1) My body moves slowly and can't go long distances easily. I wish I could go faster and farther.

2) I wish my senses were stronger.

3) I'm always getting cuts and scrapes when I play. I wish my body had more protection.

4) I'm tired of wearing a coat in winter and carrying an umbrella when it rains. I wish my body was warmer and could stay dry.

5) My fingers aren't very good at picking up tiny Legos or other small objects on the floor. I wish I had a long, strong invention to help me pick up all my tiny toy pieces.

(Field note, 10-14-14)

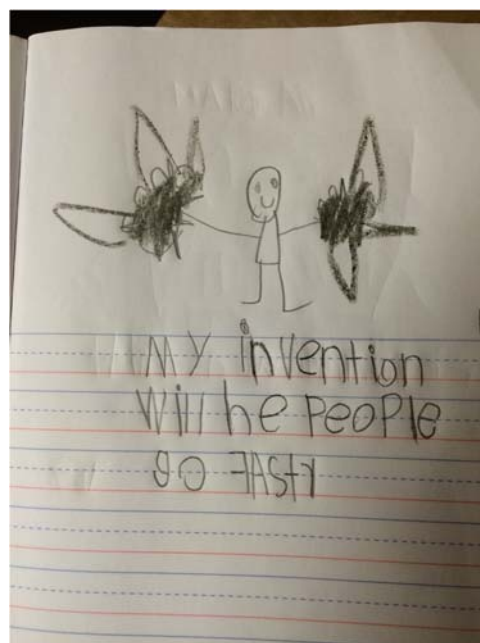
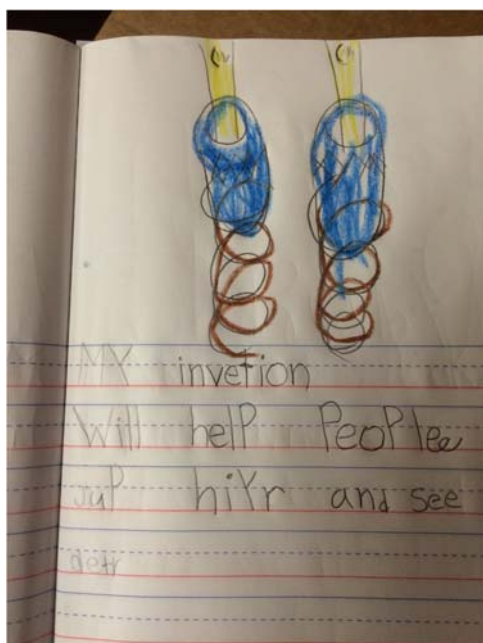
The Krewe came back together and engaged in whole group discussion. During this time, Mr. Reynaud acted as a scribe, writing down vocabulary, ideas, and possible solutions on a large piece of white chart paper. Supporting and valuing cognitive and symbolic expression and ideas of each individual child as well as those derived from the Krewe, the ideas were documented by Mr. Reynaud and posted on the classroom walls to tell the story of the children's investigations. This shared writing experience became a starting document in the design thinking process and served as a resource or third teacher.

Day 2:

Discussion on rug about the project/challenge: we would like to develop prototypes of inventions to overcome the limitations of the human body. The inventions MUST borrow one or more of the amazing abilities or adaptations from an animal. We reviewed some of the ideas groups came up with on Day 1.

Today students decide what their individual inventions will be. They can use any of the ideas we came up with or come up with new ideas of their own. Animal books are available in the classroom for reference or for idea generation. Students may work individually or in small groups researching and gathering ideas. When students have decided on an animal ability or adaptation they would like to simulate, they will sketch and write about their ideas in their journals.

The students work in their journals. At the end of class time, the students will share their journal entries. (Field note, 10-15-14)



Collaboratively, the Krewe generated possible solutions, developed their own ideas, and reflected on the processes they would engage in to solve the problem. How children interact with each other and the materials available in the innovation room invited children to participate in discovering their wonderings and how to go about creating deeper meaning and understanding.

The children, as a group, navigated the questions at hand and, through discussion and conversation, established and maintained peer relationships. This required the children to use persuasive language and to draw upon their repertoire of vocabulary and schema to negotiate meaning. The supportive and collaborative environment allowed the children to share ideas, scaffold each other's learning, and take risks by sharing what they imagined. The relationship between the teacher, peers, and the environment allowed for the group to collectively construct a unique peer culture and their functions and roles within it. In this space, the children used language as a tool to experience, tinker, evaluate, and analyze their understandings. In this space, the children respected that each individual has their own ideas, opinions, and ways of problem solving and that all views are valued – there is not one correct way to solve a problem.

The types of questions posed by Mr. Reynaud provided an opportunity for the children to think about who they were designing for (characters) and what were their needs – why it was a problem worth solving. During this stage, the constant questioning helped the children become questioners and thinkers about what was the available design (what already existed) and what solutions they could create to solve the problem better. Collectively, the Krewe engaged in wonderings to help discover, brainstorm, and formulate essential vocabulary and rich discussion about story grammar – setting, characters, problems, and possible solutions. The design questions posed by the teacher and refined by the Krewe helped the children engage with higher-level thinking and perspective taking. Evaluative questioning in this context led the children to learning about empathy, which became important as the children began to decide who they were designing for, as well as to understand and discover deeper needs and why the needs were

important. The overall value that was placed on the child and their wonderings, curiosities, and understandings of themselves in this space— connects deeply with Bricolage’s philosophy.

Tinker/Make – Animal Adaptations

Use your imagination and what you know about animals. Come up with an invention that uses an amazing animal ability to solve a human problem.

Students work in small groups brainstorming ideas.

Teacher moves among groups, redirecting, explaining, and making suggestions.

Each group writes down three or four good ideas to share.

Return to rug to share student ideas on large poster paper. (Field note, 10-14-14)

In the above excerpt, Mr. Reynaud assisted the children in conceptualizing, requiring the children to be active in weaving concrete and abstract thinking to derive meaning. With the use of overt instruction, Mr. Reynaud aided in helping children analyze the problem, calling attention to cause and effect, reasoning, and processes of thinking (Cope & Kalantzis, 2009). Mr. Reynaud guided the children, but also allowed them to play and tinker with their ideas and use their imagination to individually and collaboratively come up with ideas to solve human problems. Mr. Reynaud provided adult interaction and explicit teaching to move the children’s development and understanding forward from simple to complex (Provenzo, 2009). The children were guided to critically analyze animal traits compared to the problem presented. Open-ended discussion questions helped the students draw upon their understandings of animals and humans to investigate and theorize the question presented in the design challenge. With Mr. Reynaud’s assistance, the children were guided to frame and reframe the problem based upon their ideas and wonderings.

Students eagerly began working at the tables using cardboard, paper plates, straws, string, paper clips, tape, foil, foam squares, and anything else they could find to begin building their inventions. During this time, Mr. Reynaud circulated among the tables to question designs, aid in prototyping, and help children find materials to make their prototypes function.

Whimsical chatter among the children could be heard.

Gabe: “What are you making?”

Aria: “Stilts”

Gabe: “Why?”

Aria: “So people can be taller and see farther”

Gabe: “Did you get that idea from the giraffe?”

Aria: Nods her head.

The whimsical chatter and tinkering with tools and materials looked much like free whimsical play. However, there were pedagogical goals in mind – to create a real, workable solution to the problem. The children tried out and played with what was envisioned in their minds from their plans in their design journals. Using the materials at hand, they transformed their drawings into artifacts using signs and symbols and available tools. As the children worked and played, the materials and tools in the innovation room took on new transformed meanings - prototypes. Paper became wings, straws became elephant trunks, and pipe cleaners became springs – all because of imagination (See Table 2 for examples of the children’s prototypes).

The children’s prototypes became literacy objects and could be read “as layered assemblages of meaning, modes, practices, histories, and discourses” (Wholwend, 2011, p. 9).

Having the opportunity to experience, play, tinker, and work with the available tools and materials afforded innovative forms of textual interpretations through *making*.

Design of pollinators. Seated at the carpet, the children listened as Mr. Reynaud provided instructions for the day's design challenge. Previously, in their classroom, the kindergartens had learned about plants and insects. They had read fiction and non-fiction books about insects during reading workshop, wrote like scientists – listing, labeling, and observing – during writing workshop, and investigated insects, plants and learned about the pollination process during science inquiry time. Mr. Reynaud explained:

Today you are going to invent something - a tool that can pollinate a flower. That means you have to invent a pollinator!

Your tool will pick up some of the pollen (baking soda) and carry it over to the flower (black piece of paper).

You have some materials. You've got tape, pom-poms and pipe cleaners.

Here are the guidelines: You are not allowed to touch the flower with your hand - you need to make something that picks up a lot of pollen.... because when you go back to your table you are going to have an artificial flower that you need to pollinate.

On your table you have a piece of black paper with a cup - tap – (the teacher

models how to tap the cup and look on the construction paper to see how much pollen was picked up)



Oliver: “Maybe you should use a pom-pom - because it is soft and you can pick up more pollen.”

Penelope: “My idea is to make a scoop. Two balls may work better.”

Mr. Reynaud: Think back to when you made me the pick-up things in the beginning of the year.... think about what shape would pick up a lot of powder.

Try it out - make a design and test your idea - this is only the simple flower. Tomorrow we are going to have more difficult flowers to pollenate.

Remember, the flowers may not move. I will put the flowers out and they need to stay there. You may not touch the flower - you can try all three of them. Tap two times - that way everyone is doing the same thing. Don't forget to share and collaborate!

In this episode, Mr. Reynaud guided the design of the pollinators. The children did not plan in their journals or engage in elaborate discussion as a group. The materials and tools changed meaning through the children's transformative understandings and creativity. Through play, the children used the semiotic resources to create an artifact representative of their own understanding of how flowers are pollinated. This was achieved through imagination, tinkering, and play, resulting in innovation – a pollinator.

Tinker/make – pollinators. As the children made their way to the tables, Jackson whimsically flew to his spot, “I am like a humming bird - humming birds fly fast!”

Spontaneous - free form and guided – pedagogical play ensued. Children’s whimsical chatter could be heard as they began playing and tinkering with the tools in their bins: piecing pipe cleaners together, attaching pom-poms with glue, tape, and staples, all to try to pollinate the pretend flower. The materials transformed from the perceived pipe cleaners, pom-poms, and baking soda, to what the children imagined – their idea of a pollinator.



Through trial and error, and whimsical collaboration, which involved negotiating and thinking aloud, the children began to *make*. Experiencing, tinkering, evaluating and analyzing through work and play, the children engaged in the iterative process of designing a product to solve the challenge of creating a tool that could be used to pollinate the flower.

Whimsical Play vs. Guided Pedagogical Play

Bruner (1966) theorized that children’s play promoted problem solving abilities. Play was viewed as an opportunity for children to take risks without fear of failure. In his words, “Play... is a means of minimizing the consequence of one’s actions and of learning...play provides an excellent opportunity to try combinations of behavior that would, under functional pressure, never be tried” (p. 693). Bruner believed that creative and play activities are closely related and that if children explore and experiment in their play they could test a mixture of behaviors and use their experiences to learn.

According to Vygotsky (1978), whimsical play is an activity that directly supports the development of children’s language and, within a social context, serves to extend children’s

cognitive development. Vygotsky believed that children's spontaneous whimsical play is contingent on their previous experiences and the cultural tools they have appropriated (Vygotsky, 1978).

Structured play, from Vygotsky's (1978) perspective, creates a zone of proximal development, and when learning occurs within the child's zone of proximal development, it encourages and advances a child's competence level. In this sense, play is seen as a mechanism for propelling child development forward (Bodrova, 2008). Vygotsky (1978) believed play to be a cultural-historical phenomenon largely dependent on the degree and quality of adult mediation (Karpov, 2005). Speaking, listening, and understandings of the community of practice are important for a shared cultural connection of multiple modes of meaning through what is perceived and imagined.

The play that occurred during innovation time reveals that play can be both spontaneous and free form and guided by an adult for pedagogical purposes. During play, the iterative process occurred. Long durations of time allowed for deep engagement with materials. The children used the iterative process as a way to test and refine their ideas. While the process of iteration happened in a playful, whimsical way, the children were deeply engaged in *making* – exhibiting a state of *flow*. According to Csikszentmihalyi (2008), *flow* blurs the line between work and play and reveals that play can be hard/serious work. Play that is serious and focused within a learning environment can help learners construct personalized and reflective understandings (Reiber, 1998). Further, children's play and work could also be viewed as messing around (Ito et al., 2009), described as open-ended activity that involves tinkering, exploring, and extending understanding, providing insight into how exploration allows for serious play through trial, error,

and even failure, all of which are characteristics of the process of design. I believe this is what was happening during innovation time.

This extends our thinking and understanding about the idea that play can be work, and work can be play, but most importantly, it shows us the value of play during *making*. Resnick and Rosenbaum (2013) argue that tinkering, defined as a playful, exploratory, iterative style of engaging with a problem or project, closely aligns with play and allows for designing, making, experimenting with new possibilities. Design, test, fail, refine: At Bricolage Academy, tinkering became an iterative mode where children engaged with authentic ideas about their solutions to the problems at hand. Through tinkering (using the resources and cultural tools at hand) the children represented their ideas through prototyping and making. During tinkering, the maker engaged in both whimsical and pedagogical play and work. The mantra was try and try again – failure leads to new discoveries.

In the innovation room, the freedom to choose and children's autonomous undertaking with materials, from an outside perspective, could be interpreted as play, because the children found interest and delight in performing the tasks, but the activities and materials that the children engaged with were purposeful and significant to pedagogical goals, which aligns with work.

Summary of Findings

Looking at play through Bruner's (1996) three modes of representation and a sociocultural frame, we can begin to extend our thinking to reinterpret what was going on in the classroom. During whimsical chatter, ideas began to form and develop. The talking, thinking, playing of what was perceived and imagined took on a literacy all of its own. Children felt free

to explore their ideas in their classroom community. They did not feel the need to “produce” something but rather used the time and space to explore purpose, problems, and interests as a step in solving a bigger problem. The whimsical environment provided the children with an opportunity to draw on their literate understandings, which were enacted through tinkering, thus supporting multimodal and semiotic constructions of understanding. The children did not always use print, language, actions, gestures, or materials to “play/tinker with” an idea. The goal in the innovation room was to build a literacy of play and tinkering through the children’s experiences using modes of representations through the process of doing and making. Imagination and choice provided a play/tinker space that allowed the children the opportunity to design objects through their play.

The examples shared in this chapter illustrate Bruner’s (1996) enactive mode, iconic and symbolic modes of representation, and how a child’s experiences draw upon multiple modes of meaning making. In the examples, the children used their understandings, background knowledge and interpretations of real life circumstances, texts and illustrations, or problems to be solved to construct a real artifact representative of what they imagined. Upon examination and reflection, what was implicit about the children’s constructions was the tinkering that occurred through the process of design. The children created a plan in their minds or in their journals, exhibiting an understanding of what already existed, and then began the iterative process of representing their understandings with the tools available in the environment through prototyping. The children’s products not only demonstrated their thinking and engagement with the story they were trying to create or the meaning they were trying to convey, it also became a collaborative and social tool that was used to make meaning and communicate with peers.

Bruner's (1996) symbolic mode of expression draws upon the planning stages of the design process. When the children expressed themselves through drawing, painting, pretend play, and making they were documenting their experiences using media. Bruner's (1996) iconic mode and the enactive mode of representation became evident in the literacy of play and tinkering by doing or working through ideas of what was perceived and imagined. These modes of representation helped the children understand through the context of the world around them. In this space, the materials, also viewed as cultural tools, helped the children express their ideas through tinkering and play. The tools such as paper clips, straws, pipe cleaners, and cardboard became something different and were transformed and used for a variety of purposes through the children's imaginations. The tools in this space also helped to develop interconnectedness and move a child's conceptual learning from simple to complex. Just like Froebel's *gifts*, the tools helped the children see cause and effect, possibilities for design, as well as the interrelationships between what they perceived and imagined (Acevedo, 2008; Brosterman, 1997; Provenzo, 2009; Stiny, 1990). Situated cognition and semiotic domains, therefore, best describe how the children actively engaged with, experienced, and thought differently about the signs and symbols in this context (Gee, 2007). How the children interacted with each other and the materials available in the innovation room invited the children to create deeper meaning and understanding.

From my analysis of the data, I found that the processes that were observed in the classroom spaces during the reading and writing workshops closely aligned with the design processes in the innovation room. What is important to note is that the "process" was important to the children's literacy enactments and created an environment that supported play/tinkering and innovation. The pedagogical design of the workshop model and innovation started with the

teacher conceptualizing. Situated practice and overt instruction occurred simultaneously as the children evaluated and analyzed the conceptual understanding. Critical framing set the purpose for the reading, writing, and planning stages of the design. During this stage, the children were experiencing and tinkering and analyzing to solve problems. While the problems looked different in each context, e.g., purpose for reading, purpose for writing, purpose for designing, in all contexts, the children planned and critically framed the problem by experiencing, analyzing and tinkering. Planning in the innovation room looked much like the planning stage during writing workshop as children wrote in their design journals, drafted their idea through *making*, revised through user testing, and re-created through trial and error, resulting in a final design/product. How the children arrived at the final product was through play and tinkering. The result of the tinkering was an artifact.

Like the workshop model, the design process began with the teacher defining a problem, activating children's background knowledge, understandings, and expressive and receptive vocabularies. The sharing of ideas as a Krewe or community provided insight into the children's, knowledge and literal, inferential, and evaluative understandings of the problem at hand. The children planned in their design journals and carried out their ideas by *making*. This happened as the children played and tinkered. After a duration of time, the children returned to their design journals to compare the original design to the product. Just as in the reading and writing workshops, it was through the process of design and space to tinker where authorship (of the artifact), purpose, and deep understanding of the materials and problems were developed.

This finding, however, is contrary to Resnick and Rosenbaum's (2013) articulation of the tinkering process. They state that tinkerers do not plan and typically do not start with a goal in

mind; rather they discover the goal as they mess around and play with materials. Tinkerers typically take a bottom-up approach while “planners” start with a goal in mind and use a top-down approach to achieve a result. While planning and the process of design were important in the innovation room, the children were not held to the rigidity of the plan they wrote about in their design journal. During *making* the children started with their tentative plan, but as they played and tinkered, their plan changed and transformed, based on iterations and understandings, taking on a bottom-up approach. While the problem and goal for *making* was established by the teacher, (e.g., animal adaptations to solve human problems and design a pollinator) how the children interacted with the materials, the Krewe, and iterative process through tinkering to create a final product was whimsical and playful. (See Table 3 for a comparison of the workshop model and the innovation model to multiliteracies pedagogy.)

These play episodes are also representative of intertextuality, which, according to the New London Group (2000) is a hybrid literacy practice demonstrated through the creative transformations of original meaning making resources. In the examples, creative reproduction was afforded by the opportunity and space to use imagination, draw upon the process of design, and *make* an artifact. In the process of making, the children demonstrated critical engagement through tinkering. The artifacts became a demonstration and representation of the metalanguage of a Bricoleur: drawing upon multiple resources - tinkering – problem solving, design thinking, and understanding of literacies - story and character, and problem/solution – all to construct their “text.”

According to Huizinga, meaning is the imagination of reality and its conversion into images. In the context of the innovation room, meaning was the imagination of reality and its

conversion into artifacts. Aligned with Huizinga's perspective that pure play is one of the main bases of civilization and that play can be both serious and non-serious, at Bricolage it was demonstrated that, for the children, "Play turns to seriousness and seriousness to play" (p. 8). Building on Huizinga's work (1938, 2014), play at Bricolage provides a starting point for our understanding that the boundaries of work and play may be fluid, based on cultural perspectives and play practices.

The play/work episodes that occurred during innovation time were rich and complex. "The children were participating in a new story-making practice by leaning on familiar social and symbolic tools" (Dyson, 2013, p. 51). The children had opportunities to make predictions, observe, experience, explore, and reason, and engage in social collaboration. The children's interactions supported the discoveries made through experiencing; scaffolding and supporting each other, the social interactions became a critical component.

In the innovation room, Mr. Reynaud created an environment that provided time and space for children to play whimsically, but also directed play to an exploratory level by challenging the children to work at solving something that was meaningful and purposeful to them. In this space, the children also relied on the classroom community, the Krewe, for feedback regarding their artifact and to test to see if what they designed solved the problem they were designing for. Through tinkering and play, the children used language to describe and persuade as well as analyze their ideas through storytelling. This is where the Krewe became important. At times the teacher provided just in time coaching and instruction but peers became equally important as teachers and mentors, as the children actively engaged in the iterative process. Yelland (2011) states that when the elements of play come together effectively:

Teachers enable and support children's meaning making with interactions and resources that encourage them to make connections between the different modes of representations – through playful explorations adults can support and extend new play worlds by giving children opportunities to self-select but adults should give children a variety of materials in a shared learning context. (p. 11)

From a sociocultural perspective, Vygotsky (1978) contends play is a space that allows for mediation and scaffolding within a child's zone of proximal development. Mediation of the environment creates opportunities for adults, peers, or cultural tools to move mental processes forward (Leontiev, 1981). "Mediation straddles the space between teacher-guided engagements and child explorations" (Medina & Wholwend, 2013, p. 45). From this perspective, the teacher, children, and tools are important. What children can and cannot do is dependent on the tools/technologies they interact with, as well as the context and cultural situations in which they find themselves. Capable peers, technologies, and media can scaffold children's levels of comprehension (Brown et al., 1993). Rather than solely relying on the classroom teacher, the children were encouraged to collaborate by working together, as well as use the resources around them.

In the innovation room, the children began to think differently about signs, symbols, and cultural tools as they actively engaged with the materials. They were situated in an authentic environment that provided space and time to create based upon their interests, natural abilities, and natural inclinations. Opportunities for play, talk, and tinkering through experiential learning helped the children negotiate what was perceived and what was imagined. Guidance from Mr. Reynaud helped the children to critically frame the problem at hand. Through the process of

ideation/brainstorming, the Krewe's ideas and questions became a scaffold for the children to draw upon as they engaged in the design process. Through experiencing and constant analyzing and evaluating during the iterative process of making, the children were developing a new set of skills and multiple ways to make meaning. Aligned with the constructionist perspective (Papert, 1991), the result was alternative ways to represent their literacy understandings through the real, workable artifacts they created.

In summary, the design of the classroom space and available tools provided the children with authentic literacy experiences that integrated multiple modes of communication. Time and space to be whimsical influenced each child's ability to enact literacies through tinkering, resulting in representation using a variety of modes. The teacher valued expanded literacy practices through reading, writing, planning design journals and interpreting the perceived and imagined ideas that the children held to solve a problem. In this space, the children were situated in multimodal practices that expanded symbolic repertoires and provided them the opportunity to tinker with multimodal representations to create intended meanings. Tinkering and play became a part of the metalanguage of design and were an embedded extension of innovation. Attempting a revision of the definition of play within the frame of constructionism, tinkering and design, play in this context is understood as a whimsical, individual and guided process, in which children problem solve.

In the next chapter, *The Cleverness of Innovation*, I provide findings from Mr. Owens' *innovation* classroom on how the classroom environment embraced the pedagogy of multiliteracies to promote a culture of creativity, innovation, and flexibility and regarded all forms of representation as a dynamic process of meaning making. I illustrate how children's

explorations, play, tinkering, and progress toward understanding complex concepts through transformative practice are represented in the artifacts they created.

CHAPTER 8 –THE CLEVERNESS OF INNOVATION

In this chapter, I provide findings on how the innovation classroom environment embraces the pedagogy of multiliteracies to promote a culture of creativity, innovation, and flexibility, and regards all forms of representation as a dynamic process of meaning making. I illustrate how children's explorations, play, tinkering, and progress toward understanding complex concepts through transformative practice are represented in the artifacts they create.

The School Context: Esplanade Avenue

Fast-forward four months, Bricolage Academy's location moved to Bayou St. John, five miles from the St. Charles Avenue location. As I drove along in the Uber car on Esplanade Avenue, a part of New Orleans I was not familiar with, out the window I saw a street lined with grandiose homes, restaurants, small shops, a cemetery, and schools. Bayou St. John, a waterway that runs right through the middle of the city, divides the surrounding neighborhood. The bayou, I learned, is a place where people picnic on the banks, kayak, and ride alongside the murky flowing water on bicycles. A little down the way from the bayou is City Park, a place that attracts tourists to view the vast oak trees, blooming flowers, and sculptures.



I arrived at the school ready to extend my journey to see how the school had transformed and grown, as four second-grade classrooms had been added. I made note of the new location, new context, new staff members, new sights, new smells, new neighborhood – but I observed

something that remained the same, the underlying mission and core values of Bricolage

Academy – the rhythms and melodies of the culture did not skip a beat.

On this morning, it was 8:15 a.m., the sun was shining and the sky was a vibrant blue.

Once again, children arrived in cars and buses ready to start their day. Filing in the courtyard that



yielded a vast amount of space, the children entered through a black iron gate, which led to a petit outdoor space, which divided the two halves of the building. Some children entered the door to the left and others the door to the right. Not long ago, this building was home to a Catholic grade school. The

church was still a space where the community gathered and the adjoining building was a residence for nuns and priests; however, this shared space had been transformed into Bricolage Academy's new home for the next few years. Imprints of the school's culture that was built in another space and location, the St. Charles Avenue location, were evident in both the sights and sounds that echoed in the halls and classroom spaces – almost as if they packed it up in a suitcase and carried it with them across town. As I entered the building, I saw familiar faces, children talking side by side, teachers welcoming children, and children's colorful artwork and creations adorning the old walls. The feeling given off by the antiquated building told its own story and cultural history from the layers of paint to the fingerprints on the walls. The large cream-colored hallways with high ceilings had clearly been walked through by generations of school children and teachers. The classrooms were larger, but in comparison to the St. Charles location, looked the same in design and layout. Each new classroom space, from my brief examination, exhibited

a child created environment that was warm, inviting, and that showed evidence of learning with displays of children's work. Besides room to allow for four sections of kindergarten through second grade classrooms, what were new additions in this space were a blacktopped playground and a grassy area for the children to play outdoors.

A thick wood staircase in deep mahogany with painted grey stairs led the children to the second floor of the school building. On this particular morning, I saw all of the children, kindergarten through second graders, gathered together for a community meeting. Sitting attentively on the light wood gymnasium floor, the children listened to Mr. Densen's welcome message and praise for entering the space quietly. Promptly, the children began to assemble at the front of the circle, where a keyboard and long colorful tubes were set on the floor. The music teacher explained that today the children would be playing a song that



they wrote during choice time, (a play/work time on Friday afternoons), which he would accompany by keyboard for all of the children to enjoy. The Bricolage community waited anxiously for the rhythm and melody to begin.

Community time was over; we were going to head downstairs to see Mr. Owens and the innovation space in the new school.

Alex Owens – Innovation Room Teacher

At the beginning of the 2015-16 school year, Mr. Alex Owens became Bricolage Academy's innovation room teacher. Mr. Owens began his career teaching in a private school in Baltimore. After two years, he moved to New Orleans and joined AmeriCorps, a community organization. His job was to help rebuild homes after Hurricane Katrina. During his time with AmeriCorps, Mr. Owens worked with volunteers and taught them how to build houses. He realized that there was a disconnect about who he used to be and what he was doing with AmeriCorps. He felt that real world experience was where learning happens and his pedagogical goal was to merge the world of education with real world experience. After his work with AmeriCorps, Mr. Owens headed to California, where he was a resident in a graduate credential program at High Tech High. Mr. Owens stated that being at High Tech High formalized what is possible when schools integrate hands on experience with classroom content. After a few years in California, he moved back to New Orleans and shortly thereafter began teaching at Bricolage Academy as the *innovation room* teacher. Mr. Owens set high expectations for his students. He admitted that sometimes his expectations were too high. As a past educator of middle and high school students, teaching young children was challenging. "It's me figuring out what is developmentally appropriate. How much is just surface and how much is thinking?" (Alex Owens, Interview, 1-28-16). Nonetheless, in this space Mr. Owens valued the importance of the design process, building a foundation of thinking, children's autonomy and interests, and moving the children forward to solve complex problems.

Classroom Design – The Innovation Room of Mr. Owens

This space was large. The innovation room in the new school had practically doubled in size. To my right was a floor to ceiling bookcase that spanned the length of the entire wall. There was plenty of room to hold children's works in progress. The room had an abundance of natural light shining through the large wood paned windows that looked out over the parking lot and Esplanade Avenue. To my left, there was another floor to ceiling book case that spanned the length of the entire wall; this space held all of the materials – the same wood, cardboard, plastic bins with blocks, play dough, plastic connectors, Styrofoam balls, straws, plastic wrap, pegboard hardware, kinetic balls, wood planks, and shoe boxes - all lined neatly upon the wood shelves, “play” items such as Magnatiles, plus-plus tiles, plastic blocs, Legos, Keva, Brio, and electric circuits. New items had been added to the children's innovation experience, squishy circuits, chrome books, and an abundance of craft supplies – paint, glitter, colorful paper and a mix of scraps.

In the front of the room was a SMART board that was used daily as a tool to enhance children's understanding of concepts by providing background information through Mr. Owens' use of photos and videos, or as a display for sharing children's work. There was a large space in front, too, used as a gathering area during the beginning of *innovation* time. This time was used to talk about the challenge or problem to solve, planning, iterative process, or celebrate and communicate final products. The same space was used at the end of each class session to reflect on the mistakes of the day – to talk about failures and plans for iteration and to provide opportunity for children to “shout out” or commend peers on their work, ideas, or creations.

With second grade added to the *innovation* schedule this year, all children had the opportunity to visit this space two times per week for fifty minutes. The topics, problems, and creations were all based upon children's interests and helped guide Mr. Owens' planning. Some children were interested in coding, some were interested in deconstruction, and some were interested in just making with cardboard and tape. Play and tinkering was an integral part of innovation time. During play, the children were able to explore available materials. Overall, just like Mr. Reynaud, Mr. Owens used a *design, make, play* (Honey & Kanter, 2013) framework in the innovation space.



Clever – showing inventiveness or originality; ingenious

Innovation – the act of innovating; make changes in anything established; to introduce something new (<http://www.dictionary.com>)

It was the beginning of January and the children had returned to Bricolage Academy from winter break. Mr. Owens had decided to transform the innovation room environment into Bricolage's very own Mardi Gras World for the next six weeks. According to Mr. Owens, this was a very ambitious agenda. To provide some background knowledge, Mardi Gras World is one of the largest tourist attractions in the city of New Orleans, as it is known as the largest float designing and building facility in the world. It houses nearly eighty percent of the amazing floats belonging to the numerous Krewe that parade in the streets during the Mardi Gras season. Located in large warehouse on the Mississippi River, Mardi Gras World is a symbolic space filled with history and culture exclusive to New Orleans (Gotham, 2005). An amazing fact learned during a tour is that in the days following the Mardi Gras parade, the float designers begin working immediately on constructing floats for the next year. As a former employee and designer at Mardi Gras World, Mr. Owens decided to transform the *innovation* room into a mini version of Mardi Gras World, exclusive to the Krewe of Bricolage Academy.

As the children entered the room, excitement filled the air. It was evident in the rhythms, melodies, whimsical chatter, and children's actions how excited they were for the upcoming carnival season - Mardi Gras. As a matter of fact, during the week of Mardi Gras, schools are on recess to allow for attendance at the nightly parades that move throughout the streets of New Orleans. The parades are sights to be seen and it is without a doubt a huge part of the culture of New Orleans communities (evidenced by the number of people who line the streets to marvel at the remarkable floats of the numerous Krewe). Children anxiously await the parade season and when in attendance hope to catch the throws. Throws are tokens that are exclusive to the parading Krewe that children have the opportunity to "catch." For example, the Krewe of

Muses' throw elaborately decorated shoes, the Zulu Social Aide and Pleasure Club's signature throw is a coconut, and other Krewes throw sunglasses, doubloons, beads, and fruit – just to name a few items. For the children in New Orleans, the hope of catching a throw is the most exciting and challenging part of the parade.

Aspiring to capture the Mardi Gras season in the *innovation room*, this year Mr. Owens presented design challenges to the children which included making throws, making throw catchers, making floats, and ultimately designing Bricolage Academy's very own Mardi Gras parade.

Drawing upon his design experience and understanding of the histories and culture of New Orleans Mardi Gras, Mr. Owens provided children with opportunities to view videos, look at photos, and talk about their experiences as parade goers. The children engaged in interactive and collaborative conversations, shared their experiences, and like small children typically do, added elements to and embellished their and each other's stories.

Zulu coconuts. It was a Thursday morning. Mr. Owens presented the second grade children with a very special design problem, something that had never been done before. Mr. Owens: Zulu has a problem, they have hundreds of throws to decorate before the Mardi Gras parade and do not have time to do it all by themselves! How do you think we could help them?

Children: We can decorate them!

Mr. Owens: The Zulu throw is very specific though. Has anyone ever seen or caught a throw from Zulu? Zulu throws coconuts! They are very symbolic. They have very specific markings. Do you think you can help Zulu by creating your own design – but ensure you have the markings so that everyone knows that the throw is from Zulu?

As the children listened attentively to Mr. Owens, he grabbed a huge, thick, white, plastic bag with at least a hundred coconuts in it. He showed the children what the coconut looked like – completely sprayed with shiny black paint. The children marveled in the round black fruit. Before designing, it was essential that the children had an understanding of the history and culture of Zulu. A Bricolage staff member, who was a member of Zulu, came into the class to provide the children with the story of Zulu, the parading experience, and throwing the throws. Mr. Owens also used video footage to immerse the children in the street parade, all to place importance on the special opportunity to design for



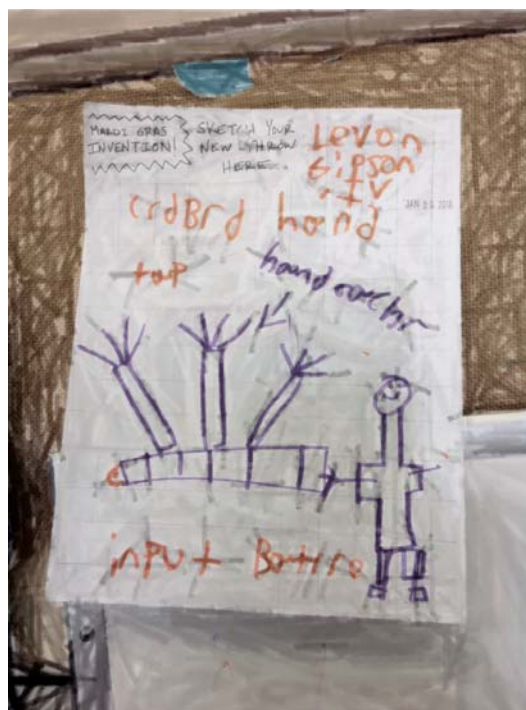
Zulu. A model of a Zulu coconut from the previous year was on display for the children to see – the available design. The challenge was for the children to create a design on the Zulu coconut with distinct features. Mr. Owens explained that embedded in the design needed to be a capital “Z” and the year, 2016. The rest was up to the children’s imaginations.

Mr. Owens reminded the children that it was very special to catch a coconut and that their design needed to be well thought out and planned before they began to transfer their idea onto the fruit. Mr. Owens passed out the coconuts and at this point the children became engaged in tinkering – looking at the sort of round object from all angles, examining it to see how they could make their “text” fit. The children used glitter glue and paint to imprint their contribution to the

stories of the Zulu throws. Implicit design principles were applied as the children navigated the black tableau to convey their message. During the experiencing phase, the children analyzed their message to see if they could fit more, or in some cases, the children realized that they did not have enough room for the essential information and used a wet wipe to start over. Engrossed in their work, the children transformed the once brown fruit into a throw – a cultural symbol of Mardi Gras and Zulu.

With only a few weeks remaining, a lot needed to be done to be ready in time for the first ever Krewe of Bricolage Mardis Gras parade. The design of the Zulu Coconut led to a new design challenge for the children at Bricolage.

Designing a Bricolage throw. “There is a problem,” explained Mr. Owens. “Bricolage does not have it’s own throw! Our work is going to be to come up with throws that can be tossed into the crowd for parade comers during Bricolage’s Mardi Gras Parade.” Conceptualizing the problem, Mr. Owens guided children through an analysis of what types of throws would be appropriate for the Bricolage Krewe. Children came up with suggestions such as robots, Legos, and round pieces of cardboard to resemble doubloons. The iteration process began; the children had to come up with prototypes of their idea for a throw. Some children chose to work together while others decided to work individually. Using the materials and tools around them, the children began to design prototypes



– made from Styrofoam, cardboard, tape, and Legos. The end product was an eclectic mix of throws symbolizing the imaginations of the children at Bricolage.

The problems of Mardi Gras. After designing the Bricolage throws, Mr. Owens engaged the children in a discussion regarding the problems the children and their families encountered during Mardi Gras parades. Problems ranged from, “we can’t see the floats” to “I never catch throws!” Collaboratively, the Krewe discussed plans to solve their own Mardi Gras problems. Some children decided to solve the problem of not being able to catch throws while others tried to solve the problem of not being able to see the floats. The design challenge was for the children to think outside the box and create a prototype. Drawing upon the available designs and what the children knew already existed, they sketched out their new ideas and then began making a prototype of their design. During the prototyping the children had the opportunity to test out their products with other children at the carpet. For example, the children would throw objects into the air for their peers to try out their “catcher.” If the “catcher” did not work, the children resumed working on their creations. A group of girls off to the side of the room decided they would make a safety seat that they would put on top of the ladders (which are exactly that – ladders with a seat on them – like a highchair where children sit during the parade). The safety seat included a seat belt so that they could lean or stretch to catch the throws with the large scooper they made out of cardboard without fear of falling off the ladder. One of the “catchers” that was created resembled a drone. The drone was made from a large circle of cardboard with cardboard scoops on the top and the bottom to serve as arm-like extensions. The group also made a pretend remote control for the drone object that included buttons to fly up, down, or swoop. The group of children working on the drone design decided that they would fly the object above

the crowd so that it could scoop up the throws before they landed in the hands of the parade goers.

Mardi Gras floats. “Something is missing for our Bricolage Parade”, explained Mr. Owens. “What do you think it is?” FLOATS! “Of course we can’t have a parade without

floats!” Guided by Mr. Owens, the design challenge was for the children to work in pairs to design a float from the materials at hand. Transformations occurred during the design process. What was once a cardboard shoebox, through play, imagination and tinkering, became a symbolic representation of the Bricolage Krewe members. Some children chose to cover the box with flashy paper, while others decorated the box with beads and glitter. As the



children played and tinkered around with their designs, the shoeboxes transformed into a shared story of the children’s experiences, favorite elements, and traditions of Mardi Gras.

Summary

Transformed practice helps us to understand how children explain their knowledge and understanding of the world and how they make meaning within different cultural contexts and environments (Cope and Kalantzis, 2000; New London Group, 1996). In these multimodal events, children used their funds of knowledge (Moll et al., 1992) to represent their own ideas about their school community, the community outside of school, and personal narratives of the happenings during Mardi Gras to create meaning. According to Levi-Strauss (1966), bricolage is

interpreted as “making do with what is at hand.” He used bricolage to explain two phenomena: *ideational* bricolage and *material* bricolage. *Ideational* bricolage helps to understand the process by which members in a society recombine elements to create new functions. And the second, *material* bricolage, is the process through which people use and combine resources they have “at hand” as a means of finding workable, imperfect, approaches to a variety of problems or opportunities. Tinkering, then, is “a process by which individuals and cultures use objects around them to assimilate ideas” (Repenning & Ioannidou, 1997, p. 403). Throughout the designing of the Zulu coconuts, throws, throw catchers, floats, and ideas for the Bricolage Mardi Gras parade, the children negotiated which modes were most applicable to the challenge at hand. They were active designers of meaning through listening, responding, creating and interacting with multiliteracies. Furthermore, they made deliberate choices about the problems with Mardi Gras from their perspectives. According to Kalantzis and Cope (2001):

Meaning-making resources may be found in representation objects, patterned in familiar and thus recognizable ways. However, these objects are reworked. Meaning makers do not simply use what they have been given: they are fully makers and re-makers of signs and transformers of meaning. (p. 175)

Both explicitly and implicitly, through the design process, the children created new stories of Mardi Gras. Identifying problems, the characters (users), props, setting, and creating solution/conclusion through the design of their artifact, the children’s decision-making processes demonstrate critical thinking and problem solving with and through a new cultural text. Through these processes, Mr. Owens helped to guide the children as they drew upon a range of resources

and understandings to ultimately produce an artifact representative of multimodal communicative practices (Lankshear & Knobel, 2003, 2004, 2005). As Kress (1997) reminds us:

Children see the complexity of the meaningful cultural world with absolute clarity; and in their making of meaning they construct elaborate, complex representations of the world-out of the materials which are to hand: bits of paper, glued, stuck, cut, folded, painted, cutout; bits of tinsel; old birthday cards, colored string; and so on. In this process they construct complex alternative systems of representation, never arbitrarily, never simply copying, always producing forms which reveal and bear the logic and interest of the sign-makers' cognitive actions, and affective interests. (p. 33)

In these instances, children's composition of text was transformed through tinkering with cultural tools, signs and symbols. Language in use, collaboration, and negotiations within cultural discourse provided opportunity for children to engage in social dialect and transfer their understandings into cultural representations (Bruner, 2010).

Perez (1998) states, "one brings the experiences with the world, the ways of interacting with text learned in the culture group, the knowledge and skills with letters, words, text organization as they interpret a written text" (p. 5). This experience and knowledge shapes the environment and purpose for constructing meaning. According to Jerome Bruner (1996), a learner's construction of reality and how they make meaning are mediated by the use of cultural tools (symbols, texts, process of meaning making). Literacy is therefore viewed as a cultural phenomenon and the construction of meaning includes multiple literacies that are embedded within a sociocultural context and cannot be considered content or context free (Scribner & Cole, 1981; Street, 1984).

During the designing of the Zulu coconut, the children drew upon alphabetic and numeric conventions, ensuring there was a “Z” and “2016” in their textual design. The children drew upon their existing schemas with information gleaned from the videos and photos as well as the oral presentation or story of Zulu told by the staff member. During the design of the Krewe of Bricolage throws, the children represented their ideas about their school and the Bricolage community through their designs. This aligns with Papert’s (1980) theory of constructionism in the design of learning environments. Papert’s (1980) theory is based on the philosophy that children are more successful in learning something when 1) they are given an active and creative role in the learning process, and 2) the results of their creativity are presented to an audience. The designing of floats was not a mere re-production of something that existed before, the children drew upon multiple resources – from culture, history, and personal experience to collaboratively design a new float that told their story – as students at Bricolage Academy and as members of the New Orleans community. These elements allowed the designers to act on the cultural and social functions informing their unique messages and designed product. This is the point of transformation and innovation – the children’s interpretations from tinkering with signs and symbols resulted in a redesigned hybrid text to be interpreted by not only their school community but also by the larger community of New Orleans. Bruner (1996) argues that although meanings form in a child’s mind, they have origins and significance in the culture in which they are created. Cultural situated-ness provides opportunity for humans to make meaning, negotiate, and communicate by utilizing cultural tools.

CHAPTER 9 – CONCLUSION

“The basic is to produce texts – deliberately organized constructions of meaning- through the use of symbolic modes appropriate to the circumstance, that is, to the social situation and cultural practice... It is a matter of differentiating the representational nature and the material and social affordances of these symbolic modes. Modes are not in opposition but rather play off one another, not only on a single page, but also in a field – a playground – of interconnected practices” (Dyson, 2013, p.171)

The key topic of this dissertation has been to examine what types of literacy young children are enacting when they play/work in environments that support play/tinkering, a topic influenced by sociocultural theory, play theory, and new literacy theory. Examining the context/environment, culture, and ideological perspectives of play and literacies helped to uncover the triadic relationship between educators, children, and cultural tools in order to understand the complexities of children’s access to new forms of literacies and meaning making. In this concluding chapter, I provide an integrated overview of the findings from my research; followed by a theory of literacy that combines the theories I have relied upon with the practices I documented. I discuss how thinking about literacy as tinkering/bricolage is a useful way to understand how meaning extends boundaries of modes and multimodal connections. I conclude with final remarks, limitations of my study, and future directions for research.

Overview of Findings

Bricolage Academy aims to cultivate children’s participation and dispositions toward the culturally diverse society in which they live, challenges equitable education in New Orleans, and

provides a glimpse of how teachers and children interact to design and connect literacy to their lives and the world around them.

Sociocultural context of Bricolage Academy. Like the schools of Friedrich Froebel, Maria Montessori, John Dewey, and Loris Malaguzzi, Josh Densen’s spark of an idea ignited a design for a school that was impacted by the political, social, and historical contexts of public schools in New Orleans. In its own way, New Orleans is a struggling community. Like the schools of the historical play theorists that rose out of challenges faced by the community, so did Bricolage –trying to work together for the future of the city and the children that inhabit it. The problem worth solving in this environment is trying to create a school that helps repair a fractured system of inequalities. The experimental and transient nature of charter schools provided an opportunity for Josh to transform his vision of education into the production of a school that adds to and builds upon the story of the educational landscape in New Orleans. The community is the most important factor that contributes to the story of education in New Orleans and Bricolage Academy. The story begins in the neighborhoods, with the members of the community – and above all with the children. All of these elements continue to add to new words, sentences, chapters, storylines and the unique culture found at Bricolage Academy. Without community, without children, there is no story to tell.

Giving a voice to children, parents and educators, Josh Densen aims to connect deeply with the community and his staff. Just as well, Michele aims deeply to connect with teachers, parents, and children in curriculum design. The educators aim to connect deeply with parents and children, and collectively as a design team, they seek opportunities to advance educational advantage, values, equity and diversity – not perfection.

The educational landscape, community, parents, children, and educators all codetermine the mindful design of the learning environment found within the walls of the school building, and pedagogical practices of the educators. Designing an educational environment to prepare children for the reality of the culture they live in as a means to helping them understand and become empowered by diversity, equity and opportunity becomes an important goal. Together these factors build a culture of innovation.

Collectively and collaboratively, the teachers work together to form a participatory culture centered on the development of the whole child. What is important in the classroom spaces is that *design* is a human centered activity and every child has the potential to be a designer (Carroll et al., 2010). This is echoed in common values held by the teachers by providing opportunities for children to be problem solvers through the design process, and literacy learning - in which play and tinkering are valued and embedded in the curriculum. This shared value forms a metalanguage that the teachers use in their classroom environments, curriculum and pedagogies. The metalanguage of design thinking creates reflective ways of knowing, thinking, and communicating (Moje & Lewis, 2007). This metalanguage also begins to blur developmental and sociocultural lines and allows educators to support instruction and pedagogies in flexible ways, embracing the context of children's lived experiences and participation in the culture and what is required to support it. Embracing the sociocultural practices of the Bricolage community, the teachers conceptualize learning as situated and socially mediated. In the classroom spaces educators also help foster values and encourage children to treat others the way they want to be treated, do their best and try new things, listen to each other, collaborate, engage in the process of understanding, know that it's okay to fail, and

respect themselves and the classroom space. The teachers' stance aligns with the vision of empowering children to learn through lived experiences (Papert, 1993).

At Bricolage Academy, the teachers and the children think differently about the classroom space. It is purposefully designed and rooted in a philosophy that all children have the potential to be readers, writers, and designers. It is important to note that it is not the physical/architectural space that matters; it is the mindset of the educators and children that helps to create the culture of Bricolage. Collectively, the community of practice – of the “Bricolage Krewe” – plays an important part and is the foundation of the philosophical principles that root the pedagogical practices. The participatory culture and collective collaboration that has been established is important in each classroom context. These pieces include each individual child, the children and their peers, the children and the environment, and the children and the educators.

Classroom spaces. At the point of convergence of sociocultural theories of literacy, play theory, and design thinking, Bricolage's curriculum design draws upon a variety of resources and can perhaps be summed up as taking a sociocultural/new literacies/constructionist theory approach (Papert & Harel, 1991).

In the curriculum, we see traditional basics with regard to learning to become literate and literacy concepts evidenced in a balanced literacy approach: phonological/phonemic awareness instruction, and the basics of learning to read and write using a workshop model. The curriculum design respects that modes of receptive and expressive literacies work in parallel and children are encouraged to use multiple forms of literacy that are enhanced in multimodal environments. The reciprocal approach of the workshop method provides opportunities for children to borrow ideas

in the books they read and incorporate them into their own stories. Reading their own stories and listening to peers allows children to see how written and oral languages are related. The curriculum design expands traditional basic skills and understandings of phonics, spelling, syntax, and semantics as children engage with reading, writing, and content areas such as math, science, and social studies. They begin to think of themselves as readers, writers, mathematicians, scientists, and social scientists – rooted in the idea that children have the ability to be designers. Innovation and the inventiveness that is encouraged in classroom contexts provides a solid foundation by giving children time and space to think, play, tinker with ideas, and synthesize their understandings of the world around them through exploration, work, play, and selecting the materials with which they would like to engage.

Discovered in the data was an implicit thread that connects the process of designing to the idea of children as bricoleurs – who experience literacy through tinkering and play. Illustrated from this study, I found the language of design embedded in the workshop model and embodied in the literacies of reading and writing workshop (plan, iterate, refine, product). Interestingly, though, this was not explicitly obvious to the teachers or the children, as the design language used in the innovation room was not the same language the children used in the workshop model. When I brought up this discovery in my discussions with the teachers, they were able to make the connection from the workshop model to design, however this was neither explicit nor intended in the curricular design and pedagogical practices.

Collaborative culture of the Krewe. The process of design became an implicit component to transform children's wonderings and extend their individual thinking into the collaborative culture of the Krewe found in the classroom spaces. Opportunities that were both

serious and playful helped develop creativity, confidence and deep engagement through experimentation, exploration, problem solving and collaboration. As children worked together, collaboration and a culture of peer mentoring became like the testing phase in the design process.

In the classroom context, courage, confidence, imagination, and innovation were embraced, as the children became risk takers, engaged *makers*, and ultimately authors. Rather than solely relying on the classroom teacher, children were encouraged to collaborate by working together as well as by using the resources around them. Through the process of ideation/brainstorming, the Krewe's ideas and questions became a scaffold for the children to draw upon as they engaged in the design process. The children, as a group, navigated the questions at hand, and through discussion and conversation, established and maintained peer relationships. Through experiencing and constant analyzing and evaluating during the iterative process of making, the children were developing a new set of skills and multiple ways to make meaning collaboratively within the community of the Krewe. In this space, the children respected that each individual has their own ideas, opinions, and ways of problem solving and that all views are valued – there is no one correct way to solve a problem.

Design-tinker-make framework for play. The wide range of literacy practices that are embedded in the curriculum design allow for children to engage in multimodal literacy enactments. From this, what became evident was the transformation that took place when children applied what they learned about the reading and writing processes within the workshop model, and carried that understanding implicitly over to innovation. This is supported by a design/tinker/make framework which includes planning in their journal, the design of their artifact, children's reflection on the process and product, and finally in children's communication

of their design. What was explicit is that play and tinkering in both the classroom and innovation space aided the children in the problem solving process and in the construction of texts. The whimsical environment provided the children with an opportunity to draw on their literate understandings and build a literacy of play and tinkering. Imagination and choice provided a play/tinker space that allowed the children the opportunity to design objects through their play.

In the classrooms and innovation room, teachers provided children with space, a long duration of time to work/play, tools, and materials, and helped foster a mindset that the end result of tinkering is a product that solves a problem. Through tinkering (using the resources and cultural tools at hand) children represented their ideas through prototyping and making. During tinkering the maker engaged in both whimsical and pedagogical play, and work. The mantra was try and try again – failure leads to new discoveries.

The children's products not only demonstrated their thinking and engagement with the story they were trying to create or the meaning they were trying to convey, it also became a collaborative and social tool that was used to make meaning and communicate with peers, thus supporting multimodal and semiotic constructions of understanding.

In this study, the children actively manipulated and playfully used materials and positioned themselves as producers or meaning makers as they transformed their understandings of complex inquiries. Research supports that play provides children with opportunities to put concepts to practical use and transfer new ideas to purposeful, real situations (Roskos & Christie, 2001; Roskos & Christie, 2007, Morrow and Schickedanz, 2006). Also supported is the notion that the environment informs and shapes behavior (Gump, 1989) and that literacy enriched play

environments remain critical in the developmental trajectories of language and literacy learning for young children (Roskos & Christie, 2011). This study builds upon prior play research with the idea that when children are in an environment that allows them the time and space to use available modes, they transform and redesign materials intentionally through tinkering. Tinkering allows the children to draw upon all of their resources as they become designers, within the dimension of play (Kjallander & Moinian, 2014; Kress, 1997).

That education should be child centered, active and interactive, and involve both the child's social world and the community is relevant in light of new literacies and creating a culture of innovation (Dewey, 1916). Dewey's (1916) view that play for its own sake should be taken seriously as an important part of early-childhood education contributes and supports open-ended explorable environments, and helps to legitimize play's role in current educational settings. According to Csikszentmihalyi (2008),

Unless enough people are motivated by the enjoyment that comes from confronting challenges, by discovering new ways of being and doing, there is no evolution of culture, no progress in thought or feeling. It is important, therefore, to understand better what enjoyment consists of and how creativity can produce it. (p. 8)

Flow contributes to our current thinking about play, design, and innovation in early childhood environments. *Flow* blurs the line between work and play and reveals that play can be hard/serious work. Moving our thinking to the idea that play can be work and work can be play in contemporary classrooms may present a new model or pedagogical approach to the play/work debate.

Iteration of Multiliteracies Theory

In the case of Bricolage Academy and its environment, I found that Cope & Kalantzis's (2009) pedagogy of multiliteracies was reshaped through an iterative process as teachers guided students to become creative innovators and active designers of meaning. Cope & Kalantzis' (2009) pedagogical implications of multiliteracies include (pp. 17-19):

- 1) **Situated Practice:** Experiencing, between familiar and unfamiliar literacy experiences
- 2) **Overt Instruction:** Conceptualizing, requires that learners be active weaving concrete and abstract thinking to derive meaning
- 3) **Critical Framing:** Analyzing, learners explore causes and effects, develop webs of reasoning, and interrogate the interests behind a meaning or action, and their own processes of thinking
- 4) **Transformed Practice:** Applying, application of knowledge and understandings to the complex diversity of real world situations and transfers previous knowledge into new settings

As we have seen, the classroom contexts at Bricolage Academy aligned with the findings of Cope & Kalantzis (2009). However, the data revealed that the multiliteracy pedagogy in this context first began with *conceptualizing*. During *conceptualizing* together, the teachers and children theorized problems and began to think about possible solutions. The focus then moved in a fluid way back and forth from situated practice, to overt instruction and *analysis*. This was illustrated through the children's wonderings and questioning, which at times was guided by the teacher. After the children had the opportunity to critically frame and analyze the problem, they

had the opportunity to engage in *experiencing* with the resources at hand by using cultural tools such as the Krewe (peers, community, teacher), as well as the cognitive and material resources available in the classroom context. It is essential to note that during experiencing, the children moved in a triadic way between experiencing, analyzing, and applying. This is where tinkering and play occurred. Experiencing provided the children with an opportunity to problem solve and connect the known to the new to help them begin to conceive a new approach or re-designed text. The data supports that the children continually analyzed their designs and moved back and forth from experiencing and analyzing before transformation occurred. In this context, transformative literacy practices were directed toward *making* and the *process of design* to interpret useful relations between and among what was perceived and what was imagined through tinkering. Cope and Kalantzis (2011), state:

Design is premeditated, a series of extraordinarily focused stages of thinking and action: conceptualization, enactment, and evaluation. Design is reflexive, aware of the range of its potential applications. Design is continually aware – of its antecedents, of the scope of present needs, and possible future consequences. Design is respectful, open to alternative perspectives and practices. Design is resource prudent. Design is functional, creating things for the world which are usable, useful and enhance the quality of people's lives. (p. 56)

Thinking about literacy as a process, tinkering is useful to understand how meaning extends boundaries of modes and multimodal connections. Tinkering can be understood as a new literacy that includes exploration and use of multiple modes, play, and work, all of which are used to transform available designs.

What is important to note is that the “process” was important to the children’s literacy enactments, creating an environment that supported play/tinkering and innovation. The pedagogical design of the workshop model and innovation started with the teacher conceptualizing. Situated practice and overt instruction occurred simultaneously as the children evaluated and analyzed their conceptual understanding. Critical framing set the purpose for the reading, writing, and planning stages of the design. During this stage, the children were experiencing and tinkering and analyzing to solve problems. While the problems looked different in each context, e.g., purpose for reading, purpose for writing, purpose for designing, in all the contexts, the children planned and critically framed the problem by experiencing, analyzing, and tinkering. Planning in the innovation room looked much like the planning stage during the writing workshop as the children wrote in their design journals, drafted their ideas through *making*, revised them through user testing, and re-created them through trial and error, resulting in a final design/product. How the children arrived at the final product was through play and tinkering. The result of the tinkering was an artifact.

In the next section, I provide an explanation and rationale for an emergent theory I am calling *bricolage literacy theory*, which is situated within sociocultural theories of literacy. Like sociocultural theories of literacy, bricolage literacy theory provides an expanded view of what counts as literacy beyond decoding and encoding. Beyond that, bricolage literacy theory considers *tinkering* as a form of literacy.

Bricolage Literacy Theory

By combining sociocultural theories of literacy, including new literacies, with the concepts of bricolage/tinkering and the literature around innovation and design thinking, I

developed a multifaceted theoretical framework to explain how the literacies of play develop as children innovate in multimodal environments. Bricolage literacy theory attempts to broaden our understanding of literacy and literacy pedagogy to create environments that foster innovation. Gee (2013) articulates that the mind is unique in that it works most powerfully when it plugs into tools. Now more than ever, environments that allow for a “third space” to exist where children have opportunities to engage in the use of cultural tools through experimenting, creating, and meaning making may lead to innovation.

Literacy for the bricoleur. Bricolage literacy theory is directed toward understanding the process of *being a bricoleur*, and toward a better understanding of what is perceived and what is imagined through tinkering. The integration of the following four factors, which may occur at different times and at different levels, may help to explain what literacy looks like for a bricoleur, and how to create an environment that fosters innovation:

1. Spark – is based on evaluation, conceptualizations and analysis of one’s environment and cultural context. Spark explains where ideas come from. This is the first step in design. What is the problem? Who am I designing for? Teachers spark the questions to provoke thinking and encourage wonderings. Through critical framing, questioning and providing just the right amount of guidance, teachers helped children to understand what to do with their ideas and push them to begin looking at and using materials in new ways to solve problems.

Spark leads to wonderings

2. Wonderings – is based on Ideation: problems to be solved that is not separate from spark. Spark drives wonderings. This is where questioning, drawing upon the known to make

new thinking happen, long thinking, understandings of environmental and cultural connectedness, collaboration, and a network of ideas occur. Who is the audience? Who are the users? What is the problem to be solved? Children analyze- how am I going to solve it? Drawing upon background knowledge and prior understandings.

Spark and wondering lead to whimsy

3. Whimsy – is based on representations of meaning by using concrete materials through play/work/tinkering to problem solve =*making*. This involves spontaneous and free form play but may also include guided pedagogical play directed by an adult. This is also where the iteration process happens – as children draw upon the resources they continually shape and reshape their understandings through the act of *making*. Tinkering is at the center of whimsy – this is evidenced in repurposing ideas and tools, where children build upon and engage in complex practices – test, respond to feedback – redesign – retest – and so on – failure leads to new discoveries.

Spark, wonderings, and whimsy lead to cleverness

4. Cleverness – is based on innovation. It is the designed solution to the problem. It is the end result of the process that leads to the product (or what the maker *made through tinkering and making*). Through evidence, evaluating and communicating meaning making – the artifact becomes a text.

The semiotic domain embedded in literacy environments provides an “experiential space” (Smagorinsky, 2001, p. 4) in which meaning is produced and demonstrated through cultural tools and tinkering as a form of literacy. This has the potential to help us understand how children utilize a wide array of cultural resources; how children engage with multimodality and

multiliteracies in their play/work; and how the sociocultural underpinnings of literacy help shape children's literate lives and a culture of innovation. Aligned with a constructionist perspective (Papert, 1991), the result becomes alternative ways to represent literacy understandings through the real, workable artifacts created by children.

Tinkering as a form of literacy. Thinking about bricolage/tinkering as a form of literacy supports the emergent theory that as children engage with their environment, they draw upon the cultural resources (tools) within semiotic domains and tinker to construct or enact literacies through play/work. Tinkering can be seen as an enactment of literacy because it provides opportunities for children to conceptualize and construct external artifacts or “texts” as demonstrations of making connections through multimodal communicative practices. Tinkering as an act of literacy includes representations of enactive, iconic, and symbolic modes of perceived and imagined play within semiotic activities as social representations during work/play episodes.

Utilizing cultural tools in a space where children can play provides insight into a (re)vision of children's play, tinkering as a form of literacy, and its affordances to innovation. From this perspective, literacy is not about being able to construct “objects” of knowledge and learning. Instead, literacy is directed toward making and the process of design to interpret useful relations between and among what is perceived and what is imagined through tinkering. The production of artifacts becomes a demonstration and representation of the metalanguage of a bricoleur: drawing upon multiple resources - tinkering – problem solving, design thinking, and understanding of literacies - story and character, and problem/solution – all to construct their “text.”

This emergent theory provides a guiding framework for understanding and capturing children's multimodal play enactments as "artisan like inventiveness" (de Certeau, 1984, p. 66), where they draw upon the cultural tools at hand to create, innovate, to produce, and engage in multimodal communicative literacies and practices (Marsh, 2006).

From the literature, we know that constructionism looks at knowledge-based relationships – accordingly *making the artifact* is the learning process, while the artifact itself only embodies the learning that happened. On the other hand, the pedagogy of multiliteracies focuses on literacy-based representations and views the artifact as a representation of self. bricolage literacy theory offers a reconceptualization of the cognitive theories of play and literacy to a multi-theoretical perspective that includes sociocultural theory, new literacy theory, play theory, and constructionism. This is where the idea of *innovation* and the pedagogical practices found at Bricolage Academy help to move and expand the boundaries of new literacy theory.

Implications for Play

Throughout this dissertation, I have provided evidence to help us understand tinkering, play, design, and literacy classroom contexts. Examining play through a sociocultural lens provided an opportunity to rethink what play is and does, and how historical, contextual, and cultural discourses of play shape approaches to children's enactments of literacies in our current time.

Over time, scholars have argued that one single comprehensive definition of play is near to impossible to articulate. However, drawing on historical and contemporary literature, as well as the evidence of this study, I argue that tinkering and play are literacy enactments and

conditions for meaning making. This study may contribute to a revision of play as whimsical work that leads to the cleverness of innovation.

Implications for “Mini-Maker” Spaces / Innovation Rooms

This study explored how classroom spaces and a “mini-maker” space referred to as *innovation* may function as a new condition for inclusion and equity of all children in a playful, transformative literacy learning environment. The aims of this research was to understand literacy enactments and representations of modes and media available to children in classroom contexts that support and are designed to foster children’s literacy learning through play, tinkering, and imagination.

Current educational epistemologies suggest that children develop knowledge and skills that synergistically work together to create learning communities centered on collaboration and problem solving in a participatory culture (Collins & Halverson, 2009). It follows that how children respond and make meaning out of and within their social worlds is important (Dyson, 2006, 2013; Wohlwend, 2008, 2011), and that this type of knowledge and skill are closely associated with practices of play (Shaffer, 2006). Contrastingly, learning spaces for young children, particularly classrooms in the United States, have minimized or eliminated play which has been shown to foster experiences of meaning making, problem solving, and collaboration (Pellegrini, 2009; Yelland, 2011).

Children engage in multiple modes of meaning making and negotiate multiple perspectives (Hassett, 2008; Kress, 2003) as they interact with the world around them, building a bridge between play theory and new literacy theory is necessary to continue to explore

environments and sociocultural contexts that allow for all children to play and tinker with multiliteracies in innovative ways.

Implications from this research regarding mini-maker space environments designed to foster young children's opportunity to innovate include the following characteristics.

Shaping the environment: time and space. Time during innovation is strategically planned out by the teacher. The children may be presented with a brief introduction to a concept or problem, a mini-teaching episode, or peer goal setting. Sufficient amounts of uninterrupted time for playing, innovating, and creating are embedded in the context of the classroom environment. The classroom space is arranged to allow for movement, use of tools, and construction. The environment serves as a third teacher and places children in the center.

Talking and thinking curriculum. The curriculum in the innovation room is created and designed by the teacher and implicitly includes iterative design cycles. In many instances children engage in talking and thinking through their projects. This provides opportunity for the children to use their imaginations, engage in creative thought, problem-solving, playful exploration, and tinkering.

Culture of support. Children develop their language abilities through sharing and collaboration as they tinker with ideas, problems, and creations. Examples have been noted in my observations of peer mentoring and peer support. This collaboration allows for children to solve problems in their own way. The words design, collaboration, iteration, failure, re-design, and production are not words that a typical five to eight-year-old child would use. These words are embedded in the learning process and create a non-competitive atmosphere that supports sharing of not only products but also the process of innovation, creativity, and the design

process. This culture provides opportunity for equity across the classroom community, through various expressive modes. In order to create future innovators, educators need to address design thinking as a pedagogical practice. The five phases of design outlined by the d School: Institute of Design at Stanford University (2015) include discovery, interpretation, ideation, experimentation, and evolution. The design process closely resembles Resnick's (2007) approach to learning and provides insight into how creativity and the generation of ideas can be cultivated. Together, the use of design thinking and allowing time for children to tinker may result in the redesign of school culture, provide opportunity for deeper learning, and prepare children for life in our ever changing world.

Literacy and play. The innovation room provides children with opportunities to engage in literacies that are multifaceted with both individual and social dimensions. As children tinker and play, literacy is constructed through meaningful social practices. Making empowers the children to connect with everything they know and to stretch their imaginations into learning new concepts. Literacy skills are made relevant to the students within the context of their experiences. Playing with materials and tools provides opportunity for the children to engage in conversation, collaboration, and research to make projects and works-in progress better. Opportunities to present real, workable constructions, in a creative culture of shared values, results in empowerment and making sense of new experiences through multiliteracies.

Limitations of the Study

There are limitations to the study that should be considered in evaluating this research. First, as a researcher, I recognize that I brought my own beliefs about early literacy practices and play to this study. In reporting this research, I acknowledge that the results were selective in

nature and not completely objective. I also acknowledge that sociocultural theory, play theory, and new literacy theory held a degree of influence over my interpretations of the data.

Second, I studied the classrooms and pedagogical practices of four teachers. Their experiences, pedagogical approaches, teaching techniques, and classroom cultures cannot be generalized to a larger population. Further, the teachers selected to participate in the study taught at Bricolage for at least one year. My study of one teacher, Mr. Reynaud, did not continue during the 2016 school year, as he did not return to Bricolage. However, I did negotiate a research relationship with Mr. Owens, who was hired as the *innovation* teacher and who began teaching in the fall of 2016.

Third, my study was limited to one charter school in New Orleans, Louisiana. While the design of the school environment and curriculum may be useful for constructing a school model or mini-maker space in classroom contexts, the socio-cultural and political structures may not be useful for traditional schooling environments.

Finally, the teachers in my study do not represent a diverse group in regard to ethnicity. The teachers in this study allowed me to study them closely and were willing participants who had at least one year of experience at Bricolage Academy, except for Mr. Owens. Studies involving diverse groups of teachers would provide insight into and understanding about applying theory to practice, literacy pedagogy, and how the underpinnings of a diverse community may impact innovation.

Implications for Future Research

Research on design thinking, new literacies, and bricolage/tinkering as a form of literacy can provide insights into an expanded definition of literacy in our current time. The school

context and design team (educators) play a critical role in shaping a cultural and learning community that values multiple representations of literacy engagement. This study contributes to our understanding of the process of design in curricular development for literacy and suggests future directions for research to include the literacies of play and tinkering to better understand the transformative process of meaning making (Kress, 1997). The research shows how children are using the resources they have at hand. Understanding how environments support play and tinkering as children engage with tools and multiple modes of meaning making within a classroom “mini” maker space may help to extend current definitions of literacy and re-define play to include constructionism and representations of making as literate possibilities.

Thinking about the sociocultural environment, Papert (1980) stresses the importance of creating learning environments that facilitate acts of constructing, sharing, and presenting to others what is learned. This approach to design leads children to evaluate and reflect upon their own work and creates a sense of accomplishment. Papert’s (1980) theory of constructionism in the design of learning environments is based on the philosophy that children are more successful in learning something when 1) they are given an active and creative role in the learning process, and 2) the results of their creativity are presented to an audience. This leads to further investigation of the characteristics of classroom learning environments that support constructionism, *making*, and learning by design.

As outlined by Marsh (2006), the roles of the ‘designer’ and ‘bricoleur’ (Lankshear & Knoble, 2005) require a new understanding for educators. While Marsh’s work references children’s creations of multimodal, digital texts, I argue that the design of text construction, both digital and non-digital, needs to be understood to push traditional literacy curricular approaches

to reflect contemporary multimodal communicative practices (Marsh, 2006). The study findings suggest an increased examination of the shaping of educational environments and mindsets regarding new literacies, play, and bricolage.

Serious play, described as an intense experience in which children “voluntarily devote enormous amounts of time, energy, and commitment and at the same time derive enjoyment from the experience” (Reiber et al., 1998, p. 29) also noted as flow (Csikszentmihalyi, 2008), has been explored in educational technology literature, specifically related to computer programming and video game play (Gee, 2007; Reiber et al., 1998). There is a gap in the research literature on how serious play, *flow*, and tinkering may relate and contribute to our understanding of children’s enactments of new literacies. Even more, these topics have not been studied with young children and particularly in formal educational settings. The process of design may also contribute to our understandings of how to create a climate of innovation and meaning making through multiliteracies in formal classroom environments with young children and therefore an investigation of these topics is necessary.

In this dissertation, I attempted to share experiences and understandings of history, culture, literacy, play, and the sociocultural context of Bricolage Academy. While the critical and political debates around the charter school movement will continue, the purpose of this document was to share Bricolage Academy’s vision and philosophy and to provide insight into children’s unique educational experiences and learning opportunities through play and innovation. I conclude with a note of appreciation to the Bricolage Academy staff and children in this study, as they have illustrated the power and complexities of tinkering and multimodal literacy enactments through “making” – true *innovative practices*.

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TABLE 1: Data Collection Timeline and Procedures

This table details my involvement with Bricolage Academy over the sixteen months of the study.

Academic Year	Month	Procedures
Year 1: 2014-15	September	Permission to conduct research study at site 4238 St. Charles Avenue, New Orleans, LA
	October	Familiarize self with school, introduction to staff, observations of K/1 and innovation classrooms
	October- February	Begin formal data collection; Observing/audiotaping/video recording/photos 3 times per month focusing on literacy, play/tinkering in the classroom and innovation room Semi-structured interviews
	February	Selection of focal classrooms, Ms. Lorio, Ms. Turner, Mr. Reynaud
	February – May	Formal data collection: • Observing/audiotaping/video recording/photos 3 times per month focusing on literacy, play/tinkering in the classroom and innovation room • Photographs of K/1 children's written and constructed products • Follow up interviews with participants
Year 2: 2015-16	September – January	New school – Familiarize self with classroom members and routines • Follow up observations • Selection of focal teacher Mr. Owens- innovation • Observing/audiotaping/video recording/photos of K/1 and innovation classrooms for a total of 6 visits • Semi structured interviews

TABLE 2: Examples of Children's Prototypes

Invention Name	Animal	Materials	What does it do?
Water sucker	Elephant	Cardboard box, tape, straws	Helps people suck up the water when it gets to high
Butterfly Backpack	Butterfly	Paper, pipe cleaners, tape	Helps people to fly so they can see better
Porcupine Spikes	Porcupine and Rhino	Paper, tape, string, pipe cleaners	This is armor, it protects humans. You strap it on your back. This is a horn to strap on your head to protect you from harm.
Grabber	Monkey and Frog	Paper, straws, pipe cleaners and tape	This helps you grab stuff when you cannot reach it.
Swimmy Tail	Shark and Mermaid	Paper, staples	This tail will make humans swim faster like a shark
Digger	Anteater	Paper, paperclip	This is a digger. You put it on your finger and it will help humans dig. Like if you lose your toy in the dirt, you can dig to find it.
Air Blower	Elephant	Cereal box, straws, tape	This will help humans when they are swimming so they can go deeper
Spring Shoes	Giraffe	Pipe cleaners, paper, tape	These shoes will make people see farther.
Picker Upper	Frog	Paper, pipe cleaner, tape, straws	Just like a frog picks up stuff – this is like a frog tongue. It is long and rectangular to help people pick stuff up. It is also sticky so the things stick to it.

TABLE 3: Comparisons

Workshop Model & the Design Model with Multiliteracies Pedagogy

Readers and Writers Workshop	Innovation	Multiliteracies Pedagogy	Knowledge Processes	
Mini-lesson/modeling	Mini-lesson	Situated Practice  Overt Instruction	Conceptualizing Evaluating Analyzing	
Guided Practice Purpose for Reading Purpose for Writing Planning Stage	Questioning Planning stage	Critical Framing	Experiencing Tinkering Analyzing	Iterative Design Process
Reading Comprehension Writing /drafting	Making	Experiencing	Play Work Flow	
Reading the text Production of Writing	Production of Artifact	Transformed Practice	Applying	

Appendix A: Bricolage's Core Values

Bricolage's core values are symbolized by three i's...



Integrity. Do your best.

Our measure of educational equity is that all students have the opportunity to achieve whatever they want to, regardless of their backgrounds or circumstances. We believe that when people commit to consistently doing their best work, special things can happen. This resulting greatness is defined not only by the quality of the final product, but also by the learning that occurs in the process of creating it.

Empathy. Care for others.

We consider four qualities of empathy: perspective taking, staying out of judgment, recognizing emotion and communicating emotion. We believe that empathy is something people can develop, and we aspire to help our students do so. Empathy builds relationships between people and promotes a sense of belonging for all. By practicing empathy we will all be able to relate to others with backgrounds different from our own.

Innovation. Be a problem solver.

We define innovation as creative problem solving. This is most easily identified in our innovation class, but its importance can be felt in everything we do. It can manifest as a student designing their own project to explore similarities between children from different cultures across the world, or two students deciding to work out an issue by stepping aside to discuss their dispute. Bricolage is full of innovators: people, who are intrinsically motivated, take initiative and learn from failure. We explicitly teach these qualities to our student daily, and as adults, we aspire them as well.

Appendix B: Administrator Semi-Structured Interview Guide

The Literacy of Play and Innovation: A case study of Bricolage

I would like to thank you for your willingness to participate and take time out of your schedule for this interview.

This interview is conducted as part of a study to understand perspectives on the intersection of play, innovation and literacy. You are free to withdraw or terminate your participation in this study at any time you wish.

You may also decline or choose not to answer any questions that make you feel uncomfortable. I am also open to any topics you would like to share if you think that could give a better explanation for this interview. If you agree to participate, please sign the consent form. You may keep a copy for your own reference.

1. Tell me about you/ your background in education.
2. Tell me about the history of your school.
3. Tell me about the school's philosophy/theories of learning.
4. Tell me about the teaching/learning atmosphere.
5. Tell me about a typical day for you.
6. Tell me about a typical day for students.
7. Tell me about a typical day for teachers.
8. What is innovation/ how do you define innovation?
9. What is play/tinkering/ how do you define play/tinkering?
10. How often do children have opportunity to play/tinker/innovate?
11. Do you innovate?
12. Tell me about the positive and negative aspects of play/tinkering/ innovating in student learning.
13. Tell me about your schools philosophy of literacy instruction/learning.
14. Can you give me examples of how your school implements a literacy environment that fosters play/tinkering/innovation during literacy time?
15. What do you notice most about your students during literacy time?
16. Are there changes in students' academic performance?
17. Are there changes in students' communication skills?

18. Are there changes in students' literacy skills?
19. How is student progress and engagement measured?
20. Do you think a play/tinker/innovate philosophy helps students to engage more with literacy? How? Provide examples?
21. How do children innovate? Can you give examples?
22. What kind of interactions do you observe when students are engaged in play/tinkering/innovation?
23. What do you think is the hardest aspect of being an administrator in an environment that promotes play/tinkering/innovation?
24. What are the factors that you think could hinder the integration of literacy play/tinkering/innovation in classroom?
25. What would you still like to learn about the integration of play/tinkering/innovation and literacy in the classroom?
26. Please describe your ideal professional development program that would help you, to help your teachers prepare to maximize the potential of children's play/tinkering/innovation and literacy.
27. If I were a teacher who is new to your school what would you advise me?
28. What do you think about the prospect of play/tinkering and innovation in education in the future?

End of interview:

Are there other teachers that you would like to suggest to me that you think could be of help for this study?

Are there any questions that you think I should have asked?

Is there anything else that you want to share?

Do you mind if I contact you again if I have further questions or need clarifications?

Thank you.

Appendix C: Teacher Semi-Structured Interview Guide

The Literacy of Play and Innovation: A case study of Bricolage

I would like to thank you for your willingness to participate and take time out of your schedule for this interview.

This interview is conducted as part of a study to understand teachers' perspectives on the intersection of play, innovation and literacy. You are free to withdraw or terminate your participation in this study at any time you wish.

Instructions for participants: During the interview please do not to reveal any personal, sensitive or identifiable information about a 3rd party (i.e. name or other identifiable information about a student, teacher, parent, etc) and instead use generic terms (i.e. a student, teacher, etc). Also, please refrain from revealing any highly personal or sensitive information about yourself. If information about a 3rd party or sensitive or identifiable information is revealed, it will be erased from the audio recording and not be included in notes, transcripts or publications.

You may also decline or choose not to answer any questions that make you feel uncomfortable. I am also open to any topics you would like to share if you think that could give a better explanation for this interview.

1. Tell me about your school.
2. Tell me about the school's philosophy/theories of learning.
3. Tell me about you/ your background in education.
4. Why have you chosen to teacher here?
5. Tell me about the learning atmosphere.
6. Tell me about a typical day for you.
7. Tell me about a typical day for students.
8. What is innovation/ how do you define innovation?
9. What is play/tinkering/ how do you define play/tinkering?
10. How often do children have opportunity to play/tinker/innovate?
11. Do you innovate?

12. Tell me about the positive and negative aspects of play/tinkering/ innovating in student learning.
13. Tell me about literacy time.
14. What is your role during literacy time?
15. Tell me about a typical literacy lesson.
16. Can you give me examples of how you implement a literacy environment that fosters play/tinkering/innovation during literacy time?
17. Can you tell me about a literacy lesson that went really well?
18. What do you notice most about your students during literacy time?
19. Are there changes in students' academic performance?
20. Are there changes in students' communication skills?
21. Are there changes in students' literacy skills?
22. How is student progress and engagement measured?
23. Do you think a play/tinker/innovate philosophy helps students to engage more with literacy? How? Provide examples?
24. How do children innovate? Can you give examples?
25. What kind of interactions do you observe when students are engaged in play/tinkering/innovation?
26. What do you think is the hardest aspect of teaching in an environment that promotes play/tinkering/innovation?
27. What are the factors that you think could hinder the integration of literacy play/tinkering/innovation in classroom?
28. What would you still like to learn about the integration of play/tinkering/innovation and literacy in the classroom?
29. Please describe your ideal professional development program that would prepare you to maximize the potential of children's play/tinkering/innovation and literacy.
30. If I were a teacher who is new to your school what would you advise me?
31. What do you think about the prospect of play/tinkering/innovation in education in the future?

End of interview:

Are there other teachers that you would like to suggest to me that you think could be of help for this study?

Are there any questions that you think I should have asked?

Is there anything else that you want to share?

Do you mind if I contact you again if I have further questions or need clarifications?

Thank you.

Appendix D: Child Semi-Structured Interview Guide

For child 5 - 6 years of age

The Literacy of Play and Innovation: A case study of Bricolage

Thank you for helping me with my project.

We are going to talk a little bit about your school, your thoughts on playing, innovation and literacy. You are free to tell me to stop during our conversation or if you decide that you do not want to help me with my project you can just say so.

You also may choose not to answer any questions that you do not want to answer. If there is something that you would like to share to help me learn about you and your school that it is okay to talk about. Your parents have signed a letter that says it is okay for us to talk.

1. Tell me about your classroom/school.
2. Tell me about what you like to do here at Bricolage?
3. Tell me about what you are doing (playing/innovating) or what you have done? (When engaged in an activity or when an activity is complete).

End of interview:

Are there any questions you think I should have asked you?

Is there anything else that you want to share with me?

Do you mind if we talk again if I have other questions or need to clarify something?

Thank you.