

January 2015

Facilitating a Transdisciplinary Approach in Teacher Education Through Multimodal Literacy and Cognitive Neuroscience

Margaret Billings Krause

University of South Florida, krause1@mail.usf.edu

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Facilitating a Transdisciplinary Approach in Teacher Education Through Multimodal Literacy
and Cognitive Neuroscience

by

Margaret Billings Krause

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Teaching and Learning
with a concentration in Literacy Studies
College of Education
University of South Florida

Major Professor: James King, Ed.D.
Jenifer J. Schneider, Ph.D.
Diane Yendol-Hoppey, Ph.D.
Emanuel Donchin, Ph.D.

Date of Approval:
April 7, 2015

Keywords: literacy, marginalized learners, pre-service teachers, multimodalities

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Dedication

“I sustain myself with the love of family.”

-Maya Angelou

This dissertation is dedicated to Will, Trey, Sara, and Ken. Your unrelenting support during my journey will always be cherished.

“To whom much is given, much is expected.”

-Luke 12:48

Mom and Dad, thank you for providing a foundation for my education. Your endless words of encouragement enabled me to believe in myself.

Acknowledgments

My journey through the doctoral program and the dissertation writing process provided opportunities for me to extend my thinking in ways I never thought possible. I am forever grateful for the challenging experiences that allowed me to expand my conceptualizations of literacy. These expansions in my understanding will serve as a guiding light for my future endeavors in academia. I have many individuals to thank for guidance, support, and words of encouragement during the course of my doctoral studies.

Dr. James King, my major professor, thank you so much for allowing me to see the passion you have toward understanding complex literacy topics. Your support, as I navigated through complex, uncharted, and seemingly discombobulated topics, enabled me to pursue my passion for understanding marginalized learners. You encouraged me to look at topics from a variety of angles, challenged my thought process, and promoted my desire to look across multiple disciplines in order to find more holistic understandings. Your mentorship and encouragement is greatly appreciated, and your sharing of knowledge is priceless.

To members of my dissertation committee: Dr. Jenifer Schneider, you opened my eyes to the affordances of multimodal literacies. You pushed my thinking, challenged my ideas, and encouraged me to delve deeply when I was only scratching the surface. Your guidance provided a foundational support for my developing understanding of multimodal literacies. Dr. Diane Yendol-Hoppey, I am forever grateful for the background and opportunities you provided for me in understanding teacher preparation. I developed an unexpected passion toward nurturing pre-service teachers who enter the classroom as inquirers into their own practice. This was largely in

response to the encouragement you provided through our ongoing conversations about teacher preparation. Further, I am grateful for the way you nurtured my understanding of research. You pushed me to think deeply about methodology as I inquired about my practices as a teacher educator. Dr. Emanuel Donchin, thank you for welcoming me as a learner in the field of cognitive neuroscience. You provided essential background for me as I searched to expand my knowledge about the neuroscience of reading, specifically with regards to developmental dyslexia. Your feedback, conversation, and guidance enabled me to travel in between the disciplines of education and cognitive neuroscience in order to become more informed when making translations from neuroscientific research to authentic educational practice.

I would like to thank all of the pre-service teachers who participated in my research studies. As I facilitated your learning, I also participated as a learner alongside you as you demonstrated the power of multimodal literacy experiences. Our professional conversations and the professional learning communities in which we all participated enabled me to enhance my understanding of effective literacy practices within teacher education and within the elementary classroom. I have always known that I love to teach, but you all made the art of teaching seem like one of the greatest gifts.

My “partners in crime”, Julia Hagge and Yvonne Franco, deserve the most special recognition. How could I have survived all of our late classes without an enlightening conversation with one of you as I traveled back to Lakeland from Tampa? Julia, we have collaborated on research and propelled each other’s thoughts about marginalized learners in such meaningful and authentic ways. I hope we have a bright future together as researchers of multimodal literacies. Yvonne, you are so gifted in your thinking about pre-service teachers and nurturing their potential. Our conversations about facilitating inquiry, nurturing community

within a cohort, and navigating the doctoral program provided some of the best motivation to persevere through some of my greatest challenges. Thank you both for friendships I know will last a lifetime.

To my fellow colleagues and professors: Margaret Branscombe, Aimee Frier, Becky Powell, Lindsay Persohn, Brian Flores, Csaba Osvath, Sarah Pennington, and Anne Anderson, you all created such a rich community of learners. The diversity of interests between us never ceased to enlighten me. Thank you for cultivating such rich thinking. Dr. Jennifer Jacobs, Dr. Danielle Dennis, and Dr. Janet Richards, your rich knowledge of literacy practices and teacher education enhanced my research endeavors and learning throughout the program. I could not be where I am today without the valuable experiences you all provided in both my professional and learning experiences.

I am blessed to have friends and family who supported me in such multilayered ways. Sara Roberts, you believed in me and made me feel like my dreams were within reach. Your countless counseling sessions, and your willingness to listen to my new ways of thinking, reiterated why you are a treasured friend. Elizabeth Vocke, Jesse Eaton, Deanna Bayless, Jil Bevis, Brandy Lansford, Brittain Fraser Pinkney, Courtney Philpot, Stacy Davis, Leigh Harris, and countless friends, thank you for sticking with me. I know I have not been the best friend as I have been immersed in my work, but your unconditional acceptance of me through my absence is appreciated beyond measure.

Words cannot express my gratitude to my family. Ken, I know I have been absent in so many ways, but you have loved me through all of my imperfections. Thank you for having the strength to persevere with me and for encouraging me to persevere even through the most challenging of times. Will, Trey, and Sara, you are my greatest gifts. Thank you for your support

as I pursued my life's dream. I hope you all will reach for the stars one day. You are all so blessed with your talents. You will always be "my sunshine". Mom and Dad, you are my pillars of strength. You are the ultimate model for me in how to maintain strong character through all of the things we encounter in life. You believed in me, and you often took over the role of parent as Ken traveled and I participated in night classes or teaching responsibilities. The unconditional love you demonstrated to me is forever engrained in my memory. Oma, Opa, Danisha, Dave, and Allie, you cheered me on throughout my work, and that means the world to me.

To Tommy: I know you are my guardian angel. I know you are proud of me right now. I know as you walk through the gardens of Heaven, you look upon the blessings bestowed upon our family and you smile. I praise God every day that I was able to call you my brother. Your model of character, perseverance, and your witty sense of humor lives on in our family and in our hearts infinitely.

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Abstract

This dissertation is a compilation of research and theoretical papers based on the affordances of multimodal literacies for marginalized learners and for pre-service teachers' developing conceptualizations of literacy. Through a transdisciplinary lens, the author considers complex issues presented in traditional, print-based learning environments that potentially marginalize learners in their developing abilities to become successful participants in the multiple literacies in the real world.

Three studies focus on pre-service teachers and their developing understanding of effective literacy-related classroom practices. Chapter Three explores potential affordances of a multimodal learning environment for pre-service teachers with self-identified reading difficulties. The phenomenological study highlights differing needs of pre-service teachers with reading difficulties as they navigate the meaning-making process within a literacy methods course. Further, it provides tangible examples of the interplay between neurocognitive mechanisms and the social and cultural factors students face as they work within a variety of modal platforms. Through a qualitative case study, Chapters Eight and Nine explore the ways multimodal learning experiences within a literacy methods course influenced pre-service teachers' literacy identities and how their developing identities translated into classroom pedagogical decisions. Chapter Nine proposes a framework for understanding pre-service teachers' developing literacy identities.

Chapters Five and Six explore the needs of learners marginalized in traditional, print-based classrooms through a critical and theoretical lens. Chapter Five explores the authentic

literacy practices of the author's son, who is identified as a talented learner, yet unmotivated in the traditional classroom setting. She argues traditional conceptualizations of literacy as reliant on print forms of text are outdated and unresponsive to the dynamic changes of the 21st century. Further, the author argues the lack of responsiveness to dynamic and multimodal characteristics of the globalized world contribute to the perceived lack of motivation talented boys demonstrate in school-based literacy spaces. Chapter Six provides a review the literature on the "functional circuitry of the reading brain" (Schlaggar & McCandliss, 2007), and it reviews neuroscientific studies of individuals with developmental dyslexia (Lyon, Shaywitz, & Shaywitz, 2003), which provide evidence for amodal sluggish attentional shifting (SAS) as a causal factor for amodal temporal processing deficits.

The author provides autoethnographic vignettes between research and theoretical papers, serving as insight into the author's journey in her own literacy identity development. While chapters following each vignette utilize a variety of qualitative methodologies and review empirical research, the author's goal is to take the reader on a journey as she weaves together her work as a literacy researcher and educator. Ultimately, the author's intention is to evoke both emotion and greater understanding about what it means to be literate in our dynamic society.

Chapter One

Introduction

Undergoing change are the days of referring to a phone book, reading a printed newspaper, or reading a trade book in printed form. Our society continues to experience dynamic growth in technology and rapid emergence of new forms of communication, creating an exponential number of resources children can access for making meaning in their environment. “Images and texts are being combined in unique ways, and readers in today’s world need new skills and strategies for constructing meaning in transaction with these multimodal texts as they are encountered during the social practices of interpretation and representation” (Serafini, 2010, p. 87). In response, “literacy pedagogies must now account for the burgeoning variety of text forms associated with information and multimedia technologies” (New London Group, 1996). In traditional academic settings, literacy practices confined to only the navigation of print-based texts arguably limit opportunities for learners to become successful participants in the multiple literacies of the real world. This calls for literacy educators to expand their view of literacy toward a *pedagogy of multiliteracies* (Cope & Kalantzis, 2000).

During my journey toward becoming a literacy scholar and literacy teacher, I traveled down multiple pathways. The YouTube video link describes my journey (Margaret Krause Dissertation Introduction: <http://www.youtube.com/watch?v=KWDz-KqHL8Q>). It began with my feverish quest to define what being literate currently means in our ever-changing, globalized world. This quest was largely in response to my experiences working with a group of elementary students with dyslexia. I noticed a particular group of students struggling to move forward in

their literacy development given the constraints of the typical classroom scenario. Initially, this journey led me toward the theory of multiliteracies proposed by the New London Group (1996) and the subsequent work of other scholars who were re-conceptualizing what it means to be literate in the 21st century (Cope & Kalantzis, 2000; Kress & Van Leeuwen, 2001; Jewitt, 2012; Kress, 2014). I became particularly interested in a component of the theory of multiliteracies, the notion of multimodality. Multimodal learning experiences provide potential affordances while individuals make meaning through a variety of resources during literacy experiences within, and across, a variety of different modes: visual, spatial, gestural, and kinesthetic (Kress & Van Leeuwen, 2001; Jewitt, 2012). Meaning-making resources include image, gesture, gaze, body posture, sound, writing, music, speech, and a variety of other resources (Jewitt, 2012). Multimodal experiences, such as those encountered in the use of digital technologies, engagement in social interactions, or artistic experiences, offer unique and shared semiotic opportunities for students. The expansion of literacies needed in response to dynamic technological advances requires individuals to combine semiotic resources for new creative expressions (Barton & Lee, 2013). These combinations and types of semiotic experiences may differ from traditional classroom-based literacy experiences, which typically focus on print-based forms of literacy (Wissman et al., 2012). Arguably, multimodal literacy experiences mimic the authentic meaning-making experiences in the real world.

Given my teaching background in working with students who have forms of dyslexia (Lyon, Shaywitz, & Shaywitz, 2003), I became enthralled with the potential affordances provided through multimodal experiences as proxies for traditional literacy. The Prezi links provide examples of my early thinking about the affordances of multimodal literacies for struggling readers (Beyond Sounding it Out:

http://prezi.com/ofr6rbygpxqb/?utm_campaign=share&utm_medium=copy; Multimodal Semiotics for Struggling Readers: http://prezi.com/wadsfpvv5l3l/?utm_campaign=share&utm_medium=copy&rc=ex0share). As outlined in the Prezis, these experiences allow potentially marginalized students opportunities to feel empowered in their learning by providing avenues for success. As I moved toward teaching pre-service teachers at the university level, I watched this scenario unfold within undergraduate literacy methods courses I taught to university-level pre-service teachers. Students who were typically marginalized because of reading difficulties in traditional settings, seemed to go deeper into the content and become more engaged with multimodal experiences embedded within the course work. As I continued my journey, I wondered why these multimodal experiences seem to empower students to consume content and produce artifacts of their learning in what seemed to me much deeper and more productive ways than they typically demonstrated in traditional academic settings, where print-based tasks are typically privileged. Are these observations a product of social interaction, new access and space for learning inside the classroom, neurocognitive mechanisms, or a combination of factors? Could the consideration of how these factors interact provide insight into literacy learning opportunities and transform our conceptualization of literacy learning?

These questions led me down another pathway. In order to inform my developing understanding of literacy, I looked towards cognitive neuroscience to enhance my understanding of what was taking place within multimodal literacy experiences. Embedded within the literature from the cognitive neuroscience of reading, Gabrieli and his colleagues (2010) provide a foundational knowledge of “the reading brain”, while researchers such as Schlaggar and McCandliss (2007) provide background on the brain’s “functional neurocircuitry” (p. 475). My interest was further enhanced through my experience in an institute provided at the

Massachusetts Institute of Technology (Summer, 2013), where neuroscientists, such as John Gabrieli and Joanna Christodolou, shared their findings about the neuroscience of reading and reading disabilities, like dyslexia. Through the aforementioned experiences, coursework in cognitive neuroscience provided at the University of South Florida, and deep reading of literature embedded within the neuroscience of reading, I realized I was gaining a more holistic understanding of literacy through my transdisciplinary learning efforts.

Leavy (2011) defines transdisciplinarity as “an approach to conducting social research that involves a synergistic collaboration between two or more disciplines, with high levels of integration between the disciplinary sets of knowledge” (p. 90, eReader). As a literacy teacher educator in an undergraduate education program, I considered the importance of merging multiple disciplines. Upon this consideration, realized I utilized a transdisciplinary lens in the development of my own conceptualization of literacy. However, I wondered how I potentially use my transformed understanding of literacy based on the synergy I found between the disciplines of cognitive neuroscience and literacy to inform my practice as a literacy teacher educator? How could the transdisciplinary nature of my teaching and research influence the ways in which my pre-service teachers develop as future literacy teachers? Through inquiry into my own teaching practices at the university level, I noticed how the incorporation of multimodal experiences into my teaching made an impact on the way my students engaged with the content I delivered as well as how they produced evidence of their understandings. Repeatedly, my students indicated they felt more connected to content because of the ways were engaging with material together as a class.

Ultimately, these multiple pathways cultivated a more holistic personal understanding of multimodal literacy, created through the synergy between cognitive neuroscience, multimodal

literacy, and literacy teacher education. This understanding drives the overarching purpose for my dissertation. Leavy (2011) states, “Transdisciplinary research practices are issue- or problem-centered approaches to research that prioritize the problem at the center over discipline-specific concerns, theories, or methods” (p. 178, eReader). I define the overarching purpose of my work with the following questions:

How does a transdisciplinary approach to multimodal literacies research inform my understanding about effective literacy practices for the 21st century?

- 1) In what ways has my identity as a literacy scholar and literacy teacher educator expanded in response to the facilitation of multimodal experiences for pre-service teachers?
- 2) In what ways has my identity as a literacy scholar and literacy teacher educator expanded in response to transdisciplinary research?
- 3) In what ways have pre-service teachers’ literacy identities expanded in response to multimodal experiences within literacy teacher preparation coursework?
- 4) How does the transdisciplinary research inform my understanding of literacy practices for marginalized learners?

Considerations/Possible Limitations of Transdisciplinary Research

While I view the adoption of transdisciplinary ways of thinking for pre-service teachers and myself as a critical perspective for nurturing responsiveness to the dynamic nature of the 21st century, I realize challenges exist when striving to synthesize across disciplines in order to form new solutions to literacy and educational challenges. First, each discipline privileges disciplinary-specific methods for research. A discipline specific approach has stymied past efforts to bridge fields, like neuroscience and education. Ansari and Conch (2006) posit multiple methodologies and levels of analysis in multiple contexts must be considered in both teaching

and research. Dissolution of discipline boundaries is required for the construction of novel methodologies tailored to merging neuroscience and multimodal literacies (Leavy, 2011, p. 9). Another barrier is the need for “translators” across multiple disciplines (Brabeck, 2008). This could require transdisciplinary researchers to act as a bridge between a variety of disciplines, effectively translating research findings, while encouraging discourse to move research and practice forward.

The premise of transdisciplinary research is to merge understandings between relevant disciplines in order to better inform educational practices. Therefore, a multidimensional approach is foundational to the discipline. While quantitative, experimental designs are often valued in neuroscience research, educational models of research are varied due to the naturalistic environments in which they often take place. A shared understanding and acceptance of a broad range of methodologies is another core aspect of transdisciplinarity. This notion can extend from action research happening at the classroom level to the most controlled experimental settings. While reliability, validity, trustworthiness, and rigor of methodologies are essential, an acceptance of the insight each lens can bring builds the potential power of this emerging field (Leavy, 2011).

Multidimensional Approach to Understanding Multimodal Literacies and Literacy Identity Development

With keen awareness of potential barriers involved in transdisciplinary research, I realize my role in this research endeavor is multilayered. In essence, my role is that of an educational researcher, an investigator into cognitive neuroscience, a translator between fields of research and practice, and a facilitator of expanding conceptualizations of literacy for pre-service teachers. This work is complex. Therefore, my attention required my constant awareness of the

multilayered aspects of transdisciplinary work. This awareness is also required in order to remain authentic in my roles of researcher and practitioner.

In the following chapters, I use a variety of research and practitioner methodologies to weave together my developing understanding of multimodal literacies, implications stemming from cognitive neuroscience, and implications for literacy teacher identity development. I use ethnographic methods, specifically autoethnography, to recount my journey as a literacy educator and provide insight into potential directions for literacy teacher preparation and multimodal literacies for marginalized learners. Essentially, autoethnography is a harmony of ethnography and autobiography or personal narrative where “people are in the process of figuring out what to do, how to live, and the meaning of their struggles” (Ellis & Bochner, 2006, p. 111). Autoethnography is an “approach to research and writing that seeks to describe and systematically analyze personal experience in order to understand cultural experience (Ellis, Adams, & Bochner, 2011, p. 273). Therefore, interwoven within the beginning of each section, I provide autoethnographic vignettes that foreground a variety of research studies I conducted throughout my exploration of transdisciplinary ways of considering literacy practices for the 21st century. This approach allowed me to develop an understanding of my personal experiences as an instructor and researcher while engaged with pre-service teachers during their teacher preparation experiences. Autoethnographers acknowledge the countless ways in which personal experiences influence the research process. Some of these decisions include who, what when, where, and how to do research, institutional requirements, and personal circumstances (Ellis, Adams, & Bochner, 2011). This is crucial in conveying my story as a literacy educator because it acknowledges the subjectivity, emotionality, and personal interests as I engage in the research process, rather than dismissing the relevance of potential influences. While the studies following

each vignette utilize a variety of qualitative methodologies and review empirical research, my goal is to take the reader on a journey with me as I weave together my work as a literacy researcher and educator. Ultimately, my hope is to evoke both emotion and greater understanding about what it means to be literate in our dynamic society.

Beginning My Journey as a Literacy Teacher Educator: The Exploration of My Literacy Identity

A Reflexive Exploration of My Literacy Beliefs. “Margaret Ann, I need you to come back here to the Bluebird table for reading group.” I looked up sheepishly as Mrs. Uncapher called upon me in front of all of my second grade peers. Without hesitation, I gathered my basal reader collection and scurried over to the u-shaped table. I could feel my face become hot and flushed as I found my place among my fellow “Bluebirds”. My heart secretly pounded in my chest as I took a few deep breaths in order to regain my composure. See the YouTube video link provided for a video narrative of the beginning of my journey as a literacy teacher educator (My Literacy Identity Development: The Beginning; <https://youtu.be/bQ2Kb9chNdo>).

Once all of the group members found their respective place at the table, we turned to a fresh page in our basal reader book to begin a new story. While I liked to read and I felt competent reading the stories in the collection, these stories weren’t like the books I read at home. They seemed incomplete, chopped off without all of the vivid details that propelled my imagination to run wild, and there were always the questions at the end that unnerved me. We rotated around the group, each student reading a portion of the story as our classmates used their fingers to follow along. I followed along intently because I was terrified of losing my place and feeling embarrassed if Mrs. Uncapher had to prompt me.

I knew I was in a “high” reading group back then. I was intuitive, like many second graders. But yet, I still felt embarrassed when my name was called. My thoughts raced when it was reading group time. I didn’t like the way it made me feel when the whole class connected who I was, my social identity to a degree, to my reading group status. I didn’t like it that my best friend, Liz, wasn’t in the group with me. I didn’t like it that I had to defend her to my fellow “Bluebirds” in the lunchroom when they said she couldn’t read the same chapter book series I was reading, when I knew she could and we shared many conversations about what we read in the series. I didn’t like how, at times, I had to downplay my reading ability so I wasn’t classified as a nerd. With all of these emotions, there was still an upside, I did think I was smart. Ultimately, it was nice to have that on my side.

Autoethnography is a personal account of one’s story, meaning the researcher is the “insider” because the “context is his or her own” (Duncan, 2004, p.3). Ellis (2004) suggests researchers systematically document their lived experiences as primary data for study through autoethnography. When researchers “do” autoethnography, they retrospectively and selectively write about “epiphanies” that result from being a part of a culture or feeling a connectedness through a cultural identity (Ellis, Adams, & Bochner, 2011, p. 275). As I look toward understanding pre-service teacher identity development, I realized I possessed insider knowledge through my own experiences as a student and instructor immersed in a community of pre-service teachers. Continually, I feel connectedness with pre-service teachers as I consider ways my literacy identity is dynamic and changes in response to my own experiences as an educator and lifelong learner. I began this chapter with a vignette about a vivid memory of my emotions during a second-grade reading group. I believe this was where I consciously began formulating my own conceptualizations about literacy, essentially, my first identifiable epiphany as I explore

my own literacy identity development. Next, I will provide insight into how my teaching practices, many years later in varied contexts, evoked such strong emotion about literacy practices that I was propelled into literacy research in order to find a more effective path for marginalized learners.

Embarking on the Journey: Two Students Provide an Infinite Impact

A Third-Grader Named John*. “John, please try to focus,” I said as I tapped on his desk. Feelings of frustration overcame me as I noticed John had nothing written in his journal during his morning work. Why not? Each day, the third-grade students in my class were expected to come in the room, unpack their belongings, get their water bottles filled and pencils sharpened, and start on their journals. That particular day, I provided a written prompt on the whiteboard that read, “This weekend I _____”. Surely he did something during the weekend. I know his parents, and I know they keep him active. Further, I know John. He expressed his love for sports, fishing, and exploring the woods behind his house during our daily morning meetings. I imagine he did *something* over the weekend. Why had he not written one word on his paper after sitting in class for 10 minutes? The only evidence of any thinking was a small doodle of a dirt bike in the margin. “Come on John,” I thought. “Get busy, and do your work!” I exclaimed. He looked up at me in a lethargic way then, he slowly started copying the prompt. I watched as his eyes darted from the board to the paper and back again as he methodically formed each letter. It was as if there was a disconnect between the print he saw and the print he wrote on the paper. Writing was not a smooth or automatic process for John. His face flushed when he caught my eye, and I quickly diverted my attention because I could tell I had already pushed him to the point of frustration.

Looking back on this scenario, I remember feeling disappointed in myself. I displaced my frustration on John's lack of effort and focus, when I think I was really frustrated with myself. I knew I was failing John because I could see his struggles. I was frustrated because I knew John was intelligent. I spoke with him regularly, and he always exuded excitement when speaking about his passions (sports, fishing, playing in the woods), but he shut down when it came to reading and writing. I knew I did not have the "toolbox" to access his abilities. I knew I wasn't allowing him to bring his gifts to the table. Instead, I was focusing on his weaknesses. What kind of teacher was I, anyway? Not the kind I truly wanted to become.

I was a third-grade teacher at a school designated to teach students of normal to high ability with a diagnosis of dyslexia. My class was comprised of 10 students, mostly boys. I was trained in a specific method for teaching children with dyslexia. The method was said to provide systematic, explicit instruction for students who struggled to read. In many ways, the method was backed by research based on the aforementioned qualities (Shaywitz et al., 2008). However, I often felt at a loss as I watched bewildered students laboriously work through their daily tasks. Each day, I drilled students with letter cards as they chorally repeated back corresponding sounds. I provided dictation activities, where students used Elkonin boxes (Elkonin, 1971) as they worked on phonemic awareness then, they translated the sound units into graphemic representations on notebook paper. Finally, I provided daily word building activities and traditional writing activities. Yes, I was providing explicit, systematic instruction, like the research suggests, yet I still faced challenges with motivation, students' self-efficacy, and a general sense of authenticity within my classroom environment. Where was I going wrong?

This takes me back to John's doodle in the margin of his journal. He drew a dirt bike. Was he trying to tell me that he rode a dirt bike this weekend? Had I completely discounted his

expression? As I contemplate this, it makes me wonder if I could have used that image as a catalyst for further expression. It also makes me think about the teaching method I used in this classroom full of students diagnosed with dyslexia. Why did the strategy fail to incorporate other means of literate expression- like drawing, acting, building models, or technology? After all, doesn't much of the literature, and even the same authors that promote systematic, explicit literacy instruction, suggest individuals with dyslexia are highly creative, out-of-the-box thinkers (Shaywitz et al., 2008)?

A Pre-service Teacher Named Brian*

Fast forward one year. After teaching John and his fellow third-grade classmates that year, I had an epiphany. I needed to go deeper in my thinking about literacy teaching practices. I needed to understand how to accommodate for the needs of marginalized learners in more effective ways.

With this need to go deeper, I started to wonder if, perhaps, most learners in a classroom are marginalized to some degree. After all, if educators adopt a "one-size-fits-all" curriculum, wouldn't there be places that might inhibit the potential of any learner, regardless of ability? It was obvious my students with dyslexia were marginalized when they were constrained by classrooms that primarily privilege print. The reverse scenario could happen, as well, meaning a student who relies on their ability with print as an effective form of expression could feel marginalized in a setting where alternative forms of communication are privileged. So now what?

This epiphany led me to the university setting, where I began my quest to satiate my intense thirst for insight into the complexity of literacy teaching practices. I began doctoral work in literacy studies, while simultaneously taking on the role of graduate assistant at my university.

Little did I know how this simultaneous work would propel me down a pathway of greater insight. During the first year of study and graduate assistant work, I spent time becoming acclimated to my new environment. I had to shift from strictly thinking about practical teaching applications to theoretical underpinnings of literacy learning. Then, I had to merge my practical knowledge of teaching into my developing theoretical understandings in order to teach pre-service teachers within the undergraduate program.

I'll admit this practice-to-theory then theory-to-practice spectrum where I traveled made me feel like I was "faking it until I made it". I didn't feel like a real doctoral student because I went from thinking I knew a lot about teaching to realizing I really would never know as much as I should. The world of "not knowing" was opened up to me. I entered the program thinking I would emerge with a Ph.D. and be an expert thinker about all things revolving around literacy only to find I entered into a lifelong quest to search for more. I wondered if everyone felt this way when they started a doctoral program. I wasn't sure if I had the potential to be the kind of thinker this work required. And then, there was the teaching part. Talk about "faking it until you make it"! In the midst of realizing how much I really did not know about literacy, I had to adopt the role of expert while teaching undergraduate literacy courses. The pre-service teachers were looking to me to provide their foundational knowledge of how to teach literacy in the school setting.

Here I go again adopting the "teacher as transmitter" model of thinking (Salomon, 1992). At this point in my developing understanding of literacy, I was so preoccupied with my own performance. I was worried about how others would perceive my expertise. I felt like I was as transparent as water in a crystal-clear spring. I knew everyone could see that I was a fraud, not worthy of being a scholar or a teacher at the university level. How could I ever know

enough? How could I ever deliver the all of the content these pre-service teachers need to know in order to enter the classroom as effective literacy teachers? It was mostly about me about me. I did not want to fail.

In the fall semester of my second year at the university, I began working with pre-service teachers involved in the new cohort model within our education program. In this model, pre-service teachers enrolled in methods courses while engaged with fieldwork. In essence, this allowed room for pre-service teachers to make direct theory-to-practice connections as they developed as teachers. My responsibilities included supervision of field experiences for students who were simultaneously enrolled in my section of foundational literacy methods courses. This is where I met Brian.

Brian came to me on the first day of our literacy methods class. I'll never forget how he seemed to slither into the classroom, find a seat in the back corner of the room, and approach me in the most timid of ways after he placed his backpack in his chair. As he awkwardly made his way toward me while I was preparing the technology at the podium for my presentation, he reluctantly extended his arm to hand me an official-looking document. The hand-off of the document came with no words from Brian, just an intense glare as I perused the unfamiliar information. I skimmed the document and I quickly realized it was a request for accommodations. After a year of teaching at the university, this was the first time a student presented a document of this nature. The document briefly outlined the need for additional support for Brian due to a diagnosed processing-disorder. Although I was quite preoccupied with my preparations for the course when Brian presented this information, that document peaked my curiosity, once again, about marginalized learners. I never considered the need for differentiated learning at the university level, until now. I acknowledged the reception of the document and

reassured Brian that I would provide the level of support needed throughout my experiences with him. Without adieu, he quickly darted back to his seat. Immediately, I wondered if I could attend to his learning needs appropriately.

This was the first time I became intricately involved with solving a dilemma that was more student-centered rather than based on my own performance while at the university. I know there were still elements of my need to perform effectively present in my teaching at this point, but Brian's need for accommodations, his reluctant demeanor during the first day of class, and my passion for starting my doctoral work fused together to make me wonder how Brian would be able to grasp the core literacy content of my class. My thoughts took me back to my third-grade student, John. It made me think about how traditional classroom settings appear with the teacher as a transmitter. It made me think about how students like John failed to thrive in that kind of environment. Could the learning needs of my new pre-service teachers, particularly the learning needs of Brian, inform my thinking about accommodating for marginalized learners. Does the university setting possess characteristics similar to that of an elementary school?

As I embarked on this semester with Brian and my cohort students, I became immersed in literature about ways to facilitate literacy learning. *It is important to note how my language has shifted toward facilitation of learning rather than the language of direct instruction.* A natural place to begin with my exploration of effective literacy practices began with work from the New London Group (1996) highlighting the need for multiliteracies in the 21st century. In Chapter Two, I present a brief literature review of multimodal literacies, a component of the theory of multiliteracies. In Chapter Three, I present a study motivated by my experiences with Brian and his fellow cohort students. My hope is for readers to gain insight into marginalized learners and

potential affordances of multimodal literacy experiences. In Section Two, I continue the story of my own literacy identity development.

Chapter Two

Multimodal Literacies: A Brief Background

In 1996, the New London Group conceptualized a *pedagogy of multiliteracies*.

Underlying this theory is the idea that being multiliterate is to be “socially and cognitively literate with all modes of communication” (Anstey & Bull, 2006, p. 23). When the New London Group (1996) conceptualized a pedagogy of multiliteracies, two major themes were highlighted. First, the group recognized globalization. The NLG defines globalization as referring to the growing significance of cultural and linguistic diversity (Cope & Kalantzis, 2000). However, Beck (2000) argues globalization is a more complex notion. Beck states:

Globalization means borders become markedly less relevant to everyday behavior in the various dimensions of economics, information, ecology, technology, cross-cultural conflict, and civil society... which is changing everyday life with considerable force and compelling everyone to adapt and respond in various ways (Beck, 2000, p. 20).

Second, the NLG acknowledged the pervasive influence of new technologies. Essentially they recognized that the creation of meaning is becoming increasingly “multimodal- in which written-linguistic modes of meaning are part and parcel of visual, audio, and spatial patterns of meaning” (Cope & Kalantzis, 2000). Within a pedagogy of multiliteracies framework (New London Group, 1996; Cope & Kalantzis, 2000), print literacies remain important modes that people use to construct and communicate meaning. Print literacies can be defined as “the reading and writing of some form of print for communicative purposes in peoples’ lives” (Purcell-Gates, et al, 2004, p. 26). This definition of print literacies groups reading and writing together in order to

acknowledge the reciprocity and interdependence of reading and writing acquisition (Clay, 1993). Therefore, the multiliteracies framework acknowledges that print literacies are an integral part of composing and consuming multimodal texts (Wissman, et al., 2012). However, from this perspective, print literacies are not privileged as in past definitions of literacy. Instead, they are viewed as modes of communication within a larger communication repertoire (Sanders & Albers, 2010).

A pedagogy of multiliteracies emerged in response to theorizations about conceptualized changes in communication within contemporary society (Jewitt, 2008). Expanding views of literacy make the responsibility for teaching literacy skills exceedingly complex and nuanced. Literacy spaces and practices are no longer bound by the four walls of a classroom (Edwards-Groves, 2011). Instead, new social, textual, and *technoliterate* practices (simultaneously functioning blend of technological and literacy skills) have “enabled students to become multimodal designers of text as they message, blog, Flickr, Facebook, Twitter,” Instagram, and Snapchat, essentially creating who they are for their future lives (Edwards-Groves, 2011, p. 49). These social and textual practices embedded within the authentic lives of students represent new requirements for students’ creativity and abilities to technically navigate and create multiple textual genres. Hawisher and Selfe (2004) emphasize if students do not possess skills to negotiate digital environments in terms of designing, authoring, analyzing and interpreting material, they “may be incapable of functioning effectively as literate citizens in a growing number of social spheres” (p. 1).

While these are important considerations, the ability to navigate print and communicate through writing continues to be central to school success, and it is essential for successful participation in most workplaces (Norman & Spencer, 2005). Therefore, developing the skills to

successfully navigate textual meaning, purpose, and audience becomes a central issue when contemplating effective literacy instruction. As Albers and Harste (2007) suggest, students need to become “agents of text rather than victims of text, whether that text is printed and found in school or visually digitalized and found in the street (p. 7).

For the purpose of this review, I focus on defining multimodality from a transdisciplinary perspective in our ever-changing society and within the educational landscape. In particular, I focus on the semiotic affordances of multimodal texts supported through literature from literacy research, psychology, and cognitive neuroscience. While a large majority of research lies within the fields of literacy, psychology, and linguistics, I attempt to weave in evidence for the neurocognitive significance of multimodality. The overarching goal of this review is to illuminate how a synergy between diverse fields of research might potentially provide a more holistic and expansive analytical approach to understanding the influences of multimodal texts.

Multimodal Texts

Multimodal texts are defined as texts that combine two or more semiotic systems, or modes (i.e., linguistic, visual, audio, gestural, or spatial) (Shanahan, 2013). Jewitt and Kress (2003) describe *modes* as an “organized set of resources for meaning-making” (p. 1), where different signs function together in interactive and interrelated ways (Kress, 1998). Bezemer and Kress (2008) further define modes as “socially and culturally shaped resources for making meaning (p. 171). These resources include image, writing, layout, speech, and moving images, all of which can be utilized as learning resources. Bezemer and Kress (2008) highlight “meanings are made with a variety of modes and always with more than one mode” (p. 171). Within traditional school-based literacy practices, linguistic forms of communication are commonly privileged over visual, auditory, or gestural modes of communication (Miller &

Borowicz, 2006; Nelson, Hull, & Roche-Smith, 2008; Shanahan, 2013). A key construct within multimodality is how individuals make meaning in order to achieve specific aims.

There are a few assumptions that underpin the notion of multimodality. The first assumption lies within the notion that while language is “widely held to be the most significant mode of communication, speech or writing are part of a multimodal ensemble” (Jewitt, 2013, p. 2). In essence, multimodality takes a stance that while speech and language often play a central role in communication, this is not always the case- especially in today’s society (Norris, 2004, p. 3). From a multimodal perspective, this means the starting point lies within the notion that all modes are part of an ensemble, evident in an interaction or a representation. Therefore, the representations and/or interactions need to be studied through the lens of what choices are available to communicators, and how the communicators select and utilize their modal resources for given purposes (Jewitt, 2013).

Another assumption central to multimodal research lies within the notion that “all modes, like language, (have) been shaped through their cultural, historical, and social uses to realize social functions (Jewitt, 2013, p. 3). Extending this socio-cultural view of multimodality, Goswami (2011) indicates the individual situated within the social context has experience-dependent neurocognitive mechanisms at play when engaging within different modes. Therefore, neurocognitive mechanisms, psychological aspects, and prior experiences collectively contribute to the meaning-making choices, decisions, and experiences of individuals within social contexts. While multimodal research asserts that all communicative acts are “of and through the social” (Jewitt, 2013), there is merit to the notion that researchers must also consider the underlying neurocognitive mechanisms at play during multimodal experiences that shape the choices individuals make within social contexts.

A third assumption underpinning multimodality is the idea that individuals “orchestrate meaning through their selection and configuration of modes” (Jewitt, 2013). Therefore, it is through the interactions that take place within and between the modes that are significant for meaning making. Modes are interwoven with interconnected meaning made in other modes in order to create a holistic communicative event. The advent of the digital age has foregrounded new communicative avenues for making meaning and the necessity for researchers to consider the affordances of modes, modal configurations, and the semiotic potential involved in a plethora of contemporary discourse worlds (Jewitt, 2013).

Multimodalities and Social Semiotic Theory

Bezemer and Kress (2008) emphasize that what counts as a mode is a “matter of decision by communities and their social-representational needs” (p. 172). Further, Vygotsky (1981) highlighted that all sign systems have the potential to serve as “psychological tools” to mediate higher psychological functions. This social constructivist view of knowledge and learning implies that “learning occurs in situated sociocultural contexts and that knowledge is apprehended and appropriated in and through social interaction, dialogue, negotiation and contestation” (Luke, 2003, p. 398). Considering the notion that functional specialization in the brain is experience-dependent (Johnson, 2004), weaving together understandings about social semiotics and neuroscientific implications becomes relevant in gaining a more holistic understanding of multimodal experiences.

Michael Halliday, a philosopher and linguist, introduced the term “social semiotics” into linguistic discourse in his book *Language as Social Semiotic* (1978). Halliday’s ideas expand on Ferdinand de Saussure’s definition of semiotics as “the science of the life of signs in society” (Saussure, 2013, p.121). Building upon Saussure’s ideas, Halliday connects language and

society, expanding the focus of inquiry from a narrow allegiance to written language in linguistics, to a broader perspective that includes the range of systematic semiotics. In Halliday's view, languages change and evolve as "systems of meaning potential" (Halliday, 1978, p. 39). Essentially, language exists in its current form because of the way it serves people in their daily lives (Halliday, 1978). Therefore, rather than viewing language as a set of static codes, instead, it is a result of the interplay between individuals' cognitive, social, and cultural interactions.

When speaking of the interplay between cognitive, social, and cultural interactions within multimodal experiences, the metaphor of a *multimodal ensemble* is commonly utilized in order to explain how the resources from different modes combine to represent meaning. Within an orchestrated multimodal ensemble (Jewitt, 2009), "resources of different modes are combined and meanings are corresponding, complementary and dissonant as they harmonize in an integrated whole" (p. 301). Speech continues to serve as a major means of communication in face-to-face communication, and it is often accompanied by gesture, body posture, and gaze (Domingo, Jewitt, & Kress, 2014). In inscribed communication, writing has historically dominated in the context of print. However, digital means of communication are changing the communicative landscape (Domingo, Jewitt, & Kress, 2014). Sanders and Albers (2010) suggest "literacy is entangled, unwilling to be separated from other modes, media and language systems that constitute the very messages that are sent, read, and/or interpreted (p. 4). This underscores the necessity of the investigation of the full multimodal ensemble of communicative events in order to gain a richer understanding of multimodal experiences (Jewitt, 2008).

In order to facilitate this orchestration of modes, teachers are called on to consider in school and out-of-school literacy practices of students in order to permit "authorized fragments" of children's lives into the classroom (Jewitt, 2008, p. 254). For instance, Marsh (2006) explored

young children's (ages 2.5-4 years old) mediascapes in order to gain understanding of the complexities of their home literacy learning environments. Her goal was to gain insight into how digital media experiences played a role in family relations, accessing of knowledge, self-expression, and development of literacy skills. Marsh's findings suggest that students reappropriate their media experiences and design at home for purposes of creative play, family interactions, and transitions between in school and out-of school meaning-making (Jewitt, 2008). These findings suggest multimodal, pedagogic design needs to consider allowances for authorized fragments of student's lives, which are highly individualized. This consideration is complex because it involves issues of power in who draws the boundary between students' authentic lives and their lives in school and whether and where boundaries should occur. In these circumstances, multimodal texts can be thought of as "material instantiations of students' interests, their perceptions of audience, and their use of modal resources mediated by overlapping social contexts" (Jewitt, 2008, p. 259).

Modal Affordances

From the social semiotic perspective, rather than viewing language as being fixed into a set of static codes, language can be interpreted through different modes (signs), allowing individuals to adapt (or "author") to make meaning. From this viewpoint, modes have different semiotic affordances for different people. Affordances can be defined as "potentials and constraints for making meaning" (Bezemer & Kress, 2008, p. 171). It can be argued that the specific affordances of different modes in the making of complex signs allow for "modal ensembles", which convey complex meaning that attend to personal meaning making, rhetorical intentions, as well as, communicative demands of the audience (Bezemer & Kress, 2008, p. 172). A multimodal perspective of textuality, "attends to linguistic resources (speech and writing) as a

part of a multimodal ensemble in which resources are organized, designed and orchestrated to realize curriculum knowledge and pedagogic relations” (Jewitt, 2007, p. 276). Looking beyond the multimodal ensemble, it is crucial to “distinguish between the ‘pre’-designed constraints and potentials of a particular platform and what “can be done on or with it” in terms of literacy development (Domingo, Jewitt, & Kress, 2014, p. 2). For example, blogging platforms, such as Wordpress, offer particular “grammar” that sets out the potentials and constraints for “writing online” (Domingo, Jewitt, & Kress, 2014). While there are a multitude of possibilities that extend beyond the Wordpress platform for writing online, learners must work within the set parameters if they are blogging in that platform. This requires educators to understand the potentials and constraints (affordances) of Wordpress in order to facilitate meaning making in the most productive way for learners. Figure 1 highlights the affordances of sharing a digital blogging platform via Facebook (www.facebook.com). The Facebook platform allows me to share links to my blog post in Wordpress in order to reach a larger community. Examples of potentials reside in my ability to create a larger audience for my message, my ability to participate in online, collaborative conversations regarding my blog posts, my ability to share pictures, video, and text in order to illuminate my ideas. However, examples of constraints potentially reside in reliance of print as a primary means of communication, community members’ abilities to navigate back and forth between Facebook and Wordpress or other online resources, and participants’ apprehension in sharing their ideas publicly via online micro-blogging platforms.



Figure 1. Digital blogging platform via Facebook

In order to explore how multimodal learning environments can offer *affordances* that support children’s meaning-making experiences in the classroom, one must go beyond the assumption that “abilities and disabilities are located solely within the learner” (Collins, 2011, p.409). Modes are a set of resources in place to enable individuals to deal with the combination of social needs (Domingo, Jewitt, & Kress, 2014) and cognitive demands (Goswami, 2011) when seeking to make meaning. In a sense, modes can be conceptualized as a technology for consuming, connecting, and composing ideas in order to create or communicate a more comprehensive understanding. For example, writing is a mode. When individuals write, they are continuously shaping their ideas to fit within societal, individual, and educational purposes. Essentially, it is “shaped by the demands, needs, structures and practices in which it is used (Domingo, Jewitt, & Kress, 2014, p. 2). When the writing mode is incorporated into a blogging context, writing is combined with other modes- visual (pictures and/or video), auditory (sound effects and/or music), action, and various other modes. In order to create holistic meaning, when learners face a constraint with one particular mode (i.e., the inability to express a complete visual image through print), if they are working within a platform that affords multiple avenues of

expression (i.e., blogging platform), they can shift to another mode (i.e., visual imagery) in order to combine modes and create an orchestrated ensemble. Therefore, when shifts occur between modes, it is assumed a particular mode of communication was judged by the designer as insufficient in providing a holistic message. An example of this is evident in a Prezi I created about the origins of dyslexia (Dyslexia and the Brain:

http://prezi.com/pteparoiu9m0/?utm_campaign=share&utm_medium=copy&rc=ex0share). In the Prezi, I incorporated a video with the voices and images of people with a diagnosis of dyslexia who describe their experiences (see Figure 2). As I composed the Prezi, I judged the video as a means of conveying the message in a more effective and holistic way than if I were limited to only print as a means of communication.



Figure 2. Prezi about origins of dyslexia

Another example of affordances of multiple modes is evident in digital text. Historically, traditional texts display a “linear ordering”, where they are largely arranged line-by-line, paragraph-by-paragraph, and chapter-by-chapter (Domingo, Jewitt, & Kress, 2014). More current forms of text, particularly online, digital texts, provide readers with alternative pathways for navigating information (Lemke, 2005). Reading digital texts affords learners the opportunity

to select pathways based on text, visuals, and arrangement, and movement on the screen. The semiotic nature of the mixture of communicative modes on the digital screen on websites affords avenues for information consumption in individualized ways. This also means that learners potentially construct individualized meaning based on experiences, cognitive demands, and biological mechanisms. Lotherington and Jenson (2011) suggest digitally-mediated, multimodal communication is “dynamic, adding a third dimension of space”, where readers can enter the texts as “cowriters in collaborative texts, actors in augmented realities, or avatar in virtual games” (p. 227). Further, the interactive nature of digital texts creates potential space for dynamic, multidimensional communication. According to Lotherington and Jenson (2011), the multidimensionality of this digitally-mediated space potentially includes opportunities for “social interaction, haptic activation, physical coordination, visual design, modal complexity, dynamic and collaborative text construction, and alphabetic literacy” (p. 228).

Vygotsky’s sociocultural theory (Vygotsky, 1978) provides a lens to assist understanding about potential contextual and interactional affordances in the multimodal classroom for all learners, including those who are typically marginalized in print-based settings. Vygotsky’s sociocultural theory indicates development is dependent on interaction with people and the tools that the culture provides to help form their own view of the world. According to Vygotsky (1978), a sociocultural perspective suggests the need to examine the intersection between the environment and the individual in order to understand how they “mutually construct” each other (Collins, 2003, 2011; Vygotsky, 1978; Wertsch, 1998).

Extending the notion that the environment and individual “mutually construct” each other, the lens of cognitive neuroscience provides insight into the brain-based mechanisms at play within individuals during multimodal experiences. Usha Goswami (2011) underscores that

the developing brain is not modular. Therefore, neural systems are functionally integrated as an interconnected system. This is an important consideration when conceptualizing the potential influences of multiple modes during semiotic work. Further, Goswami (2011) indicates developmental research reveals that functional specialization within the human brain is *experience-dependent* (Johnson, 2004). Based on a review of neuroscientific literature (Goswami, 2008), the infant brain builds cognitive systems on the “basis of sensory cross-modal learning of dynamic spatio-temporal structure, initially by low-level perceptual mechanisms” (Goswami, 20011, p. 293). Therefore, modes can be conceptualized as having different cognitive modal resources. Critical to the processing of different modalities is the temporal (time) structure of the inputs, because this reveals whether inputs are related. Beyond temporal perception, auditory, visual, and kinesthetic perceptions are key perceptual mechanisms for meaning-making (Goswasmi, 2011). For example, in both music and language, auditory modes of perception are crucial in deciphering pitch and rhythm organization. During language and musical processing, an interplay occurs between temporal and auditory modes of perception as aspects of auditory inputs such as “intensity, amplitude, duration, and frequency” correlate to various auditory and temporal parameters when individuals engage in interpretation (Goswami, 2011, p. 294). Arguably, the shared perceptual aspects between music and language have potential implications for the interplay between temporal and auditory modalities. In cases of reading disability (RD), Goswami (2011) indicates individuals with RD demonstrate difficulties with specific auditory cues (rise time and duration), which are fundamental to the perception of rhythm and prosody—also related to phonological perception. This relationship between auditory cues and phonological perception raises key questions about how the semiotic work accomplished within musical interpretation might enhance auditory acuity in phonological perception in language-

related activities. Further, this highlights how the interplay between modalities potentially influences meaning-making potential across various modes within a multimodal learning environment. For example, in this case, prosody and rhythm perception, as associated with music, have an influence on some individuals' abilities to read printed words.

Whether the goal of a learning experience is to promote print literacy skills, artistic or dramatic expression, or technological innovations, it is through the interplay between the multiple modes that provide various avenues for meaning making. This, however, provides complexities for educators as they seek to provide individualized opportunities for learners to compose and construct meaning through multiple modes with the greatest potential for meaning making in particular learning experiences.

Authoring and Design

Meaning-making within multimodal environments is a multilayered, complex process. This process demands consideration of varieties of modal affordances, coupled with social and cognitive influences. Kress (2014) states,

“The perspective of design forces us to think of learning environments in all their complexities, in all and every detail, and in great seriousness; and always in relation to those who will be asked to do semiotic work. If every action is semiotic work, every action and its outcome demands the closest attention. If work produces meaning, we are required to accord recognition to all semiotic work, to the agent of that work, to its principles and purposes” (p. 23).

Therefore, a “generosity of view” is required in multimodal learning environment (Kress, 2014, p. 23). This involves the recognition that in one community, there exists a multiplicity of

principles guiding individuals within that community. Therefore, multimodal learning involves openness and valuation of the multiplicity of principles individuals bring to a given community.

Another important consideration when considering the affordances of working across multiple modes is the “authoring” process. Dyson (2001) states,

Learning about written language is thus not just about learning a new code for representing meanings. It is about entering new social dialogues in an expanding life world. As such, written language learning is inevitably a part of learning about social and ideological worlds and about the place of a child’s own relationships and experiences in those worlds. (p. 138)

This quote underscores the idea that literacy is largely social in nature. However, the neurocognitive aspects of meaning-making cannot be ignored because the interplay between biological, cognitive, and social factors form individuals’ understandings. Visual literacy, proposed by Chauvin (2003), is defined as the “ability to access, analyze, evaluate, and communicate information in any variety of form that engages the cognitive processing of a visual image” (Serafini, 2010). Neuroscientists argue “the brain is only interested in obtaining knowledge about those permanent, essential, or characteristic properties of objects and surfaces that allow it to categorize them” (Zeki, 1999, p. 77; Serafini, 2010). This means learners must perceive, process, and categorize the salient qualities of an image before interpreting those images within the social context of their production reception and dissemination. In other words, there is an interplay among the cognitive aspects of learning with the social aspects of learning to enable learners to make and construct meaning.

When children who face challenges with traditional learning environments, and arguably all children, are placed in multimodal learning environments, it allows for *design* opportunities.

Bezemer and Kress (2008) define *design* as the “practice where modes, media, frames, and sites of display on the one hand, and rhetorical purposes, the designer’s interests, and the characteristics of the audience on the other hand are brought into coherence with each other” (p. 174). Jewitt (2008) emphasizes design is “how people make use of the resources that are available at a given moment in a specific communicational environment to realize their interests as sign makers” (p. 252). When further understanding what this means for learners within a multimodal environment, the designer has a perspective of giving direction and shape to interests and intentions based on the available semiotic resources afforded in the environment. While involved in this process, *translations* and *transformations* occur. Bezemer and Kress (2008) define *translations* as translating “meanings made in one mode or ensemble of modes to meanings made in another mode or ensemble of modes” (p. 175). This involves the description of objects or ideas based on social environments and the available modes and media. *Transformation* describes changes in arrangement within a mode (Bezemer & Kress, 2008). Transformations depict the reconceptualizations of old ideas to form new ideas based on multilevel interactions, but within a given mode of representation.

If literacy is thought of as a process, design is a useful way of conceptualizing how resources in a classroom (textbooks, media, interactive whiteboards, writing, and images) and other modal resources distribute meanings across boundaries of modes, potentially making multimodal connections (Jewitt, 2008). This is relevant when thinking about pedagogic designs of learning process and how students design their constructions of meaning in multimodal contexts. Activities involved in multimodal environments create scenarios where students constantly redesign constructions of meaning. For instance, curriculum is designed for schools via textbooks, websites, or other teaching materials. Subsequently, teachers access, download,

print, or upload materials to interactive whiteboards to use for instructional purposes. In the meantime, teachers have interpreted, annotated, or potentially altered content to serve their perceived instructional needs, while students simultaneously interpret, redesign, and repurpose meanings made from these activities in order to construct their own understandings. The activities and processes in which students engage while interacting with multimodal texts can be conceptualized as a process of redesign (Jewitt, 2008). Considering this notion and the aforementioned work of Bezemer and Kress (2008), there are implications for pedagogic design to shift away from the use of prefabricated resources, strict timetables, and formalized, teacher-directed work, which often places the teacher as the gatekeeper of knowledge. Instead, there is a call for “learning design sequences to encompass the multiplicity of learning” (Jewitt, 2008, p. 253). In essence, this recognizes the learner as a sign-maker, where during critical moments during sign-making, critical moments of translations and redesign occur within learning sequences to give way to transformations in understandings.

The Literacy Learning Process: A Space for Design, Choice, and Control

All of the aforementioned considerations of multimodal literacies highlight implications for learners who function in the communicational landscape within a classroom. Conceptualizing the learning process as a space for design, choice, and control within a classroom allows for a more holistic understanding of the meaning-making process (Hagge, Krause, & King, under review). The multiplicity involved in the multimodal design process allows for the highly individualized, interpretive work of students in their meaning-making practices (Jewitt, 2008). In our increasingly dynamic and complex world, it is essential for students to have skills that enable their ability to recognize salient features in complex multimodal texts, to navigate across different modal elements presented within a text, and to find individualized pathways to move

through texts. Further, students need to be able to make translations from one form of text to another (i.e., multimodal text to written text and vice versa) through transformations in their understandings.

New or multimediated literacy skills that extend beyond traditional notions of reading instruction are required for today's students. In addition to reading printed texts, students need to be able to find information, authenticate information, link information from multiple contexts and sources, and recontextualize and remix information in order to make meaning about new knowledge constructs. More specifically, while multimodality does not always include the use of digital technologies, digital technologies enable "modes to be configured, be circulated, and get recycled in different ways" (Jewitt, 2009, p. 1). With the drastic change in the media of communication through the use of digital devices, the "scope and speed of interactions, nature of discourse, and materiality of texts" have intensified multimodal possibilities (Lotherington & Jenson, 2011, p. 227). These inter-relationships have strong implications for how reading, writing, remixing, and composing are interrelated, recursive, and highly individualized and potentially connect to literacy practices outside of school. While the emergent literature on multimodal literacies provides a theoretical base with smaller scale studies highlighted, more work needs to be completed about how to appropriately design optimal multimodal learning environments and how to scaffold teachers in their understanding of this new literacy landscape within the digital age.

The National Council for Teachers of English (2008) calls for competency in a wide range of literacies in order to construct meaning from traditional print texts and evolving digital technologies. This expanded view of literacies calls for "literacy pedagogy...[to] account for the rapidly increasing fusion of text forms embedded in children's lives by creating new

opportunities for learners to communicate using multiple modes of representation in a variety of social contexts” (Kendrick & McKay, 2004, p. 110). Supporting this call for expanded conceptualizations of literacy, the International Society for Technology in Education (ISTE) developed standards to assist educators as they begin the complex work toward reconceptualizing schools in the digital age. The National Educational Technology Standards for Teachers (ISTE, 2008) outline effective pedagogical practices for teachers, coaches, and administrators as they design, implement, and assess learning experiences while serving as positive models for students and fellow colleagues. These standards also provide students with goals as they work within digitally-mediated platforms. While these are viewed as important goals of current educational agendas, the new reality resides in teachers’ familiarity and capacity for embracing the broadening scope of technoliteracies students bring from their out-of school environments, ultimately providing opportunities or potentially restricting opportunities for the design of digitally-mediated multimodal texts as representations of learning and activity. Further, there is a call for teachers to gain richer understandings of the affordances available within multimodal experiences, with a recognition of the potentials and constraints within particular modes and platforms (Unsworth, 2014). Finally, individualized needs deserve the upmost consideration when facilitating consumption and composition of multimodal texts (Kress, 2014). With experience-dependent neurocognitive mechanisms interplaying with the vast demands of the social and cultural contexts of learning experiences, teachers have the responsibility to consider how multimodal aspects of meaning making might look different for learners within educational environments. An expanded view of literacy teaching practices offers an avenue for students and teachers to understand learning as a process of meaning-making through individualized, orchestrated, multimodal experiences.

In an effort to explore multimodal learning environments in a variety of contexts, Chapter Three explores the potential affordances of a multimodal learning environment through the use of digitally-mediated texts for pre-service teachers with self-identified reading difficulties. The chapter highlights differing needs of pre-service teachers with reading difficulties as they navigate the meaning-making process within a literacy methods course. The study provides a tangible example of the interplay between neurocognitive mechanisms and the social and cultural factors students face as they work within a variety of modal platforms.

Chapter Three

Creating Places to Connect and Empower: Multimodal Literacy Accommodations for Pre-service Teachers with Reading Difficulties (Co-authored with Julia Hagge)

“The kind of person who can live well in this world is someone who has acquired the capacity to navigate from one domain of social activity to another, who is resilient in their capacity to articulate and enact their own identities and who can find ways of entering into dialogue with learning new and unfamiliar social languages.”

Cope & Kalantzis, 2009, pp.173-174

The introductory quote by Cope and Kalantzis (2009) provides a backdrop for the literacies essential to access our dynamic, globalized world. In traditional academic settings, literacy practices are often confined to the navigation of print-based texts, arguably limiting opportunities for learners to become successful navigators of texts existing in authentic settings (Unsworth, 2014). This current study explores the affordances of literacy experiences outside the confines of traditional literacy practices for university students who reported struggles with literacy throughout their schooling lives.

See the following YouTube video for a rationale for our research (Multimodal Literacy Accommodations: <https://www.youtube.com/watch?v=1BEzUceAntE>). As literacy instructors within a pre-service teacher education program at a large southeastern university, we talk about literacy all the time. We collaborate in course planning meetings, discuss instructional practices we expect our pre-service teachers to enact within classroom settings, and we speak often about instilling desire within our students to accommodate for learning differences that will certainly

occur with their groups of future students. One day, during a seemingly ordinary meeting, we came upon a question that made us stop and think- Were we accommodating for *our* students' learning differences? Why, of course we were! We adopt strategies in our teaching we hope will ultimately transfer to our students' teaching. We read feverishly about literacy practices, and we subscribe to literatures, which address the dynamic nature of literacy in the 21st century. In fact, we considered ourselves to utilize a great deal of multimodal instructional practices within our literacy courses. But, we began wondering if these practices were truly a part of the differentiation process for our students with self-disclosed learning difficulties. Did our students perceive these practices to be tools for accommodation? And further, how did these instructional practices affect students' perceived abilities as reading teachers?

Margaret's First Day in RED 4310- "Meeting Brian"

It was the first day of RED 4310, a foundational course in reading instruction. I watched as a sea of newly admitted education majors eagerly entered the room. As the students entered, I noticed their glances in my direction. It was a familiar "sizing up" in which I grew accustomed as an instructor at the university level. Hurriedly, the students scouted out their seats among the selection of desks arranged in collaborative groups. On the first day, there is always an awkward silence as students find their place. I was about to begin class when the final student entered the room. He immediately found a desk situated in the back of the room, which completed one of the collaborative groups. Discreetly, he accessed his notebook and pen, and he glanced around the room with a look of apprehension.

It was a surprise for my new students when I introduced the course purpose in a relatively non-traditional way. Rather than accessing a structured PowerPoint to review the syllabus, I displayed a Wordle (see Figure 3) on the large screen in front of the room. A Wordle is an

application, which allows users to make “word clouds” by entering in text of the user’s choice. In order to create my word cloud, I pasted the course objectives into the Wordle application, and it generated a colorful display of words included in the objectives. Some of the words were large, while some were small. Likewise, some of the words were positioned in the middle of the Wordle, while some were situated on the outer edges. I asked the students to engage in conversation about the words displayed. I wanted them to determine the rationale behind the display of words. Why had I chosen these words to display? Also, I wanted the students to think about the positioning and size of the words. Why were some of the words larger than others? Did this support their rationale about the purpose for the Wordle? Would they position the words differently? I listened as they engaged in discussion about the word cloud.

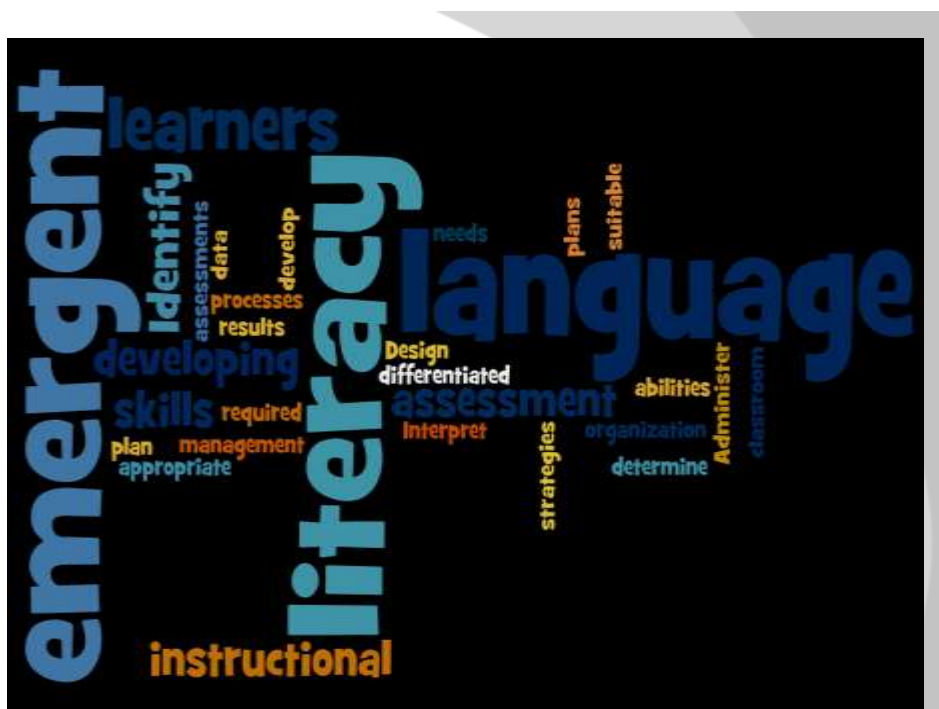


Figure 3: Wordle

As I circulated among the students, I listened to the students' responses. Most of the students engaged in thoughtful conversation about the words. They were discussing word placement and size, while "breaking the ice" with new classmates. As I listened to the conversation of the group in the back of the room, the group the seemingly apprehensive, late arriving student chose, I was surprised by the discussion. I overheard the male student say, "Wow, this isn't what I expected. It's nice to be able to talk with one another while we are working through this activity." One of his fellow group members stated, "I agree. So often, we go through a whole class without ever having the opportunity to look at anything but the instructor and a PowerPoint." At that moment, I realized the students were engaged in learning about the rationale of the course. We continued a relaxed format that day with activities, group work, and of course, the usual sharing of the semester's goals and assignments.

After class, the once apprehensive student approached me quite confidently. He stated, "Mrs. Krause, my name is Brian.¹ I want to inform you that I have a processing disorder. I have trouble taking in too much information at one time, reading difficult texts quickly and with strong comprehension, and presenting information orally. I want to let you know this now, at the beginning of this semester, before I become overwhelmed. I have educational accommodations agreed upon by the university." At that moment, I understood the apprehensive glare he wore on his face as he entered the room earlier that day. Further, I reflected upon his relaxed nature within the collaborative group setting as he discussed the Wordle. Had we already identified a way of learning that might work for Brian? I reassured him by saying, "Brian, thank you for letting me know about your needs. We will make sure to speak frequently about ways you learn most effectively." Brian had no idea of my mission for the semester- to provide multimodal

¹ All student names in the manuscript are pseudonyms.

literacy learning opportunities for all of my students. I had a hunch these multimodal opportunities would offer authentic differentiation for a variety of learning differences.

Julia's First Day in RED 4310- "Meeting Lauren"

The air was filled with anticipation as I eagerly awaited the arrival of students for *Reading and Learning to Read*. In addition to being the first day of class, it was also our first time together as a new cohort. The morning marked an initial step in our journey together. One of the first students to arrive was Lauren. As she walked in, Lauren quickly scanned the room and chose a seat in the center of the classroom. She returned my smile as she assumed her position in class. I walked over to greet her and was taken aback by her self-assured smile and confident tone of her voice. Lauren looked me in the eye and was quick to respond to my introduction. Her warm response quickly sparked a conversation regarding her first day in our cohort. As I noticed other students beginning to arrive, I disengaged from our discussion to greet new arrivals.

Infused within my reading methods course are collaborative activities. On day one the focus was on building community among my students while creating an understanding of how to build a literacy foundation. As is common on the first day of class, the discussion was filled with awkward pauses while students worked to decide how much risk they would assume in sharing their thoughts with the class. I am a firm believer in wait time and noticed when a pause became extended Lauren would raise her hand to share a response. Lauren became my Awkward-Silence-go-to-Person. I could count on her to participate when others were hesitant. After sharing information about the study of multimodal affordances within class with everyone, Lauren was the first student to express interest in being a participant. To protect her privacy, I asked if Lauren would like to step outside the class to discuss participation further. She

emphatically stated we should remain where we stood. I would later learn that Lauren feared being singled out as different. In fact, she had constructed an intricate system of behavioral patterns to mask her disability in reading. What came across as confident behavior were actually attempts to appear, what she perceived, as “normal.” Our conversation about the study marked an initial step in our journey together.

Purpose

Our study is outlined comprehensively in the Prezi link provided (Multimodal Literacies for Pre-service Teachers with Reading Disabilities: http://prezi.com/6hegru2wsfar/?utm_campaign=share&utm_medium=copy&rc=ex0share). The primary goal of our study was to explore the implications of multimodal literacy practices within the context of a teacher education methods courses for pre-service teachers with self-identified reading difficulties. For the purpose of this study we defined reading difficulty as struggling to read text due to fluency and/or comprehension, as experienced and reported by the participating students. The construct of self-identification was not verified with any written IEP, or accommodation documents. It is, however, consistent with a volunteer-based study, and perhaps less invasive than “proving” one’s status (Creswell, 2012). We explored connections between multimodal literacy accommodations and the students’ self- efficacy as future reading teachers. The goals of the study were in fact highly related to and situated within the volunteers we garnered.

Questions used to guide our inquiry include:

- 1) In what ways do pre-service teachers with self-identified reading difficulties perceive multimodal experiences within a reading methods course as providing affordances for their learning needs?

- 2) In what ways do pre-service teachers with self-identified reading difficulties perceive their self-efficacy as future reading teachers after participation in a reading methods course with embedded multimodal experiences?

Theoretical Framework

The theoretical framework for our study resides in the body of research regarding pre-service teacher self-efficacy (Armor et al., 1976; Plourde, 2002), social semiotic theory (Halliday & Hasan, 1985), multiliteracies (New London Group, 1996; Anstey & Bull, 2006; Mills, 2010), multimodal literacies (Cope & Kalantzis, 2009; Jewitt, 2007; Kress & Van Leeuwen, 1996), and multimodal literacies situated within a social context (Wolfe & Flewitt, 2010; Lankshear & Knobel, 2007; Gee, 1996; 2000) as a source of access for preservice teachers who are faced with reading challenges. In the following sections, we provide an overview of relevant fields in order to provide a backdrop for our study.

Teacher Self-Efficacy. Self-efficacy is defined as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997, p.3). In order to specify a condition specific to teachers, self-efficacy is further defined as *teacher self-efficacy*, which is a belief in one’s capability to teach effectively (Armor et al. 1976; Leader-Janssen & Rankin-Erickson, 2013; Plourde, 2002). The study of teacher self-efficacy is relevant because research indicates higher teacher efficacy has a demonstrated relationship to increased annual achievement for students (Allinder, 1995); a correlation with positive teacher practices and policies utilized within the classroom (Guskey, 1988); and a correlation with innovative classroom techniques and student achievement (Haverback & Parault, 2011; Gibson & Dembo, 1984; Wolters & Daugherty, 2007). All of these findings related to teacher self-efficacy are important factors in understanding how to ultimately increase student achievement.

Washburn and colleagues (2011) emphasize many preservice teachers enter the field with a lack of explicit knowledge of language constructs. This is an important consideration for pre-service teachers who have reading difficulties. An area of exploration lies within how increased levels of teacher self-efficacy, might influence pre-service teachers with reading difficulties in their practice.

Social Semiotic Theory. A socio-semiotic approach of multimodality defines modes as what a community decides to use as a mode (Kress, 2010; Selman, 2014). Essentially, if a person or community views something as able to communicate meaning, then it meets the criteria as a unit capable of expression and representation. However, the adopted mode needs to be evident in consistent use by the community and demonstrate its affordances for conveying meaning to audience (Rowse, 2013). It is important to note within a socio-semiotic modal theory anything can potentially be a mode and named a mode. However, the mode must be a socially and culturally instantiated and shaped resource for making meaning (Bezemer & Kress, 2008).

Multimodal Perspectives. Underlying the theory of multiliteracies as first proposed by the New London Group (1996) is the idea that being multiliterate is to be “socially and cognitively literate with all modes of communication” (Anstey & Bull, 2006, p. 23). The exponential development of new communication technologies drives the need for learners to be able to create meaning in increasingly multimodal ways- a component of the theory of multiliteracies (Cope & Kalantzis, 2000). Kress and Van Leeuwen (2001) define multimodality as “the use of several semiotic modes in the design of a semiotic product or event, together with the particular way in which these modes are combined” (p. 20). Essentially, the term “multimodal” is the means in which written linguistic modes of meaning are fundamental elements of visual, audio, and spatial patterns of meaning (Cope & Kalantzis, 2000). Meaning is

created in many modes and made differently in each of the modes incorporated into text (Kress, 2008; Jewitt, 2012; Kress, 2014), but linked in their focus on the event at hand. This idea is particularly intriguing when evaluating the types of accommodations preservice teachers with reading difficulties are provided at the university level.

A traditional, verbo-centric view of literacy is focused on the alphabet, on its use in print, and comprehension of the print in a linear sequence, with the realization of meaning gradually occurring inside the mind. In contrast, and in synchrony, multiliteracy attributes additional potential for meaning making embedded in multimodal text and within performances related to the texts (Bomer, 2008). A multimodal perspective of textuality, “attends to linguistic (language based) resources (speech and writing) as a part of a multimodal ensemble in which resources are organized, designed and orchestrated to realize curriculum knowledge and pedagogic relations” (Jewitt, 2007, p. 276).

While multimodality does not always encompass the use of digital technologies, digital technologies provide an avenue for “modes to be configured, circulated, and recycled in different ways” (Jewitt, 2009, p. 1). Thus, digital platforms potentially intensify multimodal possibilities (Lotherington & Jenson, 2011). Within society, adults and children alike are immersed in the use of digital technologies while they are connected to digital devices for information gathering and communicative purposes. For instance, commuters speak into cellular devices to activate Internet radio, engage in an Internet search, or convey text messages, or utilize hands-free cellular telephones. Children interact with smartphones through gaming applications and various interactive communicative platforms, creating a plethora of opportunities for making meaning within a globalized context. These scenarios, along with countless digitally-mediated

experiences, directly “insert individual(s) into a digitally-mediated multimodal world, creating new schema for participation and meaning-making” (Lotherington and Jenson, 2011, p. 227).

Affordances of Multimodal Texts

Use of multimodal texts create “value added” literacy opportunities (O’Brien & Voss, 2011). Multiple semiotic modes open and extend interaction with meaning-making signs. Each mode of meaning making affords its users the benefit of representing specific items in unique but complementary. These items can include actions and events or aesthetic thoughts (Kress, 2008). The affordances of new digital forms of media have revolutionized literacy practices. New conventions in the use of orthography and discourse proliferate with the emergence of dynamic communicative platforms. Individuals engage in more collaborative remixing of information rather than focusing on individual constructions of meaning. Genres, such as gaming, have become platforms for complex literacy-related practices (Kress, 2009). Given this reality, it is important to consider how interactive, screen-based media provide avenues that extend the traditional, linear characteristics of alphabetic writing so commonplace in traditional academic settings (Kress, 2009).

Digital text is an example of multimodal system with multiple literacy opportunities. The use of printed text, audio recordings, graphics, and video recordings offer numerous modes for making meaning. “Digital affordances blur the lines between the processing of text (reading) and the production of text (writing); the two processes in interactive, multimodal spaces become virtually inseparable” (O’Brien & Voss, 2011, p. 76). A multimodal approach allows the participant to stand outside of speech or writing to get a new view, as if from a satellite (Kress, 2008).

Web 2.0 tools offer learners active participation with web-based representations, including digital text. Pre-service teachers who were previously unmotivated to write, may be more motivated to respond to a blog related to their interest (e.g., teaching websites, Pinterest. Micro- blogging) (Hundley & Holbrook, 2013). Online digital media offers the affordances of participatory culture (Jenkins et al., 2006). See Figure 4 for a model of characteristics of participatory learning as described by the New Media Literacies Project (<https://playnml.wikispaces.com/PLAY!+Framework>). Online tools, including blogs, wikis, podcasts, micro blogs, and games, “facilitate collaborative and socially connected online literacy practices in which users co- construct the information space” (Mills & Chandra, 2011, p. 36). See the Prezi link for further explanation of the affordances of participatory culture (Jenkins et al., 2006) (Media Literacies Final: http://prezi.com/or6rff3zyg9y/?utm_campaign=share&utm_medium=copy&rc=ex0share).



Figure 4. Retrieved from <https://playnml.wikispaces.com/PLAY!+Framework>

What Do Multimodal Experiences Inside a Reading Methods Course Look Like?

From our perspective, students are provided additional learning affordances, through semiotic opportunities while engaged with a variety of modes. Individuals work within a variety of modes while engaged with digital technologies, within social interaction, through dance or drama, and across different semiotic platforms. It is through the affordances of multimodal experiences in which potentially marginalized students may experience a new feeling of empowerment in a previously disenfranchising learning context and find avenues for success within the dynamic culture of the 21st century.

Multimodal experiences for our pre-service students began the very first day of class. These multimodal experiences were largely based on students' use of digital media platforms. Our classrooms were hardwired to access and present digital media. Students were able to bring and use electronic devices to access the free campus-wide Wi-Fi. We adopted an interactive approach to our course, where we utilized tools like Glogster (www.glogster.com/) (see Figure 5), Animoto (www.animoto.com/), and Prezi (www.prezi.com/) to create interactive, meaningful presentations, which engaged multiple senses. An example of an interactive, multimodal course presentation is outlined in the provided Prezi link (RED 4310 Fluency: http://prezi.com/g04qb7llr8ry/?utm_campaign=share&utm_medium=copy&rc=ex0share). Further, we incorporated opportunities for students to move around the room and interact and collaborate with one another while working on class assignments and projects using the multimodal, digitized platforms. The purpose behind these activities was to create social engagement and collaboration, while allowing room for student choice in how they could most successfully express their new understandings. We strove toward utilizing a harmonious blend of

digital technologies, social-semiotic experiences, and student modal choices within digital platforms in order to provide expanded affordances for our learners within the courses.

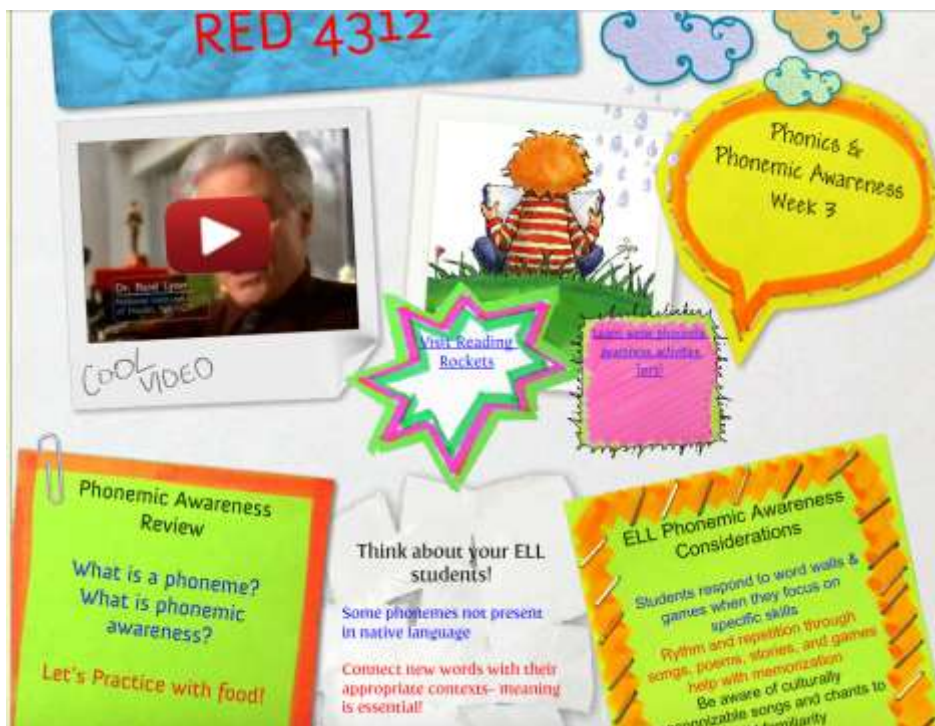


Figure 5. Gloster example

Outside of class, students were asked to micro-blog through Edmodo (www.edmodo.com/). As instructors, we would pose thoughts or wonderings to our students throughout the weeks. For example, one week we posted “How are you seeing comprehension strategies implemented by your collaborating teacher in your field experience?”. Many students extended the conversation we started with thoughtful responses. In response to the previous example, one student wrote “I see my CT using turn and talks when she asks students to make text-to-self and text-to-world connections. This helps the students comprehend their reading and make connections to their own life”. Interestingly, others started new thoughts based on course experiences, readings from their text, or application to their fieldwork. The purpose behind the

Edmodo blogs was to allow open dialogue about reading content between students and instructors in a relaxed, collaborative virtual space.

Further, we created digitally-based, multimodal opportunities for assessment of course content. Students were afforded choices when completing required course assessments (see example: <http://animoto.com/play/O9c2xA6Yapr9JobdGnIa4g>). One quiz tasked students to create Glogsters in order to represent their understanding of fluency, vocabulary, and comprehension (see example RED Phonics: <http://darianrivera.edu.glogster.com/quiz-2/>). In the quiz Glogsters, students could provide visual representations, videos, text, movies, and audio in order to convey their ideas. In one participant's Glog about the foundational pillars of literacy, she incorporated a video discussion about comprehension from a literacy expert, images of word study activities, a video of a child engaged in repeated reading for a fluency strategy demonstration, and text boxes with associated images to demonstrate the differences between phonics and phonemic awareness. Additionally, students shared their creations with partners and offered reflections on the quiz experiences. Through this process, students were able to construct information about new concepts through a variety of modes, and likewise, students were able to represent their new constructions of meaning using their modal preferences.

In reviewing what we have described as “multimodal,” one may be resigned to say, “That’s just good teaching. Where’s the multimodal?” Our intent here is to point out there has always been multimodality in teaching literacy. After all, picture books are the first teaching texts. But, in the past these more visually oriented or performative gestural elaborations were executed in the service of print literacy. Newer, multimodal accounts place value on these “elaborations” *as* literacies. With the addition of computer-based, Web 2.0 authoring tools, the elaboration has become the text.

Methodology

In order to explore the phenomenon of pre-service teachers with self-identified reading difficulties and their participation in a reading methods course with infused, selected multimodal experiences, we subscribed to a qualitative case study approach (Moustakas, 1984; Yin 1984). Our constructivist assumptions guide our belief that learning is socially situated, which is supported by phenomenological analysis tools within the case study approach. Undergirding phenomenology is the notion that individuals' perspectives of lived experiences evolve over time as people interact with their environment and social contexts (Husserl, 1970; Purcell-Gates, 2004). While we worked within a case study design, phenomenological analysis tools allowed us to continually consider the notion that environments and contexts are continuously changing within a given lifeworld (Husserl, 1970), and each individual's perception of a given experience is entirely unique.

Further, we define our study as a *case study* because we sought to provide a contextual description of a group of pre-service teachers with reading difficulties engaged in multimodal literacy coursework. Yin (1984) defines the case study research methodology as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used" (p. 23). Understanding the shared experience through the participants' perspectives through phenomenological analysis tools allowed for a more comprehensive understanding of the experience. We looked toward descriptive data to provide insight into the lived experiences of our students who participated in our coursework, while also keeping our role as instructors in the forefront of our minds. Vivid descriptions provided through our interview process, participant observations, conversation calendars, and Edmodo micro-blogs

enabled us to gain insight into the “essence of the experience” (Van Manen, 1990, p. 38) within our multimodal reading course. We attended to procedural activities suggested by Van Manen (p. 39), which included:

1. Turn to a phenomenon which seriously interests us and commits us to the world.
2. Investigate experience as we live it rather than as we conceptualize it.
3. Reflect on the essential themes, which characterize the phenomenon.
4. Describe the phenomenon through the art of writing and re-writing.

Participants

Our volunteer participants included six students with self-identified reading difficulties enrolled in the College of Education at a large, southeastern university. The participants were part of a field-based cohort model. Two of the authors independently taught reading methods courses in separate cohorts from which the participants were drawn. Recruitment was based on self-identification of reading difficulty, enrollment in a section of our foundational reading methods course within the College of Education, and a voluntary desire to participate. We explained the premise of our study during the initial course meeting, soliciting participation among students who identified with the aforementioned description. There was no attempt made to verify the students’ self-assessments, but the types of difficulties included (in students’ words):

Daniela: “The difficulty I had in school with reading was my inability to pronounce words; my lack of phonics knowledge. At times I also see letters, words, and numbers in the wrong order.”

Amy: “I know I have to work a lot harder than those around me when it comes to reading. I remember working hard to sound out words, and I always struggled when it came to reading aloud.”

Lauren: “Reading and spelling has been a huge struggle for me since Kindergarten. After I was held back in 1st grade I was tested and diagnosed with dyslexia.”

Brian: “ I have a processing disorder that I’ve struggled with as long as I remember. My mom actually went into special education to learn more about my struggles.”

Kim: “In school I had extra time on tests and extra help. I really needed the extra time to make sure of everything. “

Meg: “I have always struggled with reading. In elementary school, I was always in the lowest reading group. The school pulled me out for special reading instruction.”

In all, we came to know our participants as a diverse group of learners with felt difficulties in their experiences as readers within educational settings.

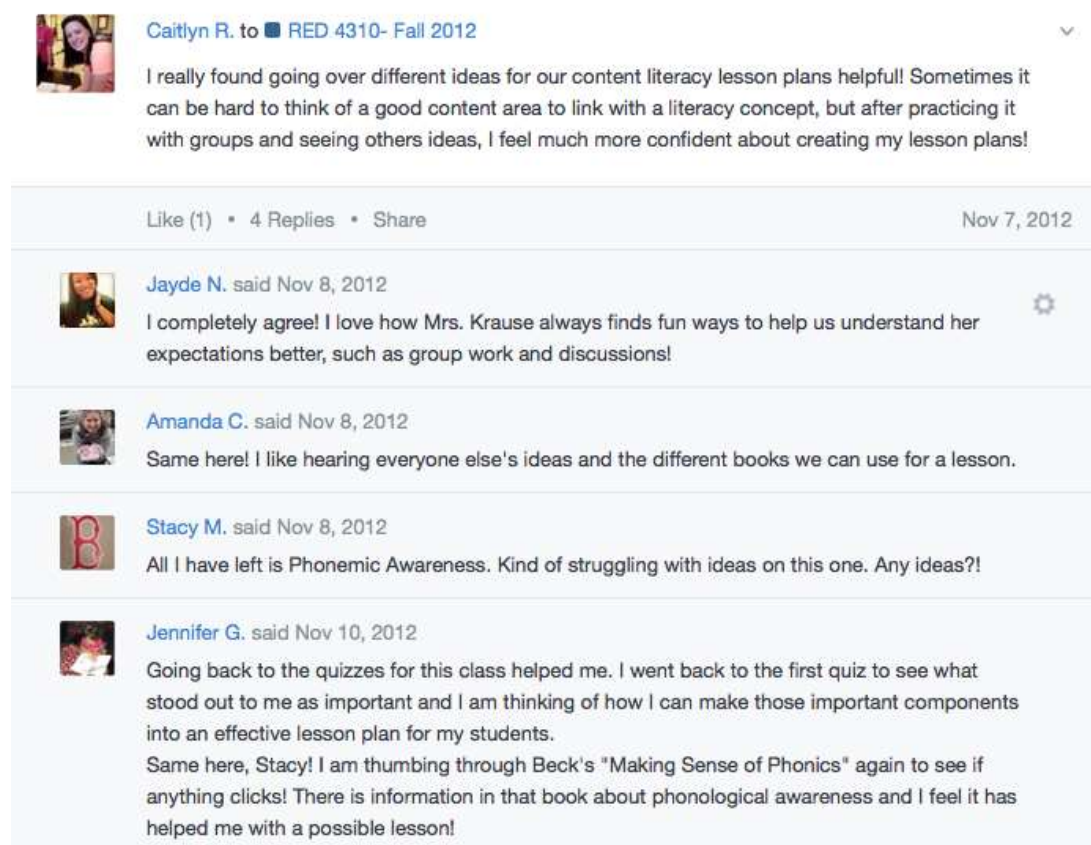
Data Collection

Qualitative data included pre- and post-interviews, participant observations, conversation calendars, and Edmodo posts. Each of these data is described in this section. These qualitative methods of gathering data provided an effective means of bringing to the foreground the experiences and perceptions of the participants from their own perspectives. We scheduled audio-recorded pre-interviews with our participants during the initial weeks of the semester. This semi-structured interview provided a guide for conversation with our participants. Examples of questions included: *How would you describe your educational experiences at the university level? What do you see as some of your strengths in becoming a reading teacher?* During this interview, we hoped to gain initial insight into the literacy experience our participants had prior

to experiences within our course. At the culmination of our course, we conducted audio-recorded post-interviews. The intent of this semi-structured interview was to gain insight into the experiences and perceptions of our participants while engaged in literacy coursework. Examples of questions included: *How would you describe your experience in RED 4310? How did your multimodal experiences help you as a learner? How did they help you as a reading teacher?* See the Glogster example with embedded interviews in the link provided (Brian- A Multimodal Snapshot: <http://william1.edu.glogster.com/brians-glog/>).

In addition to interviews, our participants provided weekly responses (N= 13 weeks) as part of their course requirement. These weekly responses were recorded in conversation calendars, which served as weekly communication folders between the instructors and participants. All students participating in the course offered reflections after each session. Many students utilized the conversation calendar space as an opportunity to discuss new understandings from course discussions, anxieties about upcoming assignments, or general questions and comments for us, as the course instructors. Further, data were collected as artifacts from the participants' use of multimodal participation outside of class through the use of Edmodo (<http://www.edmodo.com/>). Edmodo is a social network for students and teachers who share common experiences within their educational experiences (see example in Figure 6). Jenkins (2006) described how social networking opportunities provide a “participatory culture” where communication and collaboration about shared ideas allow learners opportunities to consume information and produce meaningful new content. In our case, all of our participants utilized Edmodo as a tool for communicating with classmates about their new understandings of reading content presented in class, relaying experiences with reading inside of the field placements, and interacting with classmates and instructors about course assignments.

Information from this site was collected and coded for underlying themes. This is described in further detail in the data analysis section.



Caitlyn R. to **RED 4310- Fall 2012** Nov 7, 2012
 Like (1) • 4 Replies • Share
 I really found going over different ideas for our content literacy lesson plans helpful! Sometimes it can be hard to think of a good content area to link with a literacy concept, but after practicing it with groups and seeing others ideas, I feel much more confident about creating my lesson plans!

Jayde N. said Nov 8, 2012
 I completely agree! I love how Mrs. Krause always finds fun ways to help us understand her expectations better, such as group work and discussions!

Amanda C. said Nov 8, 2012
 Same here! I like hearing everyone else's ideas and the different books we can use for a lesson.

Stacy M. said Nov 8, 2012
 All I have left is Phonemic Awareness. Kind of struggling with ideas on this one. Any ideas?!

Jennifer G. said Nov 10, 2012
 Going back to the quizzes for this class helped me. I went back to the first quiz to see what stood out to me as important and I am thinking of how I can make those important components into an effective lesson plan for my students.
 Same here, Stacy! I am thumbing through Beck's "Making Sense of Phonics" again to see if anything clicks! There is information in that book about phonological awareness and I feel it has helped me with a possible lesson!

Figure 6. Edmodo example

Throughout the data collection process, we engaged in data collection as participant observers. Our observations were documented in researcher journals, allowing us, as the researchers, to share our observations with each other in order to gain more holistic understandings about the lived experiences of our students and ourselves while we participated in the course. We chose to focus observations on participant interaction with multimodal text and communicated weekly regarding our observations and researcher-reflexive journals.

Data Analysis

In order to gain further understanding into our pre-service teachers' conceptualizations about accommodations they received for their reading difficulties before and after participation in our course, we subscribed to Moustakas' (1984) method of phenomenological reduction. While we describe our study as a qualitative case study, phenomenological analysis tools allowed us to preserve the participant's perceptions of their experiences as they shared their personal accounts of reading difficulties and their individual and shared experiences with multimodal literacy coursework. Before immersing ourselves in the data, we bracketed our preconceived notions in order to focus solely on our topic and questions. During the bracketing process, we suspended, as much as possible, our preconceived notions of our participants' experiences based on our own experiences as literacy educators. In turn, we used the matrices of our participants' world-views in order to understand the individualized meanings of what each participant perceived about the phenomenon. Based on transcriptions of our pre- and post-interviews from audio recordings, we looked at the data from a lens of "horizontalization" (p. 97). Horizontalization refers to the act of regarding every piece of data (statements) as meaningful, and looking for similar or connected bits of data, all on the same level of importance. Throughout this process we continually looked for emerging themes by reading and rereading the transcriptions. Consistent patterns were established for data as we read through data, and collectively, we looked across the patterns to determine themes based on patterns within the data. Moustakas' method enabled us to provide a rich, textural description of the participants' experiences while keeping the essence of each individual's experience in tact.

Similarly, we looked across posts our participants had offered through their weekly conversation calendars and Edmodo posts. These data pieces were also arranged into horizons

and patterns were established similar to the aforementioned interview process. Based on the nature of the data sources, we noticed further patterns in need of validation and elaboration, based on additional examples, or elimination, along with the emergence of new themes. From this process, we began the development of a *composite depiction* (Moustakas, 1984), which depicted the phenomenon as experienced by the individuals and as the group as a whole by preserving vivid, accurate, and clear depictions of participants' experiences. We read and reread participants' reflections as we engaged in this horizontal categorization processes, keeping the notion of phenomenological reduction, eliminating what we thought participants would not have recognized.

Finally, we developed a *creative synthesis* (Moustakas, 1984) of the participants' experiences. Moustakas suggests the creative synthesis offers a wide range of freedom in characterizing participants' lived experiences. Therefore, in our discussion, we offer ways of characterizing the semiotic experiences afforded through multimodal learning experiences for our participants with reading difficulties.

Findings: The “Lived Experiences of Our Participants”

Julia (Instructor): “How do you perceive literacy accommodations after your multimodal experiences in RED 4310?”

Lauren (Participant): “It’s funny you said accommodations. I didn’t think of accommodations because it (multimodal instruction) just seemed like the right thing to do... It (multimodal instruction) really got me through the course and helped me to stay on task and look back on things... It was almost like a map or guide. You helping me, helped me to help myself later.”

In order to examine our research questions, we looked across pre- and post interviews, Edmodo posts, and conversation calendars in order to identify reoccurring responses among our participants. First, we considered how pre-service teachers with self-identified reading difficulties perceived multimodal experiences within a reading methods course as providing affordances for their learning needs. As we looked across post-interviews, we noted all participants described the course as an engaging experience. When we asked participants, *“What multimodal literacy accommodations did you receive in this course? How were they beneficial or not beneficial?”* Participants’ responses offered insight into their perceptions of what constituted accommodations. Participants included details about levels of engagement they experienced within the coursework, the compelling nature of visual imagery, the use of alternative quiz formats, and the enhancement of instruction based on the integrated use of technology and other multimodal textual sources. One student explained during a weekly Edmodo post, “I really enjoyed the group work we did which helped us to both get to know our peers and get the chance to share our perspective of the readings as well as hear the views of others”. This emphasized the level of engagement she experienced during collaborative activities within the course. Another participant noted, “I liked the way you did the lessons because there were visuals I could attach to my memory... I could focus on the visuals, even if I zoned out. Then, I could go back and pick up right where you left off... It helped me have a clear picture so I could understand the content.” This participant highlighted how the integrated use of technology and multimodal resources aided in content retention and comprehension. These quotes underscore how participants perceived the use of visuals and various multimodal texts during presentations, collaborative group work, and access to presentations after class meetings provided affordances for learning course content, thus accommodations for their learning needs. See the YouTube video for

examples of our participants' perceptions of their experiences while participating in multimodal coursework (Multimodal Affordances: <https://youtu.be/CWaIfn32Ny0>).

Participants also documented their perceptions of multimodal quiz experiences. One participant stated, "I liked doing multimodal quizzes a lot. They helped me to focus on how to get the content correct instead of worrying about time. I learned more through doing them than if I had to take a traditional test". Another participant stated, "I felt like the quizzes were helpful because I had to go back into the content and learn more. . . It helped me to go back and find visuals for the content. I am very visual." When considering participants' perceptions of accommodations they received through the course experience, it became clear through the participants' comments, they viewed multimodal quiz experiences as providing affordances for their learning, and again, accommodations for their learning needs.

When considering our second research question, we sought to gain insight into the ways pre-service teachers with self-identified reading difficulties perceive their self-efficacies as reading teachers after participation in a reading methods course with embedded multimodal experiences. We continued the reading and rereading of our pre- and post-interviews, Edmodo posts, and conversation calendars. During the pre-interviews, participants reported fears of reading aloud and struggles with fluency and decoding skills. All of the participants perceived these struggles to be potential barriers to their effectiveness as reading teachers. During the pre-interview, we asked the participants, "*What do you see as some of your challenges in becoming a reading teacher?*" One student responded by stating, "I still have a hard time with reading fluency. I guess I just have to take extra care and practice before class. I have to make sure I am confident before I teach the class". Another student responded by stating, "I'm afraid of making the same mistakes they (my students) are making. I am studying what I am teaching them... My

weakness is relearning and understanding this stuff to the point I can teach them”. These quotes demonstrate the emotions students felt as they entered our reading course.

During our post course interview, we asked participants questions regarding their strengths and challenges in teaching reading. A student reported a perceived teaching strength to be his understanding of how visuals can provide affordances for learners. He states, “I need to incorporate more things that are visual, so that people who think like me have something to focus on. It (multimodal instruction) made me realize that I need to approach all students, regardless of how they learn, through a lesson that incorporates all their learning styles”. Further, another participant stated, “I think it (multimodal experiences) helped me because it gave me ideas on how to use it in a classroom... I don’t even think they (teachers) used PowerPoints until I was further along in high school... now, it’s so different”. As we continued discussions about strengths and weaknesses with our participants, we noticed shifts in how participants viewed their own abilities and associated challenges in teaching reading. In pre-interviews, we noted students expressing concerns about fluency, decoding, and basic command of language. During the post-interviews, participants’ conceptualizations of their challenges shifted. This is highlighted when one participant stated, “I feel that I really understand everything. I feel like I could go into any classroom and teach kids who do not know how to read. I did not feel that way at all before coming into your class.” Another participant discusses how it is important to “understand what students are going through” . . . You have to work with students and use their strengths, rather than point out their weaknesses.”

Some of our participants revealed how they continued to struggle with fluency and decoding, however, they demonstrated how they have developed personalized strategies for coping with their fears. One student stated, “I have to have experience with a text before I use it

in a lesson. That means, I need a lot of planning time. Really, I think this will be one of my strengths. I will be stronger because I will be more thoughtfully planned”. Another participant underscored this idea when she discussed how she would “learn alongside” her students. She revealed how she was practicing her decoding abilities prior to teaching her students. She discussed how this gave her an “insider’s perspective” as she presented new concepts. In essence, the recognition of the initial felt difficulties with reading resulted in participants developing individualized compensatory skills in order to feel confident in their literacy teaching abilities. The recognition of strategies they plan on incorporating in their practice emphasizes how participants began to shift away from feeling disempowered because of their difficulties to using their new understanding of their abilities as an avenue for successful literacy teaching.

Discussion: Multimodalities as a Source of Empowerment and Semiotic Potential

Choosing to learn. Through the analysis of our participants’ pre- and post-interviews, Edmodo posts, and conversation calendars, we discovered overarching themes. The first theme that emerged highlights participants’ feelings of empowerment in their teaching and learning through *choice* and *control* involved in multimodal learning experiences. *Choice* can be defined as the participants’ freedom to choose the types of texts and applications, which afforded optimal learning experiences. This moves beyond the notion of simply copying and importing images into a Glogster or Prezi in order to regurgitate “facts” from course texts. Choice involves the act of participants seeking out examples to demonstrate constructions of knowledge, based on new understandings from collaborative discussions, readings, and social networking opportunities (Edmodo). *Control* can be defined as the way participants perceived their abilities to navigate through online resources, both individually and collaboratively, and select multimodal texts in order to convey their understandings. Of course, both of these themes are within an instructor-

controlled course. However, we maintain the extra choice the students did enjoy through multimodality made a difference.

Lankshear and Knobel (2007) discuss “new technological stuff” and “new ethos stuff” as they elaborate on new literacies. In this discussion, Lankshear and Knobel describe how “new technological stuff” can provide tools for consumption and production during the learning process, while “new ethos stuff” potentially takes the learning process a step further. In essence, they highlight how the notion of “new ethos stuff” emphasizes the participatory and transformational nature of learning in the 21st century. It is through participation in cultural contexts (both online and offline) that allows for construction, production, and dynamic transformation of collective new meanings.

Our course was designed to encourage participation in collaborative consumption of available literacy pedagogical and content information and production of innovative constructions of new meanings. Students consistently engaged in evolving course opportunities where their work was shared, discussed, and revised, reflecting new understandings based on collective experiences. In this learning environment, it can be argued our participants with self-identified reading difficulties found accessible learning opportunities through choice and control while navigating through collective and personalized learning spaces, therefore, creating learners who felt empowered through a multimodal learning process.

Connecting through Multimodality. Another overarching theme that emerged was our participants’ perceived strength in the semiotic potential of multimodal learning. As aforementioned, participants reported feelings of “connectedness” with content and “deeper” understanding and engagement when immersed in multimodal experiences inside and outside of the course. All of our participants reported some struggle with traditional print-based practices

within the scope of their educational experiences. Interestingly, the participants all revealed through our interview session ways in which they “connected” with course content, whereas, before our course, they experienced hardships in feeling connected with other university-based course content. Some participants reported the act of selecting visual images to represent their learning from discussion and reading to place them in a position in which they had not been traditionally familiar- a position of power. Participants described the power of selecting from optional textual representations within course presentations and discussions in which they found a safe place for learning, and they also cited their experiences with alternative quiz formats and social media interactions. They were able to convey their “connectedness” to course content successfully through the affordances of the descriptive nature of visual representations, the interactive nature of course delivery, and the safety of finding “places” where they could feel comfortable in their learning. Further, most of the participants described ways in which they went “deeper” in their learning.

The act of switching back and forth between modes enabled these traditionally marginalized learners to make connections within and between modes, and ultimately, provide a platform for “deeper” understanding to occur. Without the affordances provided within and between the modes, it could be argued that these learners would still be placed in a marginalized position. This was highlighted through participants’ reported feelings during alternative quiz formats. One student emphasized this theme as he stated, “This is so different than taking a bubble-in test, or even an essay test. I feel like I can read a passage from our textbook and then explore what I’m learning even more. I can find a video to embed in my Glogster that lets you (the instructor) know exactly how I see it in my mind.” He went on to say, “I know I’m not the greatest writer, but I feel like I am great at making a Glog. It allows me to use a lot of different

tools to show off what I know. I also think I'm learning a whole lot more because I'm able to explore."

Limitations

In retrospect, we sought to look at the affordances of multimodality for participants with self-identified reading disabilities, however a dissonance exists between our research purpose and methodologies. For instance, while created an environment where we privileged digitally-based, multimodal expression within the context of our course, we utilized print-based transcriptions of interviews, print-based expressions of participants' reflections from social-media platforms, and observational notes as our primary data for analysis. Further analysis is needed of the digitally-based, multimodal artifacts participants' created in order to fully support our beliefs that digitally-based multimodal experiences offered affordances for participants' meaning-making within the context of the course. Therefore, while we were able to convey students' perceptions of the course experience through print-based means, it is imperative to consider and adequately analyze multimodal forms of representations in order to gain more holistic understanding of meaning-making experiences through multimodality, especially when seeking to make generalizations. An example of how we might use multimodal data analysis techniques in order to reconsider the meaning of our data is provided in Figure 7.

Conclusion

Our study carries important implications for future educational research and pre-service teacher development. A further exploration is needed of how pre-service teachers who have reading difficulties feel empowered through multimodal learning experiences, and how this might transfer into feelings of empowerment through the use of multimodalities in their classroom teaching experiences. As aforementioned, a more comprehensive understanding of

this perceived empowerment demands exploration of multimodal artifacts and interactions that take place within literacy experiences. While there is a lack research on pre-service teachers who enter the field with expressed reading difficulties, Washburn and colleagues (2011) emphasize that many pre-service teachers lack the explicit knowledge of basic language constructs.

Fluency Analysis of a Glogster

The fluency perspective proposed by Gouzouasis (2005). Gouzouasis described Guilford's (1962) notions of "intellectual abilities" which include fluency, facility and originality. Gouzouasis contends these abilities can be extended into broader conceptualizations of fluency when looking toward new media contexts. The constructs of fluency (visual, aural, ideational, associational, and expressive), flexibility (spontaneous and adaptive), and originality could carry potential meaning for multimodal analysis of Glogs created by participants.

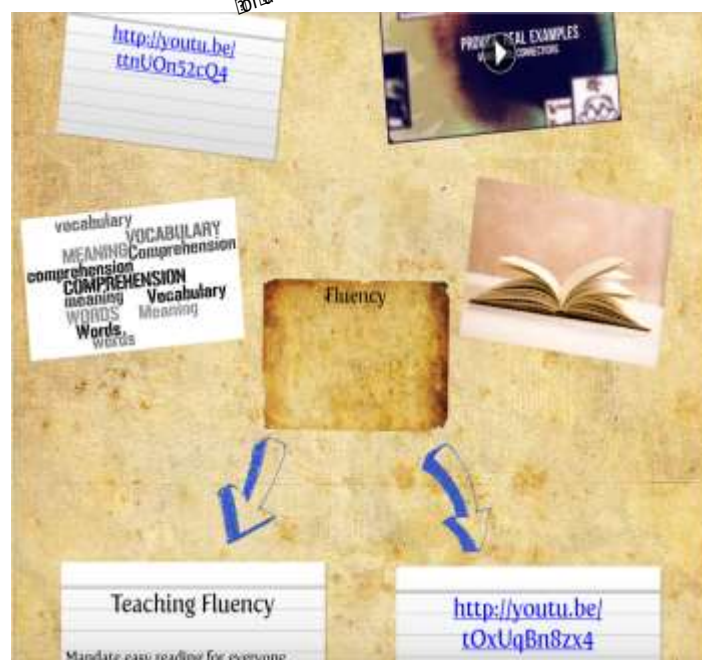


Figure 7. Example of multimodal data analysis techniques

Therefore, how might the reliance on print-based data artifacts as representations of participants' perceptions limited a holistic understanding of their experiences? Is it important that we immerse pre-service teachers with reading difficulties in multimodal learning experiences, or do we need to spend time with basic language constructs, as well, given their predominance in current educational settings? What kind of balance is needed between multimodalities (particularly digitally-based forms) and print-forms of literacy? As Cope and Kalantzis stated, "In a pedagogy of multiliteracies, all forms of representation, including language, should be regarded as a dynamic process of transformation rather than reproduction" (2009, p.179). Looking at literacy instruction from this stance highlights the need to be cognizant about how we approach the learning environment for diverse learners in teacher education. Through the participatory engagement of multimodal learning experiences inside literacy education university coursework, teacher educators are acting as the ultimate model for future teachers while meeting the needs of diverse learners.

Epilogue

Drawing on Kress' (2000, 2003; Kress & van Leeuwen, 2006) construction of multimodality and Lemke's (2007) notion of the combinatorial nature of multiple modes, in hindsight, we would heed Halverson and colleagues' (2012) argument that the complex nature of participants' productions need to be explored through a multimodal analytic methodology. As researchers looking toward gleaning insight into the participants' perceptions of multimodal experiences as offering affordances for their print-based reading difficulties, we continued to value print-based data artifacts (interview transcriptions, Edmodo print-based micro-blogging posts, conversation calendars) as representational of their perceptions, without attention toward

the digital multimedia compositions as data artifacts. While writing, speaking, and reading are modes of expression, and they offer valuable insight, they potentially restrict means of expression if attention in the data analysis process is not equally distributed or valued among all of the modal expressions of meaning (images, video, sound, layout, print). As Lemke (2007) suggests, it is through the combination of modes where we potentially glean the greatest insight. Clearly, in the above research study, attention and value was placed on print-based data artifacts.

Arguably, important insight regarding the participants' perceptions of multimodal course experiences was explored however, a multimodal analysis of Glogster, Prezi, and Animoto compositions in conjunction with interview and micro-blogging data has potential to offer even greater understanding. Norris (2004) suggests that multimodal analysis offers an opportunity to consider how the multiple layers work together to create new meaning.

Chapter Four

A Quest for More: My Unfolding Need for Transdisciplinarity to Support Multimodal Literacies

Moving Toward New Perspectives: Looking Across and Between Disciplines

It is here where my story continues to unfold. After conducting the research study outlined in Chapter Three, I became enthralled with the potential avenues multimodal literacy experiences might provide for my pre-service teachers, and ultimately all learners. I watched my cohort of pre-service teachers perceive elements of choice and control in their learning. I also realized that while I preached the need to embrace multimodal avenues of expression and I became more flexible about accepting alternative, digital media compositions as means of expression, I continued to struggle with the mode I valued as the most communicative. Retrospectively, I valued micro-blogging platforms and digital media compositions that favored print as a communicative mode of expression. While I believed I viewed images and embedded videos in students' productions as representations of equal understanding as compared to print, the ways in which I analyzed my data revealed my valuation of print as a primary form of expression, with other modes supporting and enhancing the meaning-making process. Does this truly embody the essence of multimodality that I seek to support? Further, I could not find explicit connections in the literature that explained what happened in the brain of students, especially those who typically struggled with traditional literacy practices, when they were afforded multiple avenues for meaning-making. I located social-semiotic frameworks (Halliday & Hasan, 1985; Kress, 2010; Selman, 2014), however, there seemed to be a paucity in the

literature where multimodal literacies were directly associated with underlying neurocognitive mechanisms. This inspired me to delve more deeply into my understanding of these connections through the exploration of research in cognitive neuroscience.

As I stated in previous chapters, I again felt like my activities were fraudulent. After all, I wasn't a neuroscientist. Who was I to try and understand these complex relationships? I knew I couldn't travel down that road alone. I felt an intense need for collaboration and support from experts.

Clance and Imes (1978) coined the term “Imposter Syndrome”. The Imposter Syndrome is used to “designate an internal experience of intellectual phonies (p. 1). When someone experiences the Imposter Syndrome, an individual believe he or she is not truly bright and fools those who think otherwise (Clance & Imes, 1978, p. 1). This is how I felt as I dared to venture into fields previously foreign to me. During this time of exploration, I found myself taking courses from experts at our university in order to develop a general understanding of cognitive neuroscience. I spent countless hours reviewing the literature in cognitive neuroscience for connections to the multimodal educational practices that were seemingly effective for my students. Also, I traveled to the Massachusetts Institute of Technology to attend a conference on the “Reading Brain” (Summer, 2013).

This is when I really started to see the need to look beyond the field of education for answers. I needed to inform my developing understanding by looking into other fields. I found myself becoming more and more comfortable looking at research informed by different methodologies and different perspectives. In turn, I actively reconsidered my understandings in order to merge ideas within myself and alongside my colleagues. The synergy between my own developing understandings of effective literacy practices and the understanding of others

enabled me to feel comfortable making leaps in synthesizing literature in order to form links to cognitive neuroscience and education.

A Rationale for Transdisciplinary Research

The past few decades are marked by extraordinary technological advances. Leavy (2011) argues transdisciplinary research practices emerged from this change, thus “culminating in the new research landscape” (p. 608). Transdisciplinary research can be conceptualized as “an interpenetration of epistemologies in the development of methodology. The dissolution of disciplinary boundaries is necessary for the construction of novel or unique methodologies tailored to the problem and its context” (Wickson et al., 2006, p. 1050). Further, Leavy (2011) highlights three fundamental considerations in order to understand the transdisciplinary paradigm; “1) the changing academic landscape, 2) the changing global context, and 3) the kinds of massive/complex problems humanity now faces and related changes in the public and public needs” (p. 608). Leavy (2011) states, “multidisciplinarity and interdisciplinarity have impacted disciplinarity creating something new- a “third space”- transdisciplinarity (p. 722). This “third space” can be thought of as a space for knowledge building- a place where borders between disciplines shift, overlap, or become obsolete in order to transform understanding. Homi Bhabha (2004) initially coined the term “third space”, which traditionally emerges from the sociocultural tradition. While sociocultural approaches acknowledge the role of culture in mind, Bhabha extends this approach by recognizing the unequal forces of cultural representation. In transdisciplinary research, this “third space” represents opportunities for disciplinary gaps, or unequal and uneven forces between disciplines, to overlap and create new space for understanding. This is necessary when the complexity of the issues faced in contemporary society is considered. While it is necessary to have disciplinary knowledge, and experts within

fields of disciplinary knowledge, it is compulsory that we understand ethical considerations while considering real-world problems. This means today's researchers must look toward transdisciplinarity as they seek to understand problems. As Leavy states, "As knowledge-producers, we have a moral and ethical obligation to use all available tools for addressing pressing social needs (Leavy, p. 888). Further, it becomes the responsibility of current researchers to embody transdisciplinary approaches to research in order to model and empower future researchers to meet the demands of our ever-changing world.

With respect to multimodality, transdisciplinarity requires a look at multimodal literacies from multiple vantage points, despite vast differences in language, research methodologies, and contexts. For example, in the cognitive neurosciences, "literacy" is often translated as meaning "reading", which is further specified to be conceptualized as the mapping of phonemes to graphemes in order to systematically decode printed words (Goswami, 2011). While the discipline of literacy continues to value "modes" of reading and writing, the notion of literacy has expanded to include a variety of modes of learning, including visual arts, technology, music, and a plethora of other modes, which engage multiple senses (Jewitt & Kress, 2003; Bezemer & Kress, 2008). Further, the discipline of psychology expands views of literacy beyond individuals' interaction with print by providing a lens into how social interactions contribute to literacy development over the course of life experiences (Vygotsky, 1981). However, neuroscience may understand literacy as a grapheme/phoneme match. These differences in understanding are what a transdisciplinary approach must consider. Exploring the synergy between disciplines could have an impact on our ability to gain greater understanding about what is happening on multiple levels (social, cognitive, neurological) during multimodal work.

Chapters Five and Six explore literacy from such varied lenses. Chapter Five looks toward literature from literacy, psychology, and gifted education in order to inform thinking about effective literacy practices for adolescent boys. The practitioner article that is the body of Chapter Five merges the disciplines in order to provide evidence for potential support for multimodal literacy practices. Chapter Six is a systematic research review and summary that explores the neurocircuitry of the reading brain. This article draws upon neuroscientific research that provides insight into neurocognitive mechanisms at play during reading, and how these mechanisms involve the harmonious engagement of multiple senses in order to read efficiently. While these articles provide only a glimpse of how transdisciplinary research could inform practice, the goal is for the reader to develop an understanding of how this kind of research could be transformative in understanding issues in literacy education.

Chapter Five

“A Series of Unfortunate Events”: The Repercussions of Print Literacy as the Only Literacy for Talented Boys

“No matter who you are, no matter where you live, and no matter how many people are chasing you, what you don’t read is often as important as what you do read”

-Lemony Snicket, Author of *A Series of Unfortunate Events*

Introduction

While driving down a densely forested, desolate road with my family on a weekend vacation, I sensed boredom in the air. I noticed my children staring dreamily out the windows as my husband contentedly hummed the song playing from his iPod. Our SUV was packed with all of the necessary supplies any family would need for a three hour trip in the car: luggage, a cooler with drinks, a bag of snacks, iPhones, tablets, videos, and books. Like an alarm waking you from a deep, peaceful slumber, my 10 year-old son broke the silence with the familiar childhood query, “Are we there yet?” As a literacy instructor by profession, my immediate response was “Grab a book, Trey. Aren’t you reading *A Series of Unfortunate Events*? We will be there in about 2 ½ hours.” Much to my dismay, Trey winced and said, “But mom, I hate reading!”

At that moment, I felt inundated with feelings of discontent. After all, I have dedicated my professional life to finding ways of fostering the love of lifelong reading for children. I was certain Trey connected with the turbulent and mysterious series of novels written by Lemony Snicket. After all, isn’t *A Series of Unfortunate Events* packed with action and adventure? Aren’t these the elements boys like? Further, my memories of my role as a mother, the role I perceive to

be the ultimate teacher, came flooding back to me. I reminisced about the countless hours spent carefully selecting books for my own children, the times I read to them and with them as they developed their own literate identities, and my effort to express the joy and insight books provide to our worldly knowledge. When my pre-adolescent boy expressed his utter disdain for reading, I felt like my determination to nurture my child's love of literacy had failed.

Trey is a high-achieving, fifth-grade boy enrolled in a specialized charter school, which emphasizes technology integration throughout the curriculum. After he refused my appeal to settle into the book he was half-heartedly reading during school hours, he grabbed his iPhone and became entranced with a game called Minecraft. Minecraft is a game involving the placement of blocks in a strategic form to build structures, which ultimately prevent attack from nighttime monsters. I watched Trey as the game consumed his attention. I asked, "Trey, are you typing words as you play the game?" I was curious about how he was navigating through this virtual space. Was he using text as a tool in the gaming context? "He responded, "No, Mom. But, I am reading directions about strategies to use while I build my structures." Interestingly, I watched as he clicked away from Minecraft for a moment and began typing text into his Google search field on his phone. I asked, "Now, what are you doing?" He said, "I am searching for a way to build a kitchen for my fort. I am sure someone has posted directions on how to do this." He appeared to find help with this strategy, and he switched back to Minecraft to continue his game. In that instance, I realized without his proficiency as a reader and writer of print, he would have difficulty knowing how to navigate in these virtual and online spaces. As his mother, I was relieved to know he was, in fact, interacting with text while playing this video game. As a literacy instructor, I realized there was something more complicated going on with Trey. He read text, switched in between virtual and online spaces for information, and wrote text as he

researched information about his strategy. As I settled into my seat for the rest of our journey, I pondered three questions: Why is Trey unmotivated to read books inside and outside of school, in spite of his success with reading and writing skills? Is he “reading” while engaged in this virtual and online context, and is it my conceptualization of what reading means the real problem? How does the traditional focus on print-based literacy as the only “valued” form of literacy fail to engage pre-adolescent and adolescent boys in literacy practices?.

In the following sections, I look toward literature in the areas of gifted education (Gagne, 1996; Cavazos & Kattke, 2006), multimodal literacies (New London Group, 1996; Lankshear & Knobel, 2003; Leu, Kinzer, Coiro & Cammack, 2004; Jewitt, 2008; Cope & Kalantzis, 2009), reading preferences (Hebert & Pagnani, 2010), and gender-related literacy practices (Watson, Kehler, & Martino, 2010) in order to inform my developing conceptualization of literacy for Trey and his preadolescent, talented peers. I argue that traditional conceptualizations of literacy as reliant on print forms of text are outdated and unresponsive to the dynamic changes of the 21st century. Further, I argue the lack of responsiveness to dynamic and multimodal characteristics of the globalized world contribute to the perceived lack of motivation talented boys demonstrate in school-based literacy spaces.

I found Trey’s lack of interest in *A Series of Unfortunate Events* to be eye-opening. Initially, I found Trey’s lack of interest in reading to be unfortunate. Upon true examination of his literacy practices, I realized that it might not be a problem with my son, rather unfortunate practices within literacy education for talented boys. I present my arguments through a progression of “a series of unfortunate events”.

The First Unfortunate Event: Teacher-selected print as the only valued print

Trey's strong reaction to my suggestion of reading a book in the car highlights the lack of interest many preadolescent and adolescent boys display when presented with reading opportunities (Covazos-Kattke, 2006). In this section, I will refer to "reading" as the traditionally valued texts often encountered within the classroom setting. As the article progresses, my definition will expand to encompass more than these traditional conceptualizations. Studies of boys' reading achievement emphasize some problematic trends. First, girls consistently outperform boys on reading tasks, according to standardized measures of reading and writing (Brozo, 2002; Newkirk, 2002; OECD-UIS, 2010). Further, studies demonstrate a significant relationship between reading achievement and attitude, with boys displaying more negative attitudes toward reading than girls (Henk & McKenna, 2004; Covazos-Kattke, 2006; OECD-UIS, 2010). The most surprising trend, however, is the finding "many boys who are talented readers and might not be expected to have poor attitudes toward reading" report more negative attitudes and decreased motivation toward reading than their female counterparts (Roth, Worrell, & Gabelko, 2002; Covazos-Kattke, 2006, p. 133). This is perplexing issue, which demands further investigation.

Why are these talented boys unmotivated? Research in gifted and talented education suggests personal interest is a significant factor in the development of reading attitude (Dooley, 1993; Covazos-Kattke, 2006). In order to delve into this trend, I looked to gain an understanding of the reading material males often find enjoyable. Research indicates males tend to prefer non-fiction texts (Boraks, Hoffman, & Bauer, 1997; Hopper, 2005), and boys are more likely than girls to read informational texts, magazines, and newspapers, and special interest (hobby/sport) books (Hebert & Pagnani, 2010; Smith & Wilhelm, 2002). Further, research indicates that while

most studies reveal boys' interest in non-fiction, their interests are highly diverse (Hebert & Pagnani, 2012; Spring, 1996). This finding is incongruent with genres and selections found in many traditional language arts classrooms. Coles and Hall (2002) found many language arts classes to be based around the use of narrative fiction. This has strong implications for boys' literacy identity development. If classroom teachers place value on particular genres, like narrative fiction, students who prefer different genres might equate "good reading" with the reading of the valued classroom genre. In the case of narrative fiction, proficiency in reading would be determined by the ability to read, identify with, and comprehend stories. Freedmon (2003) cites a case where a 10 year-old boy demonstrates the aforementioned notion of "good reading" when he states, "I get lost in books about other worlds and forget about the time, but my teacher doesn't think these are real books" (p. 6). This illuminates how the power relationship between teacher and student comes into play as determinations and norms are created about what constitutes relevant, quality reading opportunities.

As I reflect upon Trey's literacy development throughout his schooling, I recall defining moments that document his journey as a reader. Beginning in first grade, Trey was assigned specific reading goals. These goals included reading from a selection of teacher approved books on his Accelerated Reader level, then taking computerized comprehension tests in order to earn points. Accelerated Reader is a widely used progress monitoring software assessment used to track students' reading progress. Trey's teachers typically displayed a chart in the classroom, which tracked the points earned for each student. At first glance, this program challenged students within the classroom to read feverishly in order to reach goals. For Trey, these goals were easily accomplished, and he seemed to enjoy the rewards he received each quarter based on his performance. In fact, it was through the "literacy skills" he demonstrated on these particular

tests that signaled his teacher to recognize his talents. As the years progressed, the end-of-quarter, extrinsic rewards became less gratifying for Trey, and he began to ask about reading books outside of those prescribed within the Accelerated Reader curriculum. Teachers would often respond by explaining to Trey, “You must read Accelerated Reader books in order to reach your reading goals, but you can read other books when you are finished. Oh, and make sure you are reading books on your assigned level”. Trey would reluctantly select from the provided reading list and make his goals, but he didn’t strive to go beyond the predetermined expectations. Further, he felt like he was capable of reading books beyond his prescribed reading level, however, this was not permitted. These constraints he faced inside the A.R. program, created questions about books and literature outside of the Accelerated Reader program. He started questioning his ability to read books on a higher level, the quality of other types and genres of reading material (i.e. Sports Illustrated for Kids, online reading, and young adult science-fiction novels). As I recount his reading experiences within his elementary years, the pattern becomes obvious- his interest in reading progressively waned.

So, why do I propose this happened? Partly, in response to the teacher-selected reading material offered through the Accelerated Reader program. While I cannot generalize that the Accelerated Reader program does not work for everyone, I question the effectiveness the program provides for talented, preadolescent and adolescent boys. Building on scholarship in gifted education (Carr, 1984; Jeter & Chauvin, 1982; Renzulli & Reis, 1997), it is recommended that, “gifted readers be given some freedom to shape their own literacy development by self-selecting personally interesting reading materials for a variety of purposes” (Cavazos-Kattke, 2006, p. 133). While the Accelerated Reader program does provide the opportunity for self-selection within the books deemed as valuable enough for inclusion within the program, it sends

a strong message about literature not included on the leveled reading list. Building upon the limitations of the Accelerated Reader program's implementation with talented boys, norms created within the school setting by predominantly female teachers about what constitutes valuable literature has strong implications for boys' literacy interests. Without the opportunity to select, engage, and share new literacy understandings within a community that appreciates and values individual choices, how can talented boys' interest in literature truly be nurtured?

The Second Unfortunate Event: A misconception of "reading"

During the course of our family road trip, I watched Trey's insatiable engagement with Minecraft. At first, glance, I did not regard Trey's engagement with the game to be related to reading and literacy development, whatsoever. It looked as if he was mindlessly clicking away as he moved his blocks around and shaped his structure. It was through talking with him as he engaged in the process that I realized much more was happening. He explained how he was devising a strategy as he built his structure to avoid an encounter with the nighttime monsters. He shared how he could use a Google search to find ideas and strategies. I watched as he transferred these ideas in unique ways into his own strategy development. Most importantly, I noticed how he negotiated text within the game and outside of the game as he created his virtual world. My first impression of his fascination with this virtual space was entirely wrong.

As Thomas Newkirk (2006) notes in *Media and Literacy: Rather than bemoan boys' fascination with movies and video games, teachers can use these visually mediated narratives to engage reluctant readers and writers*, "The idea of popular media as 'the problem' - and not as a valuable resource- may be reassuring to literacy teachers devoted to book reading, who feel beleaguered by what they see as shallow, undemanding gratifications of visually mediated entertainment" (p. 63). However, Newkirk underscores these attitudes among teachers might

ultimately be self-defeating. In a study conducted by the Kaiser Family foundation in 2005, it was found that children ages 8-18 engaged with some form of media for an average of 6 hours and 20 minutes each day, with gender patterns revealing boys' preferences toward video games (Kaiser Family Foundation, 2005). It seems logical to dismiss this involvement with visually mediated sources as problematic. After all, it takes time away from experiences with books, potentially limiting exposure to the "essential" knowledge needed for classroom success. But, what is behind these visually mediated sources?

As I moved along with my expanding personal understanding of what constitutes literacy practices while watching Trey's interaction with Minecraft, I was challenged to consider my newly constructed interpretation of "reading". I felt liberated as my conceptualization became broader, encompassing the act of navigating within a context and between contexts in order to synthesize information in a meaningful way. In fact, Trey had to use text as a driving mechanism in developing his strategy for Minecraft. He had to read the directions for the game when they appeared periodically on the screen, make decisions about when to seek outside resources, use text to activate the search engine, and apply his reading of textual information to his visually mediated virtual world. Isn't this type of act the ultimate display of semiotics and higher-order thinking? After all, this is authentic, text-based problem solving. Likewise, other sources of media and socio-cultural interactions, like television, sporting events, plays, and even interpersonal interactions, possess an underlying script, which requires a "reader" to interpret and analyze intended meaning. These scripts require the harmonious engagement of multiple literacies, beyond the printed word, in order to effectively navigate within various contexts. Isn't this "reading" of text, media, interpersonal interactions, and cultural contexts important?

Gifted educators strive to provide “curricula for students that include complexity and depth” (Siegle, 2004). This type of curriculum includes opportunities to organize, analyze, synthesize, and effectively communicate new understandings. Siegle argues that technological resources can provide a valuable platform and mediation tool for this type of literacy learning to take place. In essence, opportunities to “read” visually mediated sources, print-based sources, aural sources, and gestural sources while combining and recombining information, creates meaningful learning opportunities. This is particularly relevant for talented boys who demonstrate proficiency in the fundamental task of reading print-based text. As identified by Renzulli and his colleagues (1997), two important characteristics of gifted and talented students are applicable when considering this broader definition of reading: “the ability to transfer learning from one situation to another, and an understanding of complicated reading material through analytical reasoning” (Siegle, 2004, p. 33). In essence, talented boys are armed with a toolbox of strategies to use when they encounter these complex environments where they are required to “read,” often between the lines.

Pre-adolescent and adolescent talented boys are constantly engaging with digital technologies in their daily lives. Within the highly complex interactions within and between digital technologies, social interactions, and printed texts, teachers must consider how these students are multitasking. No longer is reading commonly a matter of just sitting quietly, fully immersed in a printed text. It is an involved process of switching back and forth between textual spaces. Students commonly complete homework tasks with computers, while simultaneously engaged in online conversations in social spaces and Internet searches. They might even listen to downloaded music as they work. All of these elements combine in highly personalized ways that potentially facilitate the meaning-making process for learners. With particular respect to talented

pre-adolescent and adolescent boys, these spaces for “reading” need to be further understood and drawn upon by educators in order to truly facilitate intrinsic motivation toward literacy practices that transfer from everyday practices into the literacy classroom (Hebert & Pagnani, 2010).

Further, once teachers work toward a broader conceptualization of what modern literacy practices mean to the talented male learner, they will be able to foster an environment that nurtures the many faces of developing literacy identities.

The Third Unfortunate Event: Teachers’ literacy conceptualizations are slow to shift

Traditionally, literacy has been associated with the ability to read words printed in ink on paper. Lankshear and Knobel (2003) argue the meaning of literacy is undergoing radical change. In fact more recent writing by Lankshear and Knobel (2008) describe how digital environments potentially afford individuals to “generate, communicate, and negotiate personally significant meanings” with an online social community with members from a variety of Discourses (Lankshear & Knobel, 2008, p. 276; Gee, 2014). While evidence of this change can be documented in the literature (New London Group, 1996; Lankshear and Knobel, 2003; Leu, Kinzer, Coiro & Cammack, 2004; Jewitt, 2008; Cope & Kalantzis, 2009), to what extent is this shift happening in classrooms?

I argue that the shift is *not* widely happening in classrooms. Teachers and administrators are consistently under pressure for students to “perform” on standardized achievement measures, which often dictate resources (e.g., reading materials) allocated to schools, and employment security. This tension causes a response from the teaching community to “teach to the test” in order to build students’ ability to perform on contrived sets of questions, often removed from the context of the real world (Vasudevan, 2006). Lotherington, Paige, and Holland-Spencer (2013) argue, “Teachers are pulled in opposing directions as literacy is applied to an expanding grey

area of evolving texts that do not fit comfortably within conventional school curricular expectations and assessments” (p. 2) . These pressures lend themselves to pedagogical methods, which explicitly teach through the application of skills needed for success on particular standardized assessments. Students become accustomed to hearing phrases like, “For the FCAT (Florida’s test), we will need to know...” Likewise, teachers adopt ways of thinking that exclude important subject matter, like science and social studies, if they know this content will not be covered on the respective standardized assessment. For the talented boy, this creates a conundrum. As mentioned in the previous sections, literacy environments are already built upon female-driven literature selections that may not be particularly interesting to boys. Now, the authenticity and appeal is stripped even further. While gifted education programs often provide enriched experiences outside of the classroom, most gifted children are still situated within their regular education setting for the majority of the day. Further, it is arguable many gifted or talented children are not even identified, making the notion of “teaching to the test” even more detrimental.

Beyond the notion of teaching toward standardized assessments, issues regarding professional development exist. Teachers need exposure to current research in education, which has potential to empower teachers to enact change within literacy education practices. This requires a critical engagement with analyzing literacy-related pedagogical practices within the current environment. Once teachers develop dispositions toward critically analyzing current practices and their effectiveness, teachers will have the ability to consider broadened notions of literacy, or what literacies to value. Research indicates teachers need to explore new literacies (Coiro, Knobel, Lankshear, & Leu, 2008). New literacy practices occur in social contexts such as gaming, blogging, and social networking. These practices also include contemporary adolescent

literacy practices that do not involve digital technologies, such as writing fan fiction and live-action role plays (LARPs; Coiro, Knobel, Lankshear, & Leu, 2008; Hebert & Pagnani, 2010). As Siegle (2004) highlights, all of these practices embody the higher-order thinking skills, which increase interest and engagement for preadolescent and adolescent boys. Arguably, improved professional development in new literacy opportunities affords teachers of talented boys the opportunity to feel empowered enough to enact change and embrace literacy learning for the 21st century.

A troubling environment currently exists in schools, which often prevents boys from learning in ways that feel natural (Hebert, 2012). Neu and Weinfield (2007) explain “while outside of school, students are multitasking and interacting with a variety of technology; inside of school they are expected to maintain focus for long periods of time on information that is primarily presented in the same low-tech way that it has been for years- listening to a teacher talk or reading a book” (p. 13). Arguably, boys develop literacy identities in their everyday lives that are being undervalued within the schools. Teachers’ views of what constitutes literacy needs to encompass and embrace the affordances involved in the spaces modern literacy practices create for talented male learners. Our world has moved beyond a boxed, “one-size-fits-all” approach to learning with the emergence of technologies and Web 2.0. Boys leave school daily and immerse themselves in sports, video games, play with siblings and friends, texting, music downloading, social networking, and a variety of other activities. These activities often take place simultaneously. This is the environment where boys feel relaxed, empowered, and successful in their adolescent identity development. Why don’t we draw upon on these very same interests in school? We can provide opportunities to collaborate within the classroom and far beyond the classroom through social networking. We can create multimodal learning experiences and

assessments that privilege a variety of textual representations, rather than stick to a prescribed and scripted curriculum privileging only traditional text. Above all, we should be able to release some of the control in the learning process and truly allow learners to navigate, explore, and make their own meaning from our dynamic, complex world. After all, these skills are what children will need in order to achieve success in the future. Now, it is time for teachers to hear the cry from their boys and understand that the problem is not a lack of interest in reading, it is a lack of connection to the types of texts teachers make available and accept within the learning environment.

Take Action!

As a classroom teacher, teacher educator, and mother, I have spent time exploring how to facilitate a learning environment that embodies and values multimodal literacies for talented, adolescent boys. Through my experiences with Trey and observations within my own classrooms, I realized that I needed to broaden my literacy lens as I explored my pedagogical practices. As a result, I continuously engage in a quest to gain understanding into how each student makes meaning in highly personalized ways. In the following sections, I make several recommendations for teachers as they seek strategies to embrace multimodal literacies.

Be “Tech-Savvy”

My students will tell you that I am not a technology expert. However, I am not afraid to dabble. I use technology to create interactive lessons on my SMART Board, I infuse video into my lessons to elaborate on ideas, I use a variety of platforms to create engaging lessons (beyond PowerPoint) for my students, and I create collaborative assignments that create a safe place for students to experiment with the technologies I model. Sometimes, I face glitches as I use these tools in the classroom, but I try to be transparent with my students about how we will often need

to experiment, problem-solve, and find alternative ways of expression if we hit road blocks.

Being tech-savvy isn't about being a technology superstar, it's about eliminating the anxiety that prevents us from even trying out new forms of communication.

Some of the presentation tools I have spent considerable time “dabbling” with include Prezi (www.prezi.com/), Glogster EDU (edu.glogster.com/), and Sparkol Videoscribe (www.sparkol.com/). While these particular tools will fade and/or evolve with time, it is important to realize that it is not the particular tools utilized, but the use of tools that counts here. Students have expressed their increased interest in the content I convey because of the varied format each tool allows. Instead of the typical confinement students feel as they listen to a teacher-directed lesson, these tools allow for alternative avenues for consumption. Students might watch a video embedded in a Prezi, then zoom to a section of the presentation that calls for a collaborative activity. An example of this is provided in the Prezi link provided (Instructional Planning for Diverse Learners:

http://prezi.com/4v8z0obxjy_y/?utm_campaign=share&utm_medium=copy&rc=ex0share).

During this lesson, students view a Wordle as a whole group then, students break into small groups to discuss the Wordle and share thoughts. Following the discussion, a video is presented, which makes connections with readings, and the discussion eventually evolves into collaborative work designed to develop understanding about larger course concepts. During Glogster presentations, students view an interactive poster where they create meaning from a mixture of visual images, embedded videos, and text. An example of a Glogster incorporating these elements is provided in the link (Comprehension Glog:

<http://william1.edu.glogster.com/reading-comprehension/>). Sparkol allows students to watch a production on an interactive whiteboard as I narrate content I have created from a script. While I

teach using these tools, I continually engage in conversations about how a variety of texts combine to create more in-depth meaning. Essentially, the discussions move beyond the technical “wow-factor” to the more crucial conversation of how we can become engaged in using multiple forms of texts to move toward greater understandings.

Encourage Discourse

Our society is becoming increasingly interconnected through social media and the affordances of technology. Lankshear and Knobel (2007) emphasize that social practices of literacy are discursive. In essence, they explain that “we ‘do life’ as individuals and as members of social and cultural groups” (Lankshear & Knobel, 2007, p. 225). Within face-to-face interactions, online conversations, and exposure to widely distributed media, children situate themselves and develop their identities within various groups. In fact, Gee (2014) maintains that, in a sense, each of us has multiple identities. Gee (2014) contends individuals have a core identity that “relates to all other identities” (as a student, a soccer player, a pianist, a daughter, a Methodist, etc.) (Gee, 2014, p. 4). Through time, the core identity transforms as we take on new identities through social interactions. These interactions often take place in multilayered environments online, in school, outside of school, and within combinations of the aforementioned. As Gee states, “we are fluid creatures in the making, since we are making ourselves socially through participation with others in various groups” (Gee, 2014, p. 4).

Social collaboration within the context of a classroom can be powerful. Currently, it is unrealistic to consider using uncontrolled sites like Facebook to encourage online conversations because of security issues for children. But, realistic collaborative spaces exist. For example, Edmodo (www.edmodo.com/) is an online space teachers can create for groups of students. It feels like an environment similar to Facebook, yet it is protected, allowing only teacher-approved

individuals to participate in online conversations. This application mimics technologies many adolescents find appealing within their authentic lives, yet it can also be a place to allow for conversation to expand upon literacy learning within school. Further, the Edmodo application can be accessed through a mobile application, allowing accessibility and freedom to add to conversations in more personalized ways. Within the context of a classroom, I use Edmodo to post “wonderings” about topics we explore. I encourage students to make posts in response to my wonderings and comment on their classmates’ posts. Not only does this allow students to make connections with each other, to texts we have encountered in class, and to texts they have encountered in their daily lives, but it also provides a gauge for me in determining where to guide their future learning.

Further, social collaboration can also encompass shared composing practices. Tools like iMovie, Moviemaker, Animoto (<http://animoto.com/education/classroom>), Xtranormal (www.xtranormal.com/), and Glogster EDU (edu.glogster.com/) can serve as avenues for students to share meaning they collectively make through textual encounters. For example, Glogster EDU (edu.glogster.com/) is a free, web-based tool where students can develop interactive, virtual posters. Within the virtual posters, students can embed audio, video, text, hyperlinks, and creative backgrounds in order to convey ideas. Further, students have the ability to share their interactive posters in online communities. Xtranormal (www.xtranormal.com/) allows students to create an online dialogue between virtual characters and share their productions through YouTube or shared hyperlinks. I have found Xtranormal to serve as a virtual reader’s theater (Thoermer & Williams, 2012; Young & Rasinski, 2009), where students develop scripts based on narratives or new content knowledge and disseminate their messages through virtual characters. Often, students report to feel “safe” when collaboratively developing

an Xtranormal production because they are not concerned with performance anxiety. Feelings of engagement and safety are particularly important during reader's theater (Worthy and Broaddus, 2001). Instead, they report spending more time on content development and creative aspects of the production. Another space for individual or collaborative meaning-making is through Animoto (<http://animoto.com/education/classroom>). Animoto provides a platform for students to mix text with audio, images, and video to make a meaningful video. Once a video is produced, students have the ability to share their production through email, embed a link in blog or website, share through YouTube, or download the video to a computer for a presentation. All of these applications allow for the orchestration of visual, auditory, and gestural components in order to convey meaning in alternate formats.

A classroom scenario might include a group of students working within a literacy circle who choose to convey their shared meaning of the author's purpose through the creation of a skit filmed on an iPad using iMovie. Collaboratively considering important elements of the production such as audience, voice, creative design, and depth of content move students to places where they can consider deeper meanings. The act of composing through multiple modes (movement, script writing, digital design, and art) fosters engagement and meaning-making that goes well beyond the constraints of common literacy practices, ultimately, enhancing overall understanding. Through the act of mixing and remixing different kinds of texts, collective and individualized meaning is constructed.

Embrace the Common Core State Standards: Multimodal, Interdisciplinary Inquiry

The Common Core State Standards (CCSS) have been widely adopted across the United States. These standards created by the National Governors Center Association for Best Practices (NGA) and the Council of Chief State School Officers (CCSSO) identify the necessary

knowledge and skills for learners to succeed in the 21st century (Common Core State Standards Initiative, 2010; Johnsen, 2012). The move toward these standards offers a productive opportunity to play into the interests of gifted and talented adolescent boys. First, the traditional focus of teacher-selected narrative approaches to literacy instruction is being challenged, with a call to move toward more informational texts. Second, the Common Core State Standards place an emphasis on developing literacy practices across disciplines. While at face value these standards hold promise, it is up to innovative educators to transform the broadly-based standards into meaningful, engaging, and enriching curriculum.

One way to tap into the interests of adolescent boys is to facilitate *multimodal* (New London Group, 1996), interdisciplinary literacy experiences. Multimodal literacy experiences afford children opportunities to combine multiple modes of meaning-making systems (visual, oral, aural, etc...) in order to construct and produce new and authentic understandings about the world. These experiences place value on all modes of communication, including the arts, movement, drama, and music in order to create “multiple ways of knowing” (Short, Harste, & Burke, 1996). While this seems logical, and most of us acknowledge that we live in a multimodal world outside of school, how do we mimic authentic ways of creating new meanings within the classroom?

First it requires you, the teacher, to become a facilitator of learning, rather than a gatekeeper of knowledge. This happened for me when I started a unit on our state’s history. I was teaching fourth grade at the time, and it was my responsibility to make sure essential content was covered in a thorough and deep manner. I realized that the only way to go “deep” with the content was to figure out how I could engage my learners. I started with a class meeting. Wow, I was so excited to share about all of the exciting historical events we would encounter! Knowing

that I needed a “hook”, I gathered the children into a common space in the classroom, I explained the purpose of our meeting, and I shared a website on the SMART Board containing “moments” of our state history. We watched several “moments”, which lasted about a minute each, and the children immediately started chattering about their experiences and bits and pieces of prior knowledge regarding our state’s history. I could tell they were excited about the multitude of topics we were about to explore, and I certainly did not want to stifle their enthusiasm. This is when one student exclaimed, “Mrs. Krause, how will we learn about all of those events. It seems like a lot of stuff to memorize.” That’s when it hit me. He was right. I didn’t want the students to have a rudimentary understanding of many different events. Instead, I wanted them to connect with the historical events they found most meaningful and determine how the new understandings they developed changed their views of the world. Without a doubt, this was a challenging feat.

Collaboratively, the classroom transformed into a room full of inquirers when I asked them to help me make a plan for how we would learn about important events in our state’s history. One student remarked, “I like topics on the website. Can’t we learn more about those topics?” A group of students immediately agreed. One student said, “We could choose a topic from the website and learn more about it than they tell us in the short video on this website.” I took a moment to ponder her idea. Then I created a quick poll on the SMART Board to determine who was interested in the specific topics on our state history. The students were excited to have choice in their areas of focus, and I was astonished with how the distribution between topics seemed to follow a natural progression. Soon, I had teams of two or three students working in areas of interest. As the days progressed, we collaboratively determined criteria for the assignment (i.e. number and variety of sources, quality and reliability of sources,

length of presentation, quality of details presented, multimodal elements embedded within the presentation). Ultimately, the students decided to compose group presentations as a culminating experience. As a class, we determined that we could learn about our state history through these presentations. Throughout the following weeks, we engaged in powerful discussions about creating quality research through the aforementioned criteria. We used sophisticated language while we engaged in the research. It was powerful. In the end, groups used iMovie, Animoto, Prezi, and one group even created a reader's theater to perform their findings. Following group presentations, classmates engaged in question and answer sessions for clarification on topics. The entire project was inquiry-based and student-centered.

This type of scenario directly relates to the learning needs of many talented adolescent boys. As Neu and Weinfield (2007) highlight, bringing modern literacy practices inside the classroom through multi-tasking and the use of a variety of texts (i.e. digital production, print, drama), we are allowing students to connect with textual experiences and create personally meaningful literacy events. It can be argued that multimodal, interdisciplinary literacy experiences embody the overarching goal of the CCSS- to become successful, literate citizens living in the 21st Century.

Look, Listen, and Consider

This is probably the most difficult recommendation to fully enact. I'm not sure that I was able to reach a place where I could truly look, listen and consider what was happening in the learning environment until I participated with my students as we dabbled together in meaning-making with an array of textual sources. Essentially, I had to put myself in their shoes as learners. This enabled me to see beyond my prescribed objectives for a literacy lesson, and it helped me understand potential for learning well beyond anything I could conceptualize. Seigle

(2004) emphasizes the importance of “complexity and depth” when facilitating learning experiences for talented students. This requires teachers to adopt a state of mind that *looks* for learning opportunities, *listens* to the variety ways students produce and consume multiple texts, and *considers* the value of a variety of textual sources and compositions.

Looking, listening, and considering are complex and interrelated tasks for a teacher. In order to *look* for a learning opportunity, teachers need to be active *listeners* as they make observations about the ways students are navigating through texts. Further, *looking* requires teachers to make determinations about what types of texts they value within the learning environment. *Listening* often requires the teacher to be an active participant in the learning environment alongside of the students. This means teachers must move away from a purely teacher-directed learning process, instead allowing for a more student-centered /teacher-guided learning context. For marginalized groups, like talented boys, this is crucial in fostering the love of texts that are personalized to their interests and connected to their daily lives. Finally, *considering* what texts we value inside of a classroom forces us to examine our own conceptualizations of literacy. This is where we are called to make a shift out of a potential comfort zone. A zone where familiar texts of our own lives in schools entrap our vision of what is important for today’s learners. Instead, we are called to *consider* the texts of our students’ lives. After all, these are the texts that will likely continue to be prevalent in our highly communicative, dynamic society and morph into future forms of textual communication. So, *consider* the lives of your students, especially talented boys. This consideration will help to send a message about what is truly valuable for their developing literacy identities.

Conclusion

One early morning before school, Trey said, “Mom, why can’t I bring my cell phone to school? I could use it as a calculator, play *Minecraft* at lunch, and even look up information for my writing projects.” I looked bewildered as I said, “I know, Trey. Your ideas make sense. I think your teacher views your phone as a distraction. During a break, ask your teacher if you can bring your phone in to show her how you use the Animoto application.” Inside, I was hoping that each little nudge I gave Trey to share his interesting and powerful tool would provide an entrance point into his teacher’s conceptualization of literacy.

A critical approach to teaching talented boys is necessary in order to cause change in current practices. Teachers need to be aware of the individual needs of every individual child, and pay close attention to those who display a lack of interest and motivation. Our dynamic, globalized environment affords teachers and students a multitude of tools for literacy development. Print-based literacy practices are still present in our classrooms, but there is a loud cry for teachers to broaden their lens of what constitutes reading and literacy. If teachers can become more “tech-savvy”, encourage thoughtful discourse within the classroom, and make shifts in their own conceptualizations of what texts should be valued, this loud cry might be answered. After all, it is through these actions that potential exists for talented boys to become engaged and interested in literacy practices, propelling them toward success in the real world.

Epilogue

After researching Trey’s literacy practices as a talented, adolescent boy in a traditional school setting, I realized the value of broadening my conceptualization of marginalization. While society typically does not regard talented learners as marginalized, clearly, as outlined in this chapter, talented learners can face barriers and constraints. In the next chapter, I explore another

scenario where society does typically categorize these types of learners, individuals with a diagnosis of dyslexia, as marginalized in the classroom. My hope is to gain insight about the broad spectrum of individuals who face degrees of marginalization, and explore potential affordances of multimodal literacies.

Chapter Six

Pay Attention! : Sluggish Multisensory Attentional Shifting as a Core Deficit in Developmental Dyslexia

Reading is an integral part of our lives. Beyond the seemingly innate spoken word, the ability to decode text, extract meaning from visual representations, and formulate new and authentic knowledge occurs effortlessly for many of us. In fact, it is largely assumed that if you are motivated and raised in a home where reading is valued, “the ability to learn to read will come with ease” (Shaywitz, 2003, p.3). For accomplished readers, we attend to the written word subconsciously throughout our daily lives while reading for information and for pleasure. Although the ability to read at a subconscious level is apparent for many, there lies a population of individuals who do not experience a seamless transition between the oral and written word. The perplexing aspect of this phenomenon occurs when children who are articulate and of seemingly “normal” cognitive abilities possess marked difficulties in reading and writing.

The clinical diagnosis for children and adults who display this mismatch of intellectual ability and reading performance is *developmental dyslexia*. The diagnosis of developmental dyslexia “reflects a reading difficulty that is unexpected for a person's age, intelligence, level of education, or profession” (Shaywitz, 2003, p. 132). According to Lyon, Shaywitz, and Shaywitz (2003), a comprehensive definition of dyslexia is as follows:

Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of

language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction (p.2).

While there are numerous hypotheses regarding the possible origins of dyslexia, the phonological deficit hypothesis remains the most widely accepted (Snowling, 2000; Vellutino, Fletcher, Snowling, & Scanlon, 2004). According to this framework, a dysfunction in the processing of phonemic and phonological representations, essential for adequate decoding skills, leads to difficulties in automatic and fluent reading (Lallier et al., 2010). Historically, research examining the source of the phonological deficit has focused on the auditory component of phonological representation, which suggests central auditory deficits in developmental dyslexia (Banai & Ahissar, 2006; Bailey & Snowling, 2002). More specifically, the phonological theory of developmental dyslexia (Snowling, 2000) posited, “reading difficulties stem from the inability to encode the sounds composing speech streams” (Lallier, Donnadieu, & Valdois, 2013, p. 97). Phonemes are hypothesized to be the smallest contrastive unit of sound that changes a word’s meaning (e.g. /b/ and /d/ as in bad versus dad) (Mesgarani, Cheung, Johnson, & Chang, 2014, p. 1006). According to this framework, the causal component of developmental dyslexia lies within a deficit specific to the linguistic domain.

More recently, research proposed resources necessary for rapid temporal processing are similarly impaired in both the auditory and visual modalities (Stein & Walsh, 2007). Research studies focused on these amodal temporal deficits in developmental dyslexia highlight the possibility of “involvement of both the visual transient magnocellular system and its auditory counterpart” (Lallier et al., 2010, p. 4125). Hari, Renvall, and Tanskanen (2001), build upon the notion of magnocellular involvement in developmental dyslexia by supporting the proposal made by Stein and Walsh (1997) that “a failure of attention subtended by a parietal lobe deficit could

explain temporal impairments in developmental dyslexia” (Lallier et al., 2010, p. 4126).

According to Hari et al. (2001), a parietal (attentional) dysfunction could be responsible for the temporal deficits found in developmental dyslexia. With the broader consideration of parietal lobe (attentional) involvement, a framework emerged for understanding how auditory and visual temporal information is potentially impacted through a dysfunction within the functional neurocircuitry. Considering these factors, Hari et al. (2001) proposed amodal sluggish attentional shifting (SAS) as a causal factor for temporal processing deficits in developmental dyslexia.

Undergirding this theory is the notion that when dyslexics are faced with rapid sequences of stimuli, their automatic attentional systems fail to disengage efficiently, which leads to difficulty when moving from one item to the next (Lallier et al., 2010). This results in atypical perception of rapid stimulus sequences. In essence, this impairment in speech segmentation processes and atypical scanning processes of letter strings could result in poor phonemic/graphemic representations and awareness, ultimately leading to reading difficulties (Lallier et al., 2013). See the following Prezi link for the rationale for further exploration of these theories (Is Dyslexia More Than a Phonological Deficit?):

http://prezi.com/pgaoxdsioglp/?utm_campaign=share&utm_medium=copy&rc=ex0share).

The aim of this paper is to provide a background on the reading process and review neuroscientific studies of individuals with developmental dyslexia, which provide evidence for amodal sluggish attentional shifting (SAS) as a causal factor for amodal temporal processing deficits. Until recently, the SAS theory, particularly the examination of amodal attentional deficits, was studied solely through the use of behavioral measures (see Facoetti et al., 2010; Facoetti, Lorusso, Cattaneo, Galli, and Molteni, 2005). One insight gathered from behavioral data highlights the decreased pace of covert attentional orienting skills in both modalities

exhibited by dyslexic children (Facoetti et al., 2010; Facoetti et al., 2005). Another insight includes the finding that stimulus stream integration/segregation deficits are consistently found in relation to reading impairments in both children (Lallier et al., 2010; Ouimet & Balaban, 2010) and adults (Helenius et al., 1999; Lallier et al., 2010). These studies provide grounds for exploring whether the typical phonological disorder observed with developmental dyslexia is actually derived from an atypical processing of rapid amodal temporal sequences within the brain. While these behavioral data provide hypothetical grounds for the SAS theory, it is crucial to ask the following: Is there evidence within the literature that provides a basis for further exploration of amodal sluggish attentional shifting (SAS) as an underlying deficit in developmental dyslexia?

Functional Circuitry of the Reading Brain

Fundamentally, reading development is a process where novel orthographic codes (graphemes) must be mapped onto pre-existing phonological codes (spoken words), which exist in attachment to meaning prior to reading (Zeigler, Perry, & Zorzi, 2014). During the initial stages of learning to read, reading development is delineated by learning how singular letters and groups of letters map onto their corresponding sound(s). This process is called *phonological decoding*, which plays a foundational role in allowing children to recode words they have previously heard but never seen before, thereby “giving them access to thousands of words that are present in their spoken lexicons” (Zeigler et al., 2014, p. 1634). Over time, successfully decoded words provide children with opportunities to establish direct connections between a given letter string (orthography) and oral language, which results in the “development of an orthographic lexicon” (Zeigler et al., 2014, p. 1634). It is largely assumed most children have a substantial phonological lexicon (initial network) established before formal reading instruction.

Therefore, a crucial understanding is needed about why this phoneme to grapheme correspondence does not occur naturally for all children (e.g., developmental dyslexia).

This section outlines the neural systems proposed to support the reading process, and describes a cognitive model for understanding attentional aspects of reading. This background is important as neurological data and theoretical perspectives merge in order to develop a more comprehensive understanding of developmental dyslexia and its potential underlying causes.

Neural Systems for Reading

Functional and structural imaging techniques continue to contribute to the understanding of the “functional circuitry” of skilled readers (Schlaggar & McCandliss, 2007). Based on these imaging studies (Fiez & Petersen 1998; Turkeltaub, Eden, Jones, & Zeffiro, 2002; Jobard, Crivello, & Tzourio-Mazoyer, 2003; Bolger, Perfetti, & Schneider, 2005), both qualitative and quantitative data converge on the importance of ventral (orthographic) and dorsal (phonological) systems because they represent the functionalities most directly associated with the specialization of reading ability (Schlaggar & McCandliss, 2007). See Figure 8 for a basic diagram of neural systems for reading (Shaywitz, 2003).

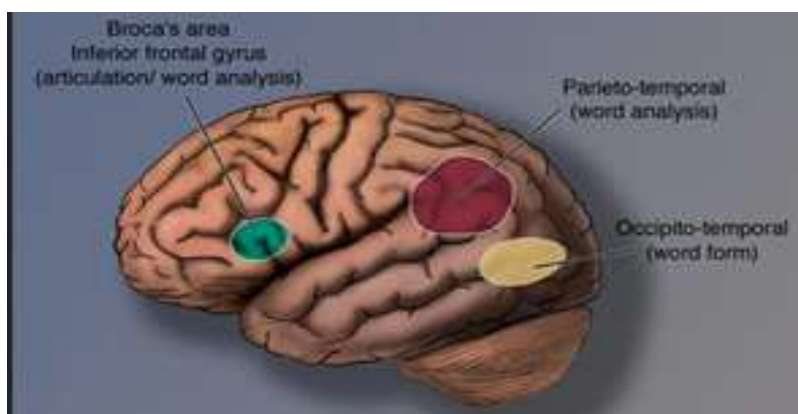


Figure 8. Neural Systems for Reading

Research supports the notion of visual information as initially processed by occipitotemporal areas, located ventrally in the extrastriate cortex (Cohen et al., 2000; Schlagger & McCandliss, 2007). This cortex occurs in both hemispheres of the brain. It is proposed bilateral regions support visual processing before reading instruction occurs, then feed into more left-lateralized regions as individuals become more “expert” readers. This more lateralized area is commonly termed the “visual word form area”, or VWFA (Cohen et al. 2000, 2002; McCandliss, Cohen, & Dehaene, 2003). This orthographic system is thought to process prelexical representations of words and pseudowords. Prelexical representations refer to the VWFA’s computation of structural representations of the visual word as an “ordered sequence of abstract letter identities” (Dehaene et al., 2002, p. 321). These characterizations of pre-alphabetic processing rely on recognition of crude shapes, or processing of visual information other than recognized letters. Current electrophysiological (i.e. EEG) and functional imaging (i.e. fMRI) techniques demonstrated functional specialization of the VWFA emerges during the acquisition of reading expertise. Spironelli, Penolazzi, Vio, & Angrilli (2010) demonstrated this finding in a study where 14 Italian children who were learning to read demonstrated hemispheric reorganization following 6 months of intensive multisensory phonological training. In order to measure language-based hemispheric reorganization, researchers used the recognition potential, an early wave on an electroencephelogram also called the N150, which is elicited by automatic word recognition (Spironelli, Penolazzi, Vio, & Angrilli, 2010). The researchers found the N150 to peak over the left temporo-occipital cortex following training. This indicated developing expertise in reading led to left lateralization, in hemispheric activity based on blood flow. Similarly, Shaywitz et al. (2004) conducted a longitudinal study of students who received explicit, phonologically mediated reading instruction, with the hypothesis that such an

intervention would improve reading fluency and the development of the fast-paced occipitotemporal systems, which have been shown to serve skilled readers (Cohen et al., 2000; Deheane et al., 2002). Seventy-seven school-aged children (49 with reading disabilities and 28 control subjects) participated in the study. Immediately following the intervention, fMRI results indicated increased activation in left hemisphere regions (as compared with baseline fMRI measures), which includes the middle temporal gyrus and the inferior frontal gyrus. Further, students taught with the experimental intervention demonstrated significant gains in reading fluency. These findings suggested the change in regional activity is related to change in skill level, as well as, impacted by educational activities (Shaywitz et al., 2004). Further, these studies represent findings across two languages, which suggests left-lateralization occurs with reading expertise among various orthographies. While Italian and English have similar orthographic characteristics, English tends to be more complex. Further studies are needed across logographic (symbols representative of words), syllabic (symbols representative of syllables), and alphabetic (symbols representative of phonemes) systems.

Dorsal components are thought to represent phonological systems involved in the reading process. This system can be functionally organized into two components: a left dorsal posterior component and a left anterior component (Schlagger & McCandliss, 2007). Commonly referred to as the perisylvian region, the left dorsal component is inclusive of the supramarginal gyrus, angular gyrus, and superior temporal cortex. The angular gyrus has long been recognized for its role in language processing (Brown, 1972). More recent researchers noted the left dorsal posterior component demonstrated greater activation when reading pseudowords rather than when reading real words (Pugh et al., 2001) suggesting this region is potentially an integrative region linking phonology to orthography (Schlagger & McCandliss, 2007). More specifically,

the left angular gyrus is considered a critical structure for reading. Historically, Starr (1889) described lesions to the left angular gyrus, which resulted in alexia (the inability to name words) and agraphia (the inability to write). Similar historical findings from lesion studies (Dejerine, 1891; 1892) suggested the role of the left angular gyrus to be a multimodal convergence zone, linking visual processes with auditory processes (Poldrack, 2001). These studies indicate damage to this area potentially results in difficulties in reading and writing. The left anterior component is thought to be responsible for the production of speech and tactile analysis of phonological components of words. This area includes the inferior frontal gyrus and extends into the dorsal premotor cortex (Fiez & Petersen, 1998; Poldrack, Wagner, Prull, Desmond, & Glover 1999).

Multi Trace Memory model: A Connectionist Model of Reading

“A steady increase in reading speed is the hallmark of normal reading acquisition... visual attention capacity could constrain reading speed in elementary school children” (Lobier, Dubois, Valdois, 2013, p. 1).

Phonological decoding is arguably an attention-demanding process (Reynolds & Besner, 2006). Specifically, *graphemic parsing*, or the segmentation of a letter string into its constituent graphemes requires an “efficient orienting of visual-spatial attention” (Facoetti et al., 2010, p. 1011) in combination with efficient phonological skills (Zeigler & Goswami, 2005; Ramus, 2003). Complications with visual-spatial attention have been repeatedly noted in the literature on developmental dyslexia (Facoetti et al., 2005; Hari & Renvall, 2001). Therefore, the Multi Trace Memory model for reading provides an interesting framework for examining connectionist theories of typical and atypical reading development.

Building upon the understanding of the functional circuitry of the reading brain, the connectionist Multi Trace Memory (MTM) model is connected to the notion that developmental dyslexia is potentially derived from an atypical processing of rapid multimodal sequences within the brain (Lobier et al., 2013). Connectionist models imply networks (neural) change over time, and they are strengthened or weakened by activation (or non-activation) (Elman, 1996). According to the MTM model, visual attention capacity modulates reading performance. In essence, this model postulated visual attention is “modeled by a visuo-attentional window”, which determines the quantity of sublexical units (visual elements, like letters or parts of letters) that can be “simultaneously encoded during reading” (Lobier et al., 2013, p 2). Further, the MTM model proposed larger attentional capacities allow for the processing of a larger quantity of visual elements (individual letters, syllables, words). Therefore, seemingly automatic recognition of words is dependent on a larger attentional capacity, allowing for the simultaneous encoding of an entire letter string. This simultaneous processing leads to automaticity in word reading. In contrast, when automatic word recognition fails, the MTM model proposed the visuo-attentional window’s capacity is potentially reduced. In this event, attention is focused on smaller elements of the word until long-term memory traces are identified. This laborious encoding process potentially inhibits word reading automaticity. The MTM model points to the importance of non-reading, attentional skills as a powerful modulator of reading performance, which is consistent with the amodal sluggish shifting (SAS) theory (Lobier et al., 2013). While this model focused on visual attention, it provides a starting point for conceptualizing how processing of multimodal sensory information is potentially subject to attentional mechanisms.

Based on the MTM model, Valdois, Bosse, & Tainturier (2004) found a deficit of visual-attentional orienting during a study on polysyllabic French word reading. In this study, they

found the visual attention deficit to be the underlying cause for a subgroup of dyslexics. In a later study, Prado, Dubois, and Valdois (2007) demonstrated this visual-attentional subgroup, in contrast to typical readers, could only process a limited number of letters at each fixation, and they could not increase the number of letters during a reading task. This potentially suggested a smaller visual attention span prevents visual-attentional dyslexics from simultaneously processing many letters. This supports the MTM model of reading as a global or analytic mode of reading, whereby visual attention is needed to focus the attentional window on a subcomponent of the word. Without this attentional focus, the lack of visual attention could impair word identification and the encoding of memory traces (Bellochi, Muneaux, Bastien-Toniazzo, & Ducrot, 2013).

While the Multi Trace Memory model provides a foundation for understanding the role of visual spatial attention during the reading process, the model does not account for other modal resources involved in the reading process. For instance, rapid engagement of auditory attention most likely plays a role in acoustic processing and segmentation of speech signals (Facoetti et al., 2010). Therefore, it becomes important to use the MTM as a beginning framework for thinking about connectionist models (Elman, 1996) given the understanding of the complexities involved in the reading process. Arguably, developmental dyslexia, or at least subtypes that involve visual-spatial, auditory, or a combination of processing issues, is potentially a product of multisensory (e.g., visual and auditory) deficits in spatial attention. According to Facoetti and colleagues (2010), a multisensory deficit of spatial attention “would have a detrimental effect on the process of segmenting into components both the auditory signals (e.g. speech) and visual input (e.g., letter strings)” (Facoetti et al., 2010, p. 1012).

Functional and Structural Neurological Studies Supporting Amodal SAS in Developmental Dyslexia

Given the understanding of the neural systems involved in the reading process and Multi Trace Memory model as a framework for understanding the nature of attention in reading, this section outlines current functional and structural neurological studies, which examine the nature of attention in the reading process. These studies explore *visual*, *auditory*, and *multimodal* attention, which help to determine whether Hari et al.'s (2001) hypothesis of sluggish amodal shifting as a causal factor for dyslexia is supported not only through behavioral data, but also through reliable neurological data.

Visual-spatial attention. Visual-spatial attention is crucial for orthographic processing given that graphemic parsing of sequences of letter strings is mandatory for efficient and automatic phonological assembly. For fluent reading, graphemic parsing demands rapid and accurate attentional orienting across letter strings (Valdois, Lassus-Sangosse, and Lobier, 2012). It is widely accepted the left ventral occipito-temporal cortex plays an integral role in letter string and word processing (Lobier, Peyrin, Le Bas, & Valdois, 2012). However, little is known about mechanisms responsible for pre-orthographic processing, which entails “the processing of letter strings regardless of letter type (Lobier et al., 2012, p. 2195). Lobier et al. (2012) sought to identify the neural correlates of pre-orthographic character string processing independent of character type. In their study, 14 skilled adult readers participated in an fMRI study of single and multiple element visual categorization tasks with alphanumeric and non-alphanumeric characters. According to the researchers,

“Each trial began with a black fixation cross displayed on a white screen for 1000 msec, followed by a 50 msec blank screen. A single character subtending a vertical angle of .7_

was then displayed in the centre of the screen during 200 msec, followed by a 500 msec mask. The answer screen (displayed next) required the participant to click on the visual label of the character's category. Participants carried out 10 training trials with feedback, and two blocks of 30 experimental trials with no feedback. The dependent measure was the success rate across trials" (p. 4).

The findings indicated participants activated the posterior parietal cortex more robustly for multiple over single element processing. Additionally, the fMRI analysis demonstrated the bilateral SPL/BA7 (superior parietal lobe) was more activated during multiple element processing. However, inferior parietal lobes did not demonstrate an activity specific to multiple element processing. Results from this study suggest parietal mechanisms are largely involved in pre-orthographic character string processing. Lobier and colleagues (2012) provided a strong argument that in general, "attentional mechanisms are involved in visual word recognition- an early step of word visual analysis" (Lobier et al, 2012, p. 2195).

Considering the attentional mechanisms involved in visual word recognition and the implications of pre-orthographic processing, it is important to consider that some dyslexic children exhibit visual attention span disorders. These children typically manifest reduced SPL (superior parietal lobe) activation when engaged in multi-element categorization tasks (Reilhac, Peyrin, Demonet, & Valdois, 2013, p. 601). Reilhac and colleagues (2013) studied a group of adult skilled readers and a group of dyslexic participants with an identified visual span disorder. The researchers administered a letter-string comparison task to the participants while undergoing fMRI. Non-words, pseudo-words, and words were utilized as stimuli to investigate sub-lexical and lexical effects on letter encoding (Reilhac, 2013). Findings from the fMRI studies indicated an impairment of substituted letters within strings for the dyslexic participants. Reilhac

and colleagues suggested this finding is related to the under-activation of the left superior parietal lobe. Further, the left ventral occipital area also showed less activation. These findings suggest a potential neural network connection between the left SPL and the VOT, indicating these regions are integral to letter-string processing.

Expanding upon adult studies, which reveal adults with dyslexia display deficits with visual-spatial attention, and moving toward the exploration of children with dyslexia, Franceschini and colleagues (2012) examined 96 pre-reading Italian-speaking kindergarten children (age 5) with typical tests of phonemic awareness, but also on two examinations of visual-spatial attention. One of the visual-spatial tasks required children to visually search across 31 symbols (not linguistic characters), while marking target symbols. The second visual-spatial task involved spatial cueing. This task involved a control condition where children briefly viewed an ellipse displayed on the left or right side of a central fixation point and identified where the ellipse was displayed. In the spatial cueing condition, the left or right side of the central fixation point was briefly highlighted before the ellipse was displayed. Following the brief highlight, the ellipse was displayed either on the highlighted side (valid cue condition) or the non-highlighted side (invalid cue condition). Building upon work from Posner (1980) who demonstrated that attention is automatically or exogenously prompted to an area after it is highlighted, the researchers hypothesized children would perform more accurately in the valid cue condition (Gabrieli & Norton, 2012).

Franceschini and colleagues (2012) followed this group of children through first and second grade as they received explicit phonics instruction. Following the longitudinal analysis of the data, the researchers found 68 of the participants demonstrated typical reading abilities, while 14 of the participants struggled with reading and/or were dyslexic. Of the 14 participants who

demonstrated reading difficulties, 60% of the children performed poorly on the visual-spatial tasks (Gabrieli & Norton, 2012). The significance revealed in the spatial-cueing task analysis demonstrated the potential for visual-spatial cueing scores as predictors for future reading performance.

While current models of amodal sluggish attentional shifting (SAS) integrate multisensory processes beyond the visual-spatial modality (e.g. auditory modality), albeit controversially, original models focused largely on the visual-spatial components (Sperling et al., 2005; Olulade et al., 2013). The visual-spatial focus highlights how some children with dyslexia are impaired in the specific visual magnocellular-dorsal (M-D) pathway (Gori, 2014). Specifically, the M-D pathway originates in the ganglion cells of the retina, travels through the M-layer of the lateral geniculate nucleus (LGN), and continues through the occipital and parietal cortices (Gori et al., 2014). In individuals with developmental dyslexia, the M-D appears to be impaired, while the parvocellular-ventral (P-V) stream appears to be intact (Stein & Walsh, 1997; Gori et al., 2014). The M-D stream responds to contrast differences, low spatial frequencies, and high temporal frequencies, including motion. However, the M-D stream is blind to color. In contrast, the P-V stream is sensitive to color, it has lower temporal resolution, and it has more optimal sensitivity to higher spatial frequencies (Livingstone & Hubel, 1987; Gori et al., 2014). Studies have demonstrated that individuals with dyslexia are less sensitive than typical readers to “luminance patterns and motion displays with high temporal and low spatial frequencies” (Eden et al., 1996; Gori et al., 2014, p. 2).

One limitation of the M-D deficit theory is that most of the evidence is derived from studies of coherent dot perception (Gori et al. 2014), which has been referred to as a “gold-standard” of measurement. This is problematic because it is rare that all individuals within a

dyslexic sample display a deficit in coherent dot perception. Talcott et al. (2013) hypothesize that deficits in detection of coherent motion might possibly be that the impact of visual temporal processing on literacy is not specific to the act of reading, but could be linked to a broader phenotype associated with neurodevelopmental disorders (Talcott et al., 2013). Perhaps, the comorbidity of other developmental disorders with dyslexia creates a more challenging argument for tasks like coherent dot perception to be determined as impacting literacy through direct mechanisms, but rather as indirect mechanisms (e.g. neurodevelopmental factors beyond dyslexia).

Neuroimaging studies of both typical and atypical reading development have repeatedly implicated regions known to subserve the orienting of visual attention, such as the bilateral frontoparietal region (Valdois et al., 2012). Interestingly, the M-D pathway mainly terminates in the parietal cortex (Gori, 2014). Some studies demonstrate a right frontoparietal system dysfunction in dyslexic individuals (Hoeft et al., 2006; Grunling et al., 2004). The left frontoparietal region is associated with auditory-phonological processing, while the right frontoparietal system is an integral component of the network attending to automatic orienting of attention. In typical readers, developmental changes in the activation of the right frontoparietal region are linked to successful reading acquisition. Additionally, several studies utilizing phonological decoding tasks demonstrated deficient task-related activation in areas associated with the frontoparietal system in dyslexics (Valdois et al., 2012).

Perhaps the activation of the right frontoparietal system involved in the orienting of visual attention aids in diminishing the “noise” outside the focus of attention. It is logical to surmise dyslexics face challenges when atypical activation in frontoparietal regions hinders their ability to rapidly orient to stimuli in the visual field, essentially disturbing the signal inside the

focus of attention. These studies demonstrate visual attention, attended to within parietal areas, is potentially “crucial for learning letter identities and their relative positions (orthographic processing) independently of language knowledge” (Franceschini et al., 2013, p. 465).

While some argue against the impairment of visual attention as a causal factor in developmental dyslexia (Olulade et al., 2013; Ramus, 2004), recent studies demonstrate that visual attention is impaired not only in children with dyslexia (Facoetti et al., 2010a; Lallier et al., 2010), but also in children with a familial risk of developmental dyslexia. These findings underscore the notion that visual attention disorders are present prior to reading acquisition, and they potentially function as predictors for reading acquisition (Ruffino et al., 2014). Further, recent findings demonstrate attentional training, without the involvement of phonological or orthographic instruction, through the use of action video games with children might improve reading abilities for children with dyslexia (Franceschini et al., 2013). Ruffino and colleagues (2014) demonstrate, for the first time, that the relationship between visual attention and phonological decoding skills in dyslexia is explained by a sluggish shifting in spatial attention (Ruffino et al. 2014). Therefore, while causal hypotheses for dyslexia continue to be debated, there is strong evidence that visual attention deficits are an indicator, and potentially a core component of the causal factors underlying dyslexia.

Auditory attention. As aforementioned, visual input is processed on multiple spatial scales. Likewise, auditory information is processed on multiple temporal scales. Gaining insight into the temporal coding mechanisms involved in information coding is crucial in understanding the perceptual processing of speech (Goswami, 2011). Phonological processing deficits are widely documented in developmental dyslexia (Snowling, 2000; Vellutino, et al., 2004). Phonological processing involves the encoding and representation of speech within a range of

grain sizes (Leong & Goswami, 2014). These grain sizes involve both segmental (i.e. phoneme) and supra-segmental (e.g. rime, syllable, and stress) (Leong & Goswami, 2014). Word reading, or decoding, involves the understanding of relationships between phonology and orthography correspondences and different grain sizes. Grain sizes are typically at the segmental size for alphabetic languages and the supra-segmental size (syllable level) for character-based scripts. Phonological processing impairments impact reading development for children across languages. In fact, research has provided support for the proposal that auditory attention is critically important for correctly sequencing sounds and discriminating sound-frequency differences (Fritz, Elhilali, David, Shamma, 2007; Shamma & Micheyl, 2010). As with visual attention, these findings suggest automaticity in speech signal segmentation requires rapid orienting of auditory attention.

Through functional neuroimaging (fMRI) studies, researchers demonstrated hypoactivation in left prefrontal brain regions during rapid auditory processing in individuals with dyslexia (Raschle, Stering, Meissner, & Gaab, 2013). Raschle et al. (2013) investigated 28 children with (n=14) and without (n=14) a demonstrated familial history of developmental dyslexia prior to reading onset. The fMRI results revealed functional alterations in left-hemispheric prefrontal regions during rapid auditory processing in the group of prereading children who were at risk for developmental dyslexia. Additionally, researchers found activation during rapid auditory naming tasks in left prefrontal regions correlated with prereading measures of phonological processing and with neuronal activation during phonological processing in posterior dorsal and ventral brain regions (Raschle et al., 2013). These findings are significant because they suggest neuronal differences during rapid auditory naming precede formal reading instruction, therefore, they are not in response to experience-dependent neurological changes

resulting from developmental dyslexia. Further, there appears to be a functional relationship between networks for rapid auditory lexical access and phonological processing within the brain of prereading children.

Goswami (2011) proposed that while current phonological models of dyslexia are based on deficits in subsyllabic phonology (awareness of onset-rimes and phonemes), individuals with developmental dyslexia also demonstrate “impaired syllabic and prosodic perception” (Goswami, 2011, p. 4). Goswami suggested a general difficulty in distinguishing different modulation frequency ranges naturally affects the slower temporal rate in speech processing, thus, impacting syllabic segmentation. She proposed phonological deficits demonstrated in developmental dyslexia are likely to be present before reading occurs, potentially atypical from birth. It can be argued human infants show sensitivity to syllables as neonates since they use rhythmic cues to distinguish syllables and words from acoustic signals in order to build a repertoire of spoken words (Mehler et al., 1998). Interestingly, a study of two- and three- year-old children at familial risk for developmental dyslexia demonstrated those children who eventually developed reading difficulties also demonstrated speech-timing difficulties. This was represented by the production of significantly fewer syllables per second (4.8 at age 3 for familial risk and 7.1 for non-risk children) and more frequent pauses between articulations (Smith, Smith, Locke, & Bennett, 2008). Supporting these behavioral findings, Giraud and colleagues found spontaneous oscillatory neural activity at both Theta and Gamma frequencies within the auditory cortex, which correlates with spontaneous activity in visual and premotor regions of the brain. Therefore, Goswami (2011) indicated it is possible “inefficient phase locking in the auditory cortex has associated effects on the development of visual and motor

processing and could also be the source of some of the observed visual, motor, and attentional difficulties” found in developmental dyslexia (p. 6).

Abrams, Nicol, Zecker, & Kraus (2009) studied a group of children with normal and impaired reading ability and assessed phase locking to speech through making cross-correlations with the response in the temporal electrodes with the broadband envelope of a sentence. Phase locking refers to the ability of a neuron to fire action potentials that are time locked to a stimulus event. The researchers found impaired phase locking in poor readers, and they also found the timing of phase locking in each hemisphere differed by reading skill (Abrams et al., 2009). Findings revealed typically developing readers demonstrated earlier right-hemispheric responses, while poor readers demonstrated earlier left-hemispheric responses. The cortical asymmetry of the responses accurately predicted 50% of the variance in phonological skill. Aligning with the many sensory deficits found in developmental dyslexia, auditory attention is potentially enhanced when stimuli arrive “in phase with neural oscillations” (Goswami, 2011, p. 7). The impaired auditory phase locking demonstrated in individuals with dyslexia provides strong support for the atypical auditory and visual cueing disruptions, which underpin the theory of amodal sluggish attentional shifting (SAS) theory. Essentially, early difficulties in auditory cue perception, derived from basic attentional disruptions, potentially lead to under-specialization of the left perisylvian phonological system (Facoetti, 2012). This dysfunction of sensory and attentional temporal sampling attended to by the temporo-parietal regions might lead to clues in finding the causal factors involved in phonological deficits for dyslexic individuals.

Multimodal attentional shifting. As previously mentioned, Hari and Renvall’s (2001) amodal sluggish attentional shifting (SAS) hypothesis suggests when individuals with dyslexia face rapid stimulus sequences, their automatic attention system cannot disengage efficiently,

giving rise to slow and degraded processing. It is proposed SAS distorts cortical networks which support sub-lexical auditory-phonological processing (e.g. syllables, phonemes) and visual-orthographic (e.g. syllables, graphemes) representations (Ruffino et al., 2014). It has been proposed these multisensory/multimodal attentional shifting and rapid processing deficits give rise to the phonological impairments often observed in individuals with dyslexia (Tallal, 2004). Given the hypothesis of inefficient processing of rapid stimuli in both the visual and auditory modalities for individual with dyslexia, broader non-linguistic deficits can be associated with inefficient processing of multisensory perceptual stimuli (e.g. perceptual noise exclusion; Sperling et al., 2005; Facoetti et al., 2010) that potentially impairs the ability to discriminate relevant stimuli when encountering “signal interference” induced by visually (spatial) or temporally (visual or auditory) close noise (Ruffino et al., 2014, p. 2).

Interestingly, attentional deficits are observed across individuals with developmental dyslexia, autism spectrum disorder (ASD), and specific language impairment (SLI) (Ronconi et al., 2013; Ruffino et al. 2014, for review). In autism spectrum disorder, Ronconi et al. (2013) investigated the efficiency of attentional focusing mechanisms in children with ASD. Results from their study indicated typically developing children displayed efficient “zoom-in” and “zoom-out” attentional mechanisms when faced with attentional resources that were either focused or or distributed within a visual field. Contrastingly, children with ASD demonstrated a gradient effect in the large focusing cue condition, implicating a specific “zoom-out” attentional impairment (Ronconi et al., 2013). Additionally, children with ASD demonstrated an atypical gradient effect at the long cue-target interval only in the small cue condition, implicating a prolonged “zoom-in” and sluggish “zoom-out” attentional mechanism (Ronconi et al., 2013). While these findings are specific to the visual modality, the commonalities between various

research findings across these developmental disorders give rise to further investigations of multisensory/multimodal attentional mechanisms within the realm of developmental dyslexia.

In order to establish a link between behavioral and electrophysiological evidence for amodal sluggish attentional shifting (SAS), Lallier et al. (2010) conducted two experiments involving stream segregation tasks. Stream segregation tasks were tested in adaptive and oddball paradigms involving both auditory and visual modalities. Participants included 26 adult volunteers, 13 of which were diagnosed with developmental dyslexia. During each experiment, participants were presented with sequences of alternating tones or alternating dots. The first experiment measured how quickly participants automatically disengaged with one stimulus and reengaged with the next. In the second experiment, the researchers evaluated P3b latency responses (a specific ERP component) elicited by deviant SOA (fast tempo and deviant tempo) targets. P3b latency is often utilized as a measure of the relative timing of the stimulus evaluation process (Coles & Rugg, 1995). These experiments were hypothesized to demonstrate an “amodal SAS deficit (Experiment 1) would be accompanied by an atypical perception of rapid stimulus sequences in both modalities (Experiment 2)” (Lallier et al., 2010, p. 4126).

As anticipated by the researchers, findings for Experiment 1 supported previous behavioral evidence for SAS by demonstrating dyslexic adults display significantly higher stream segregation thresholds in both the auditory and visual modalities. Further, findings from Experiment 2 indicated group differences in the P3b latency dependent on the speed of stimulus presentation, indicating dyslexic participants perceived auditory and visual stimulus sequences in an “atypical fashion”. The primary conclusion of this study was dyslexic participants impaired in phonological processing exhibit “amodal behavioral and neurophysiological SAS symptoms, which specifically affect rapid (<200ms) temporal processing” (Lallier et al., 2010, p. 4133).

Correlations between the visual and auditory modalities within this study support the idea rapid attentional shifting is required for synchronization between modalities in order to acquire fluency in reading (Breznitz, 2003; Breznitz & Meyler, 2003; Breznitz & Misra, 2003).

While few neurological studies have been conducted on multimodal selective attention, Lallier and colleagues (2010) illuminated potentially important directions for developmental dyslexia research. They highlight the notion of amodal sluggish attentional shifting (SAS) presented by Hari et al. (2001). In essence, the researchers suggested selective graphemic parsing deficits, as found in developmental dyslexia, are potentially due to a sluggish shifting of spatial (visual orienting) and temporal (engagement) auditory attention. This framework for thinking is critical in understanding why dyslexics face challenges with perceptual “noise” exclusion. Attentional mechanisms serving as a causal factor in the underlying characteristics (i.e. phonological deficits) of developmental dyslexia continues to be debated among researchers who continue to support phonological processing as a the primary causal factor. Therefore, it is imperative for further neurological studies to explore attentional mechanisms during the prereading and reading process in order to determine if multiple modes require attentional demands that impeded dyslexics’ ability to efficiently process information rapidly, ultimately leading to automaticity in reading.

Discussion

The aim of this article was to explore current neuroscientific research in order to further understand multimodal/multisensory deficits potentially contributing to the amodal sluggish attentional shifting theory (SAS) and their potential role in the causality of developmental dyslexia. The studies discussed on visual, auditory, and multimodal attention implicated attentional dysfunction as a core deficit in dyslexia, leading to deficits in orthographic and

phonological processing. Studies continually demonstrate the inhibitory aspects of attention are critical for perceptual “noise” exclusion (e.g. Hari & Renvall, 2001; Facoetti et al., 2005; Ruffino et al. 2014). For visual processing during the reading process, individuals must precisely select letters from a field of potentially cluttering graphemes through rapid orientation of visual attention (Franceschini et al., 2013). Further, efficient auditory attention is necessary for perception of stimuli, which increases the neural connections between letter and phoneme. In spite of the vast amount of information flooding the perceptual scene, successful readers have the ability to filter through the sensory information and focus on one object/aspect. Therefore, individuals with developmental dyslexia lack the attentional engagement, or the multisensory mechanisms designed to regulate perception of a world of complex sensory stimuli (Franceschini et al., 2013).

Franceschini and colleagues (2013) highlighted multisensory sluggish attentional engagement as a mechanism that can potentially mimic a primary rapid signal processing deficit. This is because the inefficient functioning of the attentional window potentially exposes object perception to interference from noisy distractors (Franceschini et al., 2013). The Multi Trace Memory model (MTM) provides an intriguing starting point for understanding the complexities of attentional engagement. The “mimicking” that takes place explains the common approach of looking at developmental dyslexia as a phonological deficit, rather than an issue of attentional engagement and shifting between multiple modes.

Current research demonstrates children who are at risk for developing developmental dyslexia can be identified early (Facoetti et al., 2010). Looking toward biological markers, familial history, and language development as cues, it is possible to conceive early identification of individuals who will likely develop reading disorders and provide interventions, which target

multisensory spatial orienting and attention. Development of efficient attention is crucial because it improves the perception of stimuli and potentially increases the development of neural connectivity between orthographic and phonological stimuli (e.g. letters and speech sound). Traditional approaches for remediating developmental dyslexia include explicit, systematic phonological training of letter to speech-sound integration (Gabrieli, 2009; Goswami, 2011). While this approach demonstrates some effectiveness, it potentially fails to address the core deficit many individuals who struggle with the multifaceted disorder face in their desire to read. Additionally, traditional approaches, which focus only on phonological training, might have reduced success if attentional deficits are at play (Franceschini et al., 2013). Therefore, treatment of multisensory attentional deficits could provide a strong foundation for the basis of remediation in developmental dyslexia.

Recent studies integrating behavioral and neuroimaging findings provide fairly consistent support for amodal sluggish attentional shifting (Ruffino, 2014; Valdois et al., 2012; Goswami, 2011; Lallier et al., 2010). Considering the Multi Trace Memory model, neuroscientific evidence supports the connectionist framework of reading and extends its relevance when conceptualizing developmental reading disorders. While current research provides evidence for amodal sluggish attentional shifting (SAS), more neurological and behavioral research is needed that integrates multiple senses and multiple modes while engaged in prereading and reading tasks. Research has largely focused on selective modes (auditory and visual), yet the complicated work of integrated tasks that involve multisensory tasks is not widely examined in the research. Ruffino et al. (2014) provide insightful implications for the integration of visual and auditory processing and potential sluggish attentional shifting during the processing of multisensory stimuli, however, it

is still premature to point to SAS as a definite causal factor in dyslexia until more neuroscientific evidence is explored.

Implications

Connections between neurocognitive reading models and neuroscientific research have profound implications for reducing the incidence and severity of reading disorders specifically, developmental dyslexia. It is clear attention, particularly the notion of rapid multisensory attentional shifting, is crucial when considering appropriate remediation pathways for individuals with developmental dyslexia. Various remediation for visual attention have been discussed in the literature (Franceschini et al., 2013; Goswami, 2011). These include the use of action video games for remediation and musical entrainment, respectively.

Franceschini and colleagues (2013) examined reading, phonological, and attentional skills in two matched groups of dyslexic children before and after playing action or non-action video games for 12 hours over the course of two weeks. The action video games consisted of games from a Wii product called *Rayman Raving Rabbids*, and they did not involve any direct phonological or orthographic training. The researchers found that not only did the children's reading speed improve for the group who participated in playing action video games, but results demonstrated an improvement equivalent to or more than one year of typical reading development and more than one year of specific and intensive traditional reading interventions. This underscores the implications multisensory/multimodal attentional engagement training potentially has for the improvement of reading abilities.

Goswami (2011) indicated oscillatory neural activity and phase alignment are both crucial to the development of speech processing. Neural oscillations are repetitive, rhythmic neural activity occurring in the central nervous system. Oscillatory neural activity is generated in

various ways, driven by mechanisms within an individual neuron or through interactions between neurons (Fries, 2001). Typically, oscillations are characterized by their amplitude, frequency, and phase. According to Ward (2003), phase describes the “where the neuron is in its oscillatory cycle” (p. 554). The notion of phase alignment is important with respect to neural oscillations because it could represent the synchronization of different neurons or different brain regions (Varela et al., 2001). Therefore, the notion of rhythmic entrainment becomes an intriguing place for the development of multisensory attentional engagement. Goswami (2011) emphasized the entrainment to metrical structure is essential to linguistic, as well as, musical human behavior (auditory processing of stimuli). Further, Goswami (2011) indicated individuals with developmental dyslexia often demonstrate impaired rhythmic entrainment (or tapping to a beat). Given her research data, music-based remediation for attentional shifting between multimodal stimuli might have profound benefits for developing more solid attentional mechanisms within the development of linguistic and reading abilities. In fact, Tune into Reading, a music-based, pitch matching program that requires repeated reading of song lyrics, produced significant reading gains in disabled middle school readers with only nine weeks of intervention (Rasinski, Homan, & Biggs, 2009).

Conclusion

While researchers explore theories and frameworks for understanding developmental dyslexia, it is imperative they consider the complex nature of the disorder. While there is clear evidence for deficits in attentional mechanisms as an underlying deficit of the disorder, manifestations of the disorder are varied and multifaceted. Educators and researchers need to pay attention to these subtle behaviors and develop an understanding of core deficits and how

deficits emerging from the core might require varied types of remediation, both attentional and phonological.

Thus far, the notion of amodal sluggish attentional shifting (SAS) provides the most solid evidence-based theory for attentional engagement and shifting between multimodal/multisensory stimuli as a core deficit in developmental dyslexia. While at the surface, phonological processing disorders are observed, the understanding of the undergirding deficit is potentially the key to appropriate, effective, and early remediation. If multimodal and multisensory attentional remediation is provided early, perhaps phonological processing issues could be avoided for many who potentially face struggles with reading. See the following Prezi link for further information supporting multisensory attentional training/remediation (Dyslexia and the Brain:

http://prezi.com/pteparoiu9m0/?utm_campaign=share&utm_medium=copy&rc=ex0share)

Epilogue

After reviewing the findings from the papers included in Section 2, I am pointed in the pathway of considering how individuals utilize different processing mechanisms based on their environmental and cognitive needs. In the case of Trey, a talented, adolescent boy, he looked toward multimodal literacy practices used in his daily life as avenues for expression and making meaning. For individuals with dyslexia, research supports multisensory attentional remediation as a potential avenue for alternative processing for individuals struggling with the reading process. In both of these scenarios, the findings support multimodal literacy practices as a means of alternative processing for a wide spectrum of learners.

As I look toward literacy teacher education, findings from Chapter Three supported the use of multimodal literacies for pre-service teachers with reading difficulties. While a deeper analysis of multimodal avenues of expression were needed in Chapter Three, print-based

artifacts revealed participants' perceived empowerment through multimodal literacy experiences.

In the next section, I explore implications of multimodal literacies for the development of pre-service teachers' literacy identity development.

Chapter Seven

Growing Alongside My Pre-service Teachers: How Are We Developing as Literacy Educators in a Symbiotic Fashion?

Expanded Views: Exploring Literacy Identity Development in Pre-service Teachers

Through my research endeavors, I knew I faced tension about how I defined literacy. While I valued the reading and writing processes as evidenced through my research and teaching, and I was enthralled when learning about neurocognitive mechanisms for reading and the potential for multimodal avenues of expression, I felt passionate that literacy encompassed more than the ability to read and write. This is not necessarily a devaluing of reading and writing, but a realization that to be literate is more complex than simply possessing reading and writing skills. Essentially, literacy requires an expanded set of tools. Literacy is about possessing the ability to navigate textual resources encountered through societal interactions (gestures, discourse, power), through technology, and through a variety of artistic expressions, while harmoniously blending printed word with these resources for holistic meaning-making (Lankshear & Knobel, 2007; Bezemer & Kress, 2008; Jewitt, 2013). I started to see this evidenced through my own research, but I still faced many questions about how this might look in a traditional classroom, or if these practices could be implemented into a traditional classroom. I felt even greater tension as I explored ways of analyzing multimodal data produced through participants' literacy experiences. While I now held these beliefs and tensions about my own definition of literacy, I wondered how the pre-service teachers developed alongside me in their

own conceptualizations of literacy. I knew we were growing together in our literacy teacher identities, but how were they having an impact on me as I explored their development?

Back to my theme regarding multimodal literacies and marginalized learners... Brian, the pre-service highlighted in Chapter One, successfully completed a block of literacy courses with me over the course of 2 years. Following our experiences in a series of reading and writing methods course, he remarked,

“Mrs. Krause, I want you to know that now I feel like I can go out and be a great literacy teacher. When I entered into the program, I felt like there was no way I could ever teach reading because of my disability. You’ve shown me how I can provide tools for my students to help them learn. I might not be perfect, but I know I can give them the tools now”.

This made me realize the importance of modeling for my students, marginalized or not marginalized. I valued multimodal literacies and I modeled these practices within the literacy courses I taught. I used metacognition to model about why I was using certain methods of facilitating learning, and I made mistakes along the way. *I made mistakes. That was another epiphany for me. I wasn’t afraid of being a fraud of an instructor any longer. Instead, I was transparent. I let my students see how messy learning, especially multimodal learning, can appear. However, I let them see the end result... deeper learning. I wasn’t a fraud now. This was real.*

The realization of how I could now take off my mask and reveal who I am in my own literacy identity to my students provided a sense of relief. I seek authenticity, and now I could be truly authentic with my students. I did not want my students to perceive me as an “omniscient being of literacy”. I wanted them to see me as an educated literacy instructor who seeks to guide

them in their thinking about effective literacy instruction. *At this point, after 2 years of serving as a graduate assistant and instructor in the undergraduate program, I think this was finally happening. I could tell my students relaxed with me, they felt safe in their learning environment, and they respected and valued the meaning we made together through our learning process.*

These realizations revealed a pathway towards transdisciplinarity. If transdisciplinarity truly involves the synergistic collaboration between multiple stakeholders from a variety of disciplines (Leavy, 2011), then it seems the students and I were transdisciplinary in the learning process. By this I mean it is my perception that pre-service teachers come to the table with a variety of background experiences, family structures, educational experiences, and other perspectives that have potential to synergize in conjunction with my expertise in order to form collective understandings. Often, educators devalue the expertise or perspectives children (or preservice teachers) provide, creating a deficit model of thinking (Freire, 2003). Instead, educators should value the potential expertise students bring to the educational environment (i.e. technological, social, artistic, trade-based) and allow the collective expertise to provide a foundational braid of understanding that leads to collective transformations in thinking about literacy, or broader educational issues.

As I contemplate transdisciplinarity woven together with multimodal literacies, I see how taking off my mask of “omniscient literacy being” requires me to become a facilitator or a guide rather than a transmitter. This is challenging. I know in this particular environment within the literacy course and within field supervision, I will possess more expertise. I wonder how I can move toward guiding them in the right direction without giving them too much freedom in order to ensure they develop a solid foundational knowledge of literacy. I am afraid of giving up my own control. I am required to be uncomfortable at times and willing to give students room for

exploration. As I learned through the study described in Chapter Three, students' choice and control can potentially afford multiple avenues for learning.

As I continued to contemplate my own conceptualizations of literacy and how these conceptualizations influenced my practice as a literacy teacher educator, I began wondering about how my students were developing alongside me as future teachers of literacy. I wondered about the kinds of tensions they encountered as they expanded their understanding of literacy through coursework and field experiences. Were they making theory to practice connections? Were they able to think deeply about literacy practices, or were they simply keeping their heads above water while managing the new landscape of the classroom? These questions led me to the study described in the following chapter.

Chapter Eight

Expanding Pre-service Teachers' Literacy Identities Through Multimodal Experiences

As a literacy teacher educator, I continuously contemplate what it means to be literate in our dynamic, technology-driven, globalized society. As I embarked on a semester of teaching a literacy methods course within a large undergraduate program, I realized many of my undergraduate students are products of highly standardized forms of education, where state testing mandates and school performance largely guided their prior educational experiences. As children, they experienced high-stakes reading and writing assessments, where they were instructed to read or write in prescribed ways in order to produce papers “worthy” of high scores. Currently, as interns within elementary schools, they observe teaching practices focused on instructional techniques that allegedly lead to higher testing scores, which are tied to overall school and teacher performance ratings. Lortie (1975) first describes this phenomenon as “apprenticeship of observation” in *Schoolteacher: A Sociological Study*. In essence, Lortie describes how pre-service teachers arrive at their training having “spent thousands of hours as schoolchildren observing and evaluating professionals in action” (Borg, 2004, p. 274).

From a sociocognitive perspective (Bakhtin, 1981; Vygotsky, 1978), learning is largely influenced by the values, beliefs, and experiences created within the broader community (e.g. schooling experiences). Following twelve or more years within educational environments, pre-service teachers bring values and beliefs into their teacher preparation based upon the their

experiences within educational experiences. From the pre-service teachers' vantage point, they have observed, critiqued, and appropriated ways of "knowing, being, and doing" (Lave & Wenger, 1991; Lortie, 1975; as cited in Norman & Spencer, 2005). Conversely, outside of the pre-service teachers' educational experiences, their authentic lives are potentially dominated by the use of technology for communication, social-networking, gaming, navigation, reading, and general information. Considering the potential influences of pre-service teachers' histories within educational experiences, it becomes crucial to examine "what and how" they learn in their teacher preparation coursework and how it might influence their pedagogical decisions (Norman & Spencer, 2005).

Given these influences, while developing content for a literacy methods course at a large southeastern university, I wondered how pre-service teachers would conceptualize what it means to be literate in current society as we engaged with multimodal pedagogical strategies and multimodal content about literacy instruction. Would they see the value in the messy processes of composing meaning, or would they focus on the end result, a formulaic product? Ultimately, I wondered how, if at all, experiences with multimodal texts potentially influence their literacy identity construction. *Multimodal texts* are defined as texts that combine two or more semiotic systems, or modes (i.e., linguistic, visual, audio, gestural, or spatial) (Shanahan, 2013). How might their multimodal experiences in the classroom combined with expanded understandings about literacy practices influence their pedagogical decisions when teaching literacy?

The primary goal of this study was to explore the ways multimodal learning experiences within a literacy methods course influenced pre-service teachers' literacy identities and how this translated into classroom pedagogical decisions. For today's students, construction of textual meaning requires an emphasis on design, production, and presentation as a 'multimodal' (Kress

& Van Leeuwen, 1996) constellation of *valuing*, *knowing*, and *utilizing* linguistic, visual, spatial, gestural, and audio characteristics (Cope & Kalantzis, 2000). It can be argued that providing learning environments where students are learning composing processes beyond traditional conceptualizations of print literacy potentially provides avenues for students' development of new literate identities. My study addressed the implications of facilitating a multimodal environment within a teacher preparation literacy methods course and paired field experience. Specifically, I explored how pre-service teachers evolve in their own literacy identities and how pre-service teachers' developing identities translated into classroom pedagogical decisions. See the provided Prezi link for a systematic model of my rationale for the research (Pre-service Teachers' Literacy Identity Construction:

http://prezi.com/tfcoutwv0ctf/?utm_campaign=share&utm_medium=copy&rc=ex0share).

Literature Informing the Inquiry

The literature informing the current study stems from *multiliteracies* (Cope & Kalantzis, 2000), *multimodalities* (Kress & Van Leeuwen, 1996, 2001; Jewitt, 2008), *communities of practice* and *situated learning* (Vygotsky, 1978; Lave, 1996; Lave and Wenger, 1991; Niesz, 2007; Niesz, 2010; Wenger, 1998), *pre-service teachers' identities as literacy teachers* (Beach & Bruce, 2002; Black, 2009; Chandler-Olcott & Mahar, 2003; Curwood, Magnifico, & Lammers, 2013; Thomas, 2007), and *literacy teacher preparation* (Luke, 2000; Hagood, 2000; Cervetti, Damico, & Pearson, 2006).

Multimodal Experiences

As previously defined, *multimodal texts* are defined as texts that combine two or more semiotic systems, or modes (i.e., linguistic, visual, audio, gestural, or spatial) (Shanahan, 2013). Jewitt and Kress (2003) describe *modes* as an “organized set of resources for meaning-making”

(p. 1), where different signs function together in interactive and interrelated ways (Kress, 1998). Bezemer and Kress (2008) further define modes as “socially and culturally shaped resources for making meaning” (p. 171). These resources include image, writing, layout, speech, and moving images, all of which can be utilized as learning resources. Bezemer and Kress (2008) highlight “meanings are made with a variety of modes and always with more than one mode” (p. 171). Within traditional school-based literacy practices, linguistic forms of communication are commonly privileged over visual, auditory, or gestural modes of communication (Miller & Borowicz, 2006; Nelson, Hull, & Roche-Smith, 2008).

Vygotsky’s (1978) socio-cultural theory provides a lens for understanding more about potential contextual and interactional affordances in the multimodal classroom for all learners, including preservice teachers. According to Vygotsky, a sociocultural perspective suggests the need to examine the intersection between the environment and the individual in order to understand how they “mutually construct” each other (Vygotsky, 1978; Wertsch, 1998). Since the acceptance of sociocultural theory, the notion that “knowledge and identity are socially constructed through shared community practice and mutual engagement” has become a relevant issue in literacy teacher education (Cumming-Potvin, 2012, p. 381).

Situated Learning with Multimodal Experiences and Pre-service Teachers’ Literacy Identity Development

Jewitt (2009) contends that literacy practices are “the broader cultural conception of particular ways of thinking about doing reading and writing in cultural contexts. The knowledge, experience, feelings, values and capabilities that play a role in reading and writing of texts including the models of conceptions of literacy help by those practicing it” (p. 299). Similarly, *communities of practice*, proposed by Lave and Wenger (1991) contend that learning is situated

within culture groups. In essence, this means learning is authentically embedded within activity, context, and culture. Wenger (1998) highlights, “Engagement in social practice is the fundamental process by which we learn and so become who we are” (p. 1). The sustained pursuit of a shared enterprise unites individuals in collective learning experiences, where they have opportunities for transformation in their thinking (Lave, 1996; Niesz, 2010; Wenger, 1998).

As pre-service teachers navigate university coursework and field experiences during their teacher preparation programs, opportunities to participate in communities of practice have potential implications for the ways in which they construct their identities as writing teachers. For instance, cohort-based experiences, where pre-service teachers participate in simultaneous university coursework and field experiences alongside a common group of pre-service teachers, have potential for collective transformations in thinking about what constitutes effective literacy instruction. Belongingness within the cohort group and shared discourse between group members have potential for synergistic idea formations, leading to collective transformations in thinking about literacy instruction (Wegner, 1998). Likewise, more traditional teacher education programs with individualized ways of moving through coursework and fieldwork experiences also have strong implications for literacy identity development. Factors influencing the development of writing teacher identity development might include whether students self-select their own communities of practice, variances in background experiences, and opportunities for shared discourse inside and outside of university-based coursework.

In pre-service teacher education programs, it is often assumed pre-service teachers have a level of exposure to and experience with technology and media, in essence, considered digital insiders. Robinson and Mackey (2006) challenged the idea that all new teachers are digital insiders. The researchers analyzed surveys on pre-service teachers’ experiences with technology.

They concluded that pre-service teachers potentially have had different experiences with technology than their future students. For instance, current pre-service teachers might have limited experience using technology in playful ways, which is often characteristic of their students' uses of digital texts. The divide between how pre-service teachers use and perceive technology and their future students' perceptions and use of technology is potentially problematic. Graham (2008) underscores the kinds of digital experiences in which teachers engage have significant influence on their developing pedagogical practices. Teachers who engage in 'playful social uses' of technology (alternate reality gaming, virtual worlds or other online communities) are most likely to plan for creative, participatory and pupil-driven uses of digital literacies in school (Graham, 2008). These findings have implications for literacy identity construction for pre-service teachers because it demonstrates how the willingness and value of playful interactions of a participatory nature might cultivate a more social literacy environment, connecting literacy events to more authentic and situated practice. As pre-service teachers and their students engage in the navigation and exploration of new technologies, they potentially develop a mutual dialogue, which might serve to enhance language and writing development.

Stemming from the situated learning perspective (Bakhtin, 1981; Lave and Wegner, 1991; Vygotsky, 1978), Ottesen (2006) explored how pre-service teachers engaged in discussion with mentors within their field experiences. She explored how pre-service teachers and mentors conceptualized the role of technologies in schools in order to glean insights into how pre-service teachers' experiences in different domains are essential to understanding how they 'author' their professional identities. Findings suggested that the extent in which pre-service teachers draw on their own digital experiences may be connected to the interaction between how they view themselves as technology-users and their pedagogical practices. Again, this study illustrates how

the conceptualization of technology use translated into perceptions of pedagogical value and practice. While this study was not specific to construction of writing/literacy identity, it underscores how teacher educators need to consider the implications of digital technologies as an indicator of how pre-service teachers are developing in their own perceptions of what constitutes valuable writing, especially when embedded within multimodal learning environments.

Pre-service Teachers' Professional Knowledge Construction

A central aspect of gaining insight into how pre-service teachers construct literacy-related professional knowledge within multimodal literacy environments is through understanding the interpretation of their personalized representations of meaning. This involves consideration of how teachers might “see”, “hear”, or be able to respond to the children’s ideas and beliefs about practices (McNaughton, 2005). Currently, assumptions exist that dichotomize new and conventional literacies acutely impact pre-service teachers’ literacy-related professional knowledge construction. These assumptions need to be challenged within teacher education programs. A potential key to this might reside in opportunities to explore new literacies within the context of teacher education coursework and field experiences. Instead of cultivating the notion of a “shift” in literacy instruction away from print, perhaps a framework that more closely aligns with Myer's (2006) definition of multimodalities would be effective within teacher education. Myers defines multimodalities as “evolving social practices that coalesce new digital tools along with the old symbolic tools to achieve key motivation purposes for engagement in the literacy practices” (p. 62).

Research Methodology

For the purpose of this study, I used a qualitative case study approach described by Stake (2000), based on a constructivist paradigm. The constructivist paradigm assumes that the

“meaning of experiences and events are constructed by individuals, and therefore people construct the realities in which they participate” (Laukner, Paterson, & Krupa, 2012, p. 6). Stake (2000) defines the case study research method as studies which “explicitly seek out the multiple perspectives of those involved in the case, aiming to gather collectively agreed upon and diverse notions of what occurred” (Laukner, Paterson, & Krupa, 2012). I chose this particular design in order to provide depth and richness in my description of a phenomenon shared within my cohort of students who were engaged in multimodal literacy experiences while simultaneously teaching in field experiences. The following questions guided my inquiry in the inductive-deductive nature of the analysis:

- 1) In what ways do multimodal learning experiences within a literacy methods course paired with a field experience influence pre-service teachers’ literacy identities?
- 2) How do pre-service teachers’ developing literacy identities translate into classroom pedagogical decisions?
- 3) How do the multimodal learning experiences provided in the writing methods course and paired field experiences facilitate an understanding of pre-service teachers’ literacy identity construction?

Further, I incorporated constructivist grounded theory (Strauss, 1987; Charmaz, 2000) (see Figure 1). Both Stake’s (1995, 2000) case study design and Charmaz’s (2000, 2006) approach to constructivist grounded theory recognize the importance of multiple perspectives and the researcher’s role in constructing interpretations (Laukner, Paterson, & Krupa, 2012).

My guiding interests in this study involve how pre-service teachers develop new conceptualizations about their own literate identities, how multimodal experiences potentially

provide affordances for learning within teacher education courses, and how these experiences potentially transfer into authentic classroom practices. These concepts provide *points of departure* to form respective interview questions, to look analytically at data, to observe pre-service teachers inside their coursework and inside field experiences, and to memo analytically about the data (Charmaz, 2006, p. 17).

Participants

I utilized theoretical selection (Charmaz, 2006) in order to determine participants for my study. Becker (1993) highlights that theoretical sampling is an “ongoing process of data collection that is determined by the emerging theory and therefore cannot be predetermined” (p. 256). Ultimately, 4 pre-service teachers who were enrolled in a large, southeastern university within a college of education provided representativeness of the phenomenon. The participants were enrolled in a semester of a literacy methods course, while simultaneously enrolled in field experience/internship with a related seminar. I acted as the instructor for both courses, as the program is designed as a cohort model, where a methods instructor often supervises simultaneous field experiences. While I worked with 12 interns within the cohort model, I theoretically selected 4 interns after immersing myself in the teaching and field experience as supervisor and instructor. The 4 participants selected demonstrated consistent opportunities to teach literacy in their field experiences. Further, each participant consistently discussed changes in their beliefs about their literacy teaching practices with me as I engaged in coaching experiences as their field supervisor. While each participant demonstrated slightly different philosophies of teaching literacy (i.e. explicit phonics instruction, arts-based literacy teaching), all of the participants consistently engaged in conversation about their literacy-related

pedagogical practices. In addition, participants represented grade levels across the K-5 elementary setting (kindergarten, third grade, fourth grade).

Context

Throughout the literacy course, I incorporated multimodal learning experiences and assessments as an integral part of the instructional design. Students participated in online collaborative communities, experienced non-traditional course presentations through collaborative activities and multimedia designs (Prezi and Glogster), and they constructed representations of their new understandings of course content in multimodal ways (Animoto, video, artistic renderings, and a combination of media) See an example of a participants' multimedia representation of learning in the provided Prezi link (Writing is Out of this World!: http://prezi.com/txsulswz3bcm/?utm_campaign=share&utm_medium=copy&rc=ex0share). These pedagogical choices on my part were important in providing a multimodal context for the pre-service teachers in my literacy methods course. For example, multimedia experiences in lieu of traditional lectures provided a combination of media (audio and visual modalities) and points of interaction (speaking, movement, and gesture) in order to facilitate learning. Our class shared presentations collectively and with small groups, pausing at various points to engage in activities and conversation, ultimately leading to shared meaning-making experiences surrounding the topic of writing instruction. The Prezi links provide examples of meaning-making experiences within the context of course experiences (Teaching Writing: http://prezi.com/zbz8q66c4z_a/?utm_campaign=share&utm_medium=copy&rc=ex0share; Writing Development and the Common Core: http://prezi.com/frxixjo3kbgk/?utm_campaign=share&utm_medium=copy&rc=ex0share).

Within my literacy methods course, I utilized multimodal experiences and tools in order to provide space for students to make new meaning about literacy instruction in the elementary classroom. These multimodal experiences included non-traditional presentations through visual imagery (pecha kucha) and dramatic re-enactments (modeling metacognitive processes), alternative content presentation (Prezi, video examples, Glogster, and VideoScribe), and collaborative activities that included avenues for artistic and dramatic expression developed through conversation with classmates. Further, I encouraged students to convey their content learning through multimodal avenues. The following YouTube link provides an example of a Pecha Kucha created by a participant (Pecha Kucha 1: <http://youtu.be/EpyOYH3RETY>). The flexibility involved in conveying their new learning through these multiple modes allowed for student choice and control in mode selection (Hagge & Krause, in review). While students were afforded opportunities to utilize print-based forms of communication exclusively or combined with other modes, ultimately they were able to select combinations of modes that conveyed their new understandings in ways that communicated their ideas in the most authentic ways. Students used Prezis with embedded video, imagery, and combined text in order to create a holistic idea about writing strategies. See an example in the provided Prezi link (Copy of Methods for Teaching Composing: http://prezi.com/hvfrzow-u65h/?utm_campaign=share&utm_medium=copy&rc=ex0share). They combined music, visuals, animation, and text within Glogsters (see Figure 9) to share their ideal writing classroom environment. Some students created pecha kuchas, PowerPoint slideshows containing only visual imagery supported by voiced-over narration, to share content learning from course readings. Ultimately, these processes and products were data sources as I reflected upon the developing narratives of my participants.



Figure 9. Example of Glog created by a participant


Data Sources


Data sources for my inquiry included weekly blog responses (online, digitally-mediated) (see Figure 10), multimodal assessment artifacts (pecha kuchas, Prezis, Glogsters, and Powerpoints), course presentations (video and photos of dramatic enactments of new understandings), participant observations (video and photos of dramatic enactments of new understandings) within the literacy course, coaching observations/notes within field experiences (university-created coaching tool), final course interviews (audio-recorded), and researcher-reflexive memos. Each week, participants engaged in an online, participatory blogging community where they discussed “wonderings” that emerged from their field experiences.

Students in the course were required to post a reaction each week in the form of print, photo, website link, or any mode that allowed the most meaningful form of expression when communicating their ideas. My theoretically selected participants continually blogged about literacy-related wonderings, and ultimately, developed semester-long, in-depth inquiries centered around their literacy wonderings. In the beginning of the semester, blog posts were semi-structured in nature, where participants responded to a probing question or an evocative photo (i.e. photo of writing classroom with students engaged in traditional or multimodal forms of writing/composing) in their initial blog post then, they would post reactions to other classmates' posts. Examples of my probing questions for participants' blogs included: 1) What kinds of wonderings are emerging from your field experiences? "Why are you connected to these wonderings?"; 2) "What challenges are you facing as you analyze your collected data? Why?" As the semester progressed, the blogs became more open-ended, where students had space to develop their own ideas as they worked through the inquiry process and participate in authentic conversations with classmates through the medium of the online environment. Participants included written responses to probing questions in the online space, and they also responded to other classmates' inquiries by posting links to online resources for more in-depth information regarding various topics. This online environment was only one means of communication with participants, as I continuously engaged in conversation with all students enrolled in the course on a weekly basis. This ensured that the digitally-mediated, print-based space was not privileged over other modes of communication.

Given my role as field supervisor while simultaneously teaching my participants' literacy methods course, I engaged in two formal coaching sessions and multiple informal observations with each participant during their student teaching experiences. During our formal coaching

sessions, I previewed written lesson plans describing plans for literacy lessons and pre-conferenced with the participants. I observed lessons in their entirety utilizing a coaching tool provided by my university (Appendix F). After the participants taught their lessons, we discussed general elements of their lessons as related to professional standards, and we engaged in discussion about literacy-related components of their lessons. Following our coaching sessions/conferences, I immediately recorded my reflections and I asked my participants to send an e-mail with their personal reflections. While most participants elected to use print as the mode to communicate their reflections, some participants included artistic renderings of ideas (i.e., sketch of classroom layout) or even links to websites where they found useful resources. I used the coaching tool (observational notes), my reflections, and my participants' reflections as sources of data. Further, I circulated among my group of interns regularly during their field experiences. Observational notes, photos, videos, and informal conversations from my informal visits also served as sources of data.




Sorayah G. to  **Emergent Literacy Fall 2014**

It seems that just after we talked about running records in class my CT had to do running records for her students. I performed one on my focus student and she did the rest of the class. From the running records that I saw, my focus student had more errors than most. I think it was because he knew he was being timed so he rushed through the text. I noticed that he had trouble with multisyllabic words and vowel sounds.


Like • 4 Replies • Share

Oct 22, 2014




Katie C. said Oct 22, 2014

That's cool that just after we talked about running records your teacher was doing them on her students!




Ashlyn M. said Oct 22, 2014

It is so interesting to hear about how different students are affected by things such as, putting a time limit on them reading a passage. It will be fun to find new strategies to help your student with his troubles.



Soma K. said Oct 22, 2014

I still have not gotten the chance to do a running record on my focus student, but I definitely want to do one soon. Even though, I took pictures of the one my CT did, but I feel that in order to connect with my student more I should do one that way I can see it for myself of how she is doing on it.



Michael D. said Oct 22, 2014

I can see why he would feel pressure with there being a timer. When I did my running record I did not time it either, and I think that helped my students score. He knew he could take his time and there was less pressure.

Figure 10. Multimodal Assessment Artifacts

The culminating activity of my literacy methods course included a final interview with each student. Students engaged in a 15-minute intensive interview (Charmaz, 2006) with me about a multimodal representation of their experiences working with a group of children on a writing/composing project in their field experiences. In the writing/composing project, students worked with small groups of children on particular literacy strategies and incorporated foundational elements of effective literacy instruction. These strategies and elements of effective literacy instruction were central themes of our literacy methods course with embedded multimodal experiences. In the final interview, I reviewed the multimodal production (digitally-based) as evidence of their literacy instruction then, I engaged in conversation with each student about the elements they incorporated and why they felt as though the elements embodied effective writing/composing instruction. The interview was informal and conversational in nature. Example questions included: 1) Tell me about what happened as you worked on this project with your students?; 2) Can you describe the most important lessons you learned during this experience?; 3) How, if at all, have your thoughts or feelings changed about literacy instruction? Charmaz (2006) highlights, “Interviewing is a flexible, emergent technique; ideas and issues emerge during the interview and interviewers can immediately pursue these leads” (p. 29). Therefore, as students shared their experiences about multimodal experiences, I led our conversation in directions that provided insight into the phenomenon. I audio-recorded my participants’ interviews as a source of data, ultimately, providing sources of evocative recollection of our conversations. An example of a multimodal representation of student work is provided in the YouTube video link (Multimodal Writing Project: <https://youtu.be/fasBsNMrK4I>).

In an attempt to consciously acknowledge my own values within the research process, I maintained a researcher-reflexive journal (see Appendix A). The act of maintaining a self-reflexive journal is a strategy that potentially facilitates reflexivity, where researchers utilize their journals to explore “personal assumptions and goals” and “clarify individual belief systems and subjectivities” (Russell & Kelly, 2002, p. 2). I chose print as a primary mode of expression in my journal because it allowed me to personally expand on my thoughts and elaborate on my ideas. Occasionally, I found myself sketching diagrams of my thought process when I needed an alternative route of expression. Throughout my observations, I actively acknowledged in my journal when I identified places where my own values potentially influenced my interpretations. For example, I caught myself comparing this group of participants to pre-service teachers I taught in past semesters. Examples of comments I made in my journal included, “I can tell this group of PSTs think about literacy in deeper ways because of their multimodal experiences” and “The students the PSTs worked with enjoyed the writing project more than typical writing prompt activities”. I found myself revisiting generalizations in light of my own goal with multimodal experiences. In fact, I stated in my journal in response to an aforementioned entry, “While I think PSTs think about literacy in deeper ways, I need look toward the data for possible answers. I cannot assume this finding without concrete evidence.” Therefore, I actively sought to parcel out my own values in order to keep the narratives of my participants in the forefront of my data analysis.

Data Analysis

In order to maintain a constructivist lens, Charmaz (2000) suggests researchers need to immerse themselves in data analysis in a way that incorporates the narratives of the participants. This means that I had to continuously keep the stories of my participants in the foreground

throughout my interpretative process. Further, it was my responsibility to continually share my meaning-making process and products with my participants in order to ensure I was accurately describing the phenomenon at hand. From an epistemological stance, “constructivism emphasizes the subjective interrelationship between the researcher and participant, and the co-construction of meaning” (Mills, Bonner, & Francis, 2008, p. 26). This type of immersion is enacted through the use of active coding language, in essence, keeping the participants’ lives “in the foreground” (p. 526). This required me to keep theoretical memos (see Appendix B), documenting my constructions of the categories, which described the experiences of the participants as they participated field experiences and constructed their identities as literacy teachers. As the experiences became more complex, I consciously kept the participants’ voices in the forefront of my mind as a means to preserve present meaning in the theoretical outcome (Charmaz, 1995).

I approached the data gathered from course interviews and course conversations through a constant-comparative method (Glaser & Strauss, 1967), with categories and themes emerging through a relativist approach (Charmaz, 2006) (see Appendix E). According to Charmaz, a relativist approach assumes the existence of multiple social realities, with the understanding that knowledge is created between the viewer and viewed. Therefore, the research aims toward an interpretive understanding of the participants’ experiences (Charmaz, 2006). The constant-comparative method leads researchers to “1) compare data with data from the beginning of the research, not after all research is collected, 2) to compare data with emerging categories, and 3) to demonstrate relations between concepts and categories” (Charmaz, 2006, p. 23). The logic behind this approach is to have the ability to go back into data in order to move forward with

analysis. Ultimately, this requires researchers to return to the field to gather further data in order to refine the emerging theoretical framework (Charmaz, 2006).

Charmaz highlights the importance of active coding because it provides a framework for the analysis and it serves as an essential link between empirical reality and the researcher's view of the phenomenon (Charmaz, 2006). In order to adhere to a constructivist lens, I actively coded interview data using memos and several coding techniques in order to examine the data on multiple levels. I began by using an open-coding technique, where I attached conceptual labels (see Appendix C) to each line of interview transcript in order to capture the essence of the words of the interviewees. Codes attached to the interviewees words and statements formed the foundation for developing concepts. This process constituted my first step in the analytic process.

Following active, open-coding of the data, I engaged in focused coding (see Appendix D). During this process, I returned to the initial transcripts and looked across several lines at a time in order to find the most telling codes that represented the experiences of my participants. This process allowed me to verify the codes I created during the open-coding process in order ensure I represented my participants' voices accurately. Upon a rereading of the transcripts and a rereading of the initial codes created during the open-coding process, I was able to consolidate the initial codes into more focused codes, which portrayed broader ideas stemming from the participants' voices. This process allowed for the iterative nature of delving back into the data to unfold. According to Charmaz (2006), axial coding potentially leads to a rigid view of the data, therefore, she recommends a less formalized, more reflective look at the established categories and subcategories. Once I established focused coding of my data, I chronologically organized my data in order to provide insight into how the participants' voices changed during their

experiences. Then, I reread focused codes and color-coded codes that indicated similarities and connections. This process allowed me to move back into the codes in order to establish connecting links between and across categories in order to make sense of the data. These links formed thematic categories (Strauss & Corbin, 1998), which eventually were interlinked in order to form the basis for theory about pre-service teacher literacy identity development.

During the process of developing thematic categories, I used memo writing as an analytic method of raising codes to conceptual levels, which eventually led to the development of thematic categories (Charmaz, 2006) (see Appendices B and E). I used memos as an analytic tool in order to raise my focused codes to a conceptual level. This process allowed me to scrutinize and synthesize codes identified in the initial data in order to construct categories, yet stay close to my data and participants' voices (Charmaz, 2006). Glaser (2008) indicates that memo writing is a crucial step in data analysis because it provides an opportunity for researchers to look at data in any way that occurs to them in the moment. Further, it serves to keep researchers involved in the analysis process and increases the abstraction of ideas (Charmaz, 2006).

Lincoln and Guba (1985) suggest member-checking is a "critical technique for establishing credibility" (p. 314). Upon completion of the analysis, I invited the participants to read through my findings in order to ensure I represented their voices in an accurate manner. They reviewed transcripts of interviews, reviewed artifacts selected for interpretive value, and engaged in discussion about the accuracy and inclusivity of all information utilized to make meaning about their experiences. Therefore, participants played an active role in member-checking my constructions of their experiences in order to create a trustworthy and credible account of the phenomenon (Lincoln & Guba, 1985). The use of multiple forms of texts in data

analysis (print, video, photos, and audio transcripts of conversation) created multiple forms of data, ultimately allowing for data triangulation (Lincoln & Guba, 1985). This enabled a more holistic understanding of the participants' experiences and established an appropriate level of verisimilitude.

Findings

Some theorists argue the self develops over time and is only available for view in the stories one tells about that life (McAdams, 1997; Moje & Luke, 2009, p. 427). Over the course of a semester, participants' literacy learning and teaching experiences were documented, revealing the ways in which their developing literacy identities influenced their classroom literacy practices. In essence, the participants' documented lived experiences during their field experiences provided a lens for how they viewed and embodied their developing self as a literacy teacher. In the following section, I discuss thematic categories that emerged, which describe how the participants viewed themselves as writing teachers, and ultimately literacy teachers, as they progressed through multimodal writing and composing experiences at the university and within the classroom. After I describe thematic categories, I provide an explanation of how the categories reveal a theoretical model that describes how pre-service teachers construct their writing/composing identities as literacy teachers.

Thematic Categories

I discovered four thematic categories upon analysis of the data. These categories included *identity through reflection*, *identity through classroom management*, *identity through multimodal/multimedia engagement*, and *identity through authenticity*. Operationally, I define the thematic categories as follows:

Identity through Community - Pre-service teachers' attention toward finding a position within the literacy classroom, among colleagues, and within the broader school community, which serves to shape understanding of themselves as teachers.

Identity through Authenticity- Pre-service teachers' attention toward providing multimodal learning opportunities connected to real-world scenarios and based on students' unique learning needs, which serves to shape understanding of themselves as literacy teachers.

Identity through Reflection- Pre-service teachers' thoughts and understandings they formulate after participating in multimodal university coursework and classroom practice, which serves to shape understanding of themselves as teachers.

Identity through Multimodal/Multimedia Engagement-Pre-service teachers' intentional use of a combination of linguistic, visual, audio, gestural, or spatial modes in order to facilitate meaning-making for students, which serves to shape understanding of themselves as literacy teachers.

While initially, these categories appeared to be clearly delineated from one another, as I engaged in iterative reads of the data, it became apparent that these categories shared many overlapping instances. Therefore, I describe places where the categories were identified in isolation, then move toward a discussion about how the categories worked together in a symbiotic fashion.

Identity through Community

As I looked across data chronologically, I noticed participants' initial preoccupation with finding community within the classroom, among their colleagues, and within the broader school community. During the participants' initial entry into field experiences (September 2013-October 2013), focused codes (see Appendix E) revealed a significant number of instances in

attention to classroom management (community within the classroom), as opposed to later field experiences (November 2013- December 2013). During a reflection on a lesson, one participant noted how she consistently thought about how she could use specific praise as a mechanism for driving positive behavior in the literacy classroom. She stated, “It’s crucial to use specific praise, otherwise you would be scolding the same kids over and over again.” Another participant expressed apprehension about veering from a predetermined sequence of a writing lesson when students’ inquiries begged for more information. Instead of seizing a “teachable moment” and turning toward multimodal avenues for making meaning, she felt nervous that she might lose control of the class if she did not follow her systematic plan. In my observational notes, I noted, “Cathy did not seem to have a repertoire of multimodal strategies yet to know how to accommodate for these teachable moments. She seemed focused on sequentially teaching the lesson as outlined.” Further, another participant expressed frustration regarding time constraints. She expressed how her search into the literature suggested the need to “take extra time with students and work with them and their specific needs”, however, lack of time allotted for literacy instruction (writing in this particular instance) hampered her ability to incorporate innovative strategies. While these examples focus on classroom management issues, from a broader perspective, participants express frustration with building community within the classroom. They are faced with issues with behavior management, instructional design, and time constraints that create apprehension around building a foundation for community within the classroom.

Extending this notion of defining one’s identity as a literacy teacher through community, participants continually worked toward making theory to practice connections within their online blogging reflections. As they faced challenges within their field experiences, they posed questions to the larger community of our writing class. One participant expressed, “I desperately

want to incorporate some multimodal composing strategies into my first grade class, but I'm afraid of how the students will react because they are only used to writing with a pen and paper. Will the class get out of control if I use an iPad and let them create a story through the application of Puppet Pals?" She continued her thought by stating, "... and will my collaborating teacher know that I'm helping them compose a story with the goal of broadening their literacy knowledge, not just playing with them?" In response to her questions in the online blogging platform, she received several comments from students who experienced similar challenges with time constraints, classroom management concerns, and apprehension about how multimodal experiences might be perceived from the broader school community. Interestingly, another participant responded by stating, "I have been using artistic responses to our novel study in fourth grade. Instead of sticking to the usual journal writing after reading, I have the students draw an image of what they see in their mind after reading and discuss it with their groups."

These efforts to establish community within the classroom and within cohort of university students enrolled in the literacy methods course and paired field experience connect with Lave and Wenger's (1991) construct of communities of practice. Within their construct, they contend finding a sense of belongingness within a community is a core element to developing a sense of who we are (Lave & Wegner, 1991). Further, collective learning experiences, whether alongside students in an elementary classroom or among colleagues in a university setting, allow for transformations in thinking through collective learning (Lave, 1996; Niesz, 2010; Wenger, 1998). While most of the pre-service teachers' initial efforts of literacy instruction appear to be in service of traditional conceptualizations of print literacy, multimodal platforms (online blogging platform) and class conversations emerging from participation in multimodal experiences provide an area of dissonance, forcing pre-service teachers to pose

questions about feasibility and belongingness of their ideas and selves into the classroom landscape. In response to a pecha kucha (a series of visual images with voice over descriptions depicting writing content knowledge), one participant remarked, “My students (third graders) would love to create a pecha kucha on their new science unit. I know they could find many visual images about their topics, and they’d be so much more engaged putting together the movie and script than writing independent summaries of their learning. I wonder if I could convince my collaborating teacher that this would enhance their literacy skills even though it would be in the science content area?” This class response highlights the how the participant is facing issues with power and a sense of belongingness in the classroom as a credible teacher and source of expertise, especially with the incorporation of multimodal strategies which are often minimally included in more traditional educational environments.

Identity through Authenticity

Early in the semester (September 2103-October 2013), participants also displayed a particular acuity to the recognition of tending to students’ individual needs, in essence the need for differentiation strategies (see Appendix E). Operationally, I refer to differentiation within the scope of authenticity because participants demonstrated a desire, as they were constructing their own writing/literacy teacher identity, to provide learning opportunities connected to real-world scenarios and based on students’ unique learning needs. While participants were able to quickly discern a need for individualized student attention, they often expressed frustration regarding how to effectively achieve a truly differentiated learning environment. Three out of 4 participants indicated their desire to use anecdotal notes in order to track students’ literacy progress. The participants’ belief that elaboration of their observations through print-based means (anecdotal notes) indicated they had not yet expanded toward personal adoptions of multimodal meaning-

making avenues. One participant notes, “I plan to make observations and take field notes to figure out which teaching styles and strategies benefit my struggling readers.” However, during a literacy lesson observation I recorded, “I noticed Cathy occasionally taking anecdotal notes as students wrote words, however it seemed inconsistent.” When we watched a video of her lesson together, Cathy shared her frustration with managing her ability to guide a lesson and attend to notes she intends to take on individual students. She noted, “I am learning a lot more about my teaching through watching this video than through my anecdotal notes. I think I still need my notes because writing helps me process what is happening, but I like being able to observe behaviors of other students in the class while I am working with individual students. It (the video) gives me a whole picture of what is happening.” This statement reveals her newly expanded view of how meaning can be made through a combination of modes. While she continued to value the use of anecdotal notes when working with individual students (her preferred personal mode for processing appeared to be the writing mode), she incorporated the use of videotaped lessons in order to provide a more holistic view of the classroom (an alternative mode she utilizes to provide a full picture of the classroom).

All three participants who initially used anecdotal notes to monitor individual progress found that delving into professional literature after reading their notes helped to inform how they could accurately accommodate for student’s needs, however, they all reported greater connection and accessibility to online resources (i.e., videos, educational websites, Pinterest). They seemed to feel constraints of utilizing only print-based resources, and found online resources valuable because of the visual and tangible nature of the content. They could watch teachers in action, see photos of resource examples, and hear the language teachers used for differentiation purposes.

The fourth participant, who did not immediately look toward print-based means for meaning-making, indicated an immediate connection to differentiation and authenticity through artistic means. This particular participant perceived himself as an artist, therefore, the connection seemed a natural component of his pedagogical repertoire. He states, “I have students draw every day after they read. It’s so valuable because I can go back and have them look at their illustrations and evaluate how each child is understanding their reading.” This participant clearly recognized the value of looking at each child’s individual progress in literacy development. While in this instance, he privileged artistic forms of expression, he demonstrated a willingness to accept expression beyond print in a traditional classroom setting. One could argue his privileging of artistic representations is similar to the widespread valuing of print forms of expression. While this was potentially true in some regard, this participant appeared comfortable within the community of the classroom and school environments to make decisions about writing and literacy instruction that opposed the norms. This potentially indicates an expansion in his identity as a writer and literacy instructor.

Interwoven Aspects of Identity as Literacy Teachers: Identity through Multimedia/ Multimodal Engagement, Authenticity, and Reflection

During the identification of thematic categories, I noticed interwoven aspects of identity that were difficult to separate into isolated units. While I could delineate themes based on the data, the themes of *identity through multimodal/multimedia engagement, authenticity, and reflection* often appeared to be related and working in a symbiotic fashion. Therefore, I chose to weave my description of these themes together in this section. As I looked across data chronologically, these themes were revealed more frequently in the latter part of the semester (November 2013-December 2013). While identity through reflection appeared in the codes

consistently early in the semester, as well, there was an increase in reflective practices as the semester progressed (see Appendix E). Observational notes collected on participants' coaching tools (see Appendix F) revealed epiphanies participants experienced during post-observation reflections. One student remarked, "After thinking about my lesson on vowel teams, I see where I could've incorporated more opportunities for movement. I noticed children becoming restless. This should have signaled me to vary my teaching strategies." Reflection served as a key aspect of gaining insight into the participants' development of pedagogical content knowledge. Through post-observation discussions, coupled with conversations in Edmodo (social-media application), I could see how students reflected upon their practice and connected it to relevant literacy theories. In essence, participants' reflective practices provided a window into how they processed multimodal literacy content from the university-based course and translated their new understanding into classroom practice. Early in the semester, reflection overlapped with deliberations over classroom management strategies (a component of identity through community) and strategies for authenticity and differentiation. Later in the semester, this shifted as reflection began to overlap with themes of multimodal/multimedia engagement and authenticity. One participant reflected about her lesson with a small group of learners after completing a writing project. She stated,

"I learned a lot about my teaching, especially with teaching writing. I think it is a lot more effective when working in small groups with students. I felt like I had so much more one on one time with them and I could really scaffold their writing process to help them be successful. I also learned that picture books can be a great way to teach... The final product my students made for this writing cycle was a recording with "puppets" and a setting. I created the characters and setting for

them and had them laminated and the characters glued on popsicles sticks. The students practiced their stories several times and then they moved their characters around the settings while retelling their stories. The students absolutely loved this, they were so excited to create their next story!”

In fact, instances were documented where participants displayed all three themes (reflection, multimodal/multimedia engagement, and authenticity) simultaneously (see Appendix E). One participant noted her perceived value of multimodal engagement during a written reflection when she stated,

“Pictures can tell you a lot about students’ writing... (describing writing instruction) during this activity, this student’s illustration is detailed, showing me she is really developing her ideas.”

She continues by stating:

“The drawing process is so important. They (students) don’t have all of those filler words (vocabulary) to be as detailed as they want to, so the picture is where to add in all of the detail. I think it helps stimulate their idea development, too.”

In each of these reflections, the participant displayed themes of identity through reflection and multimodal engagement. She clearly thought about her practice and made statements about valuable elements of the lesson embedded within students’ experiences. While these themes were present, her valuing and use of multimodal experiences (drawing) in the classroom were in service to the writing mode. She clearly identified where gaps existed with students’ abilities to express their thoughts completely with language, which encouraged her to facilitate activities incorporating drawing. However, her end goal was for students to enhance

their writing skills rather than to facilitate and accept meaning-making and expression in forms other than writing which might create a more holistic composition of meaning.

Authenticity and multimodal/multimedia engagement was also prevalent in data gathered in the latter part of the semester. A participant described a lesson where she facilitated the production of a multimodal, collaborative writing project in her kindergarten class. She states: “They loved the idea of making puppets in order to reenact their stories. They were so excited! Making their stories into something they could actually touch... it makes the process so much more meaningful for them. They took home their puppets to help share their original writing samples.”

In this scenario, the participant clearly demonstrates a sense of value in the authenticity and multimodality of the multilayered composing project. Students’ display of engagement through the assignment served as a reflective moment where the participant’s view of literacy instruction was arguably expanded. While, again, this participant utilizes multimodal experiences to enhance reading and writing instruction, she began making connections about how multimodal experiences increased engagement, ownership, and enhanced meaning-making about their stories, in essence, expanding her perspective of effective literacy (meaning-making) strategies.

Another participant demonstrated the essence of overlapping thematic categories as he described literacy instruction in his fourth grade class. He states,

“Every single day, we have students draw what they read. They take the written text, put it into their mind’s eye, then illustrate what they have read about. It’s so valuable because I can go back and have them look at their illustrations and evaluate how they understand their reading. The kids love it and I know the kids understand the text in deeper ways.”

This scenario highlights the reflection of the participant while he uncovers the valuable components of his students' literacy experiences through art, authentic connections to students' lives, and his own realization of how to monitor students' understanding of text. This reflection exemplifies overlapping thematic categories (reflection, authenticity, multimodal engagement, and differentiation).

In the latter part of the semester, another student underscored the overlapping nature of the thematic categories as participants construct their personal views on literacy when she stated:

“Interactive writing is important because it creates opportunities for dialogue. I think it makes the writing process more authentic. I don't want students' writing to always be about topics I give them. I want them to feel connected to the topic in personal ways.”

Again, this reflection emphasizes the developing interconnectedness of the thematic categories as the semester progressed. Interconnectedness between categories provides insight into how participants shift between places in their own identity as future writing and literacy teachers. This particular participant explicitly highlighted the need for authenticity embedded within literacy instruction. However, undertones of her reflection highlight the importance of identity through community, multimodal engagement (dialogue), reflection, and authenticity. She demonstrates how she is giving power to students as she facilitates their navigation through multimodal experiences. Once again, her ultimate goal for the multimodal experiences served to enhance students' writing mode, however, she demonstrated an expansion toward alternative ways of expression in order to enhance meaning-making.

Through my iterative and reflective analysis of the data, I realized midway through the semester that my data revealed complex interrelationships between thematic categories as

participants constructed their identities as future literacy teachers. Places where categories became seemingly interwoven potentially indicated where participants started expanding their view of writing and literacy. Initially, participants focused on community (i.e., classroom management, power in the classroom and school environment) as they engaged in reflection. As participants became more comfortable in the classroom setting, their focus shifted toward student's needs (authenticity and multimodal engagement). This drove participants toward more complex reflections about their developing beliefs about effective pedagogical practices.

Discussion

As indicated by the experiences of my participants, the group of pre-service teachers perceived themselves as motivators working within a community when they initially began their field experiences and the multimodal literacy course. As students initially constructed their identities through developing a place within their various communities (classroom, professional, university), they felt a driving force to engage students in activities, and they viewed the learning environment as a place for controlled engagement. Participants viewed engagement and control of the classroom environment as an objective, often without recognizing or pursuing deeper learning opportunities created through discourse and exploration. Arguably, preservice teachers need to understand the elements of managing classrooms in order to effectively drive instruction.

My participants' experiences underscore how, through time, pre-service teachers become more comfortable in their communities and seek opportunities for students to move into rich literacy learning opportunities that facilitate higher order thinking. This often occurs simultaneously to their own developing knowledge of literacy practices. As participants become more comfortable in their own knowledge base, they begin considering themselves worthy of serving as a model of thinking for their students. The shift here involves the desire to provide

effective literacy instruction with the emphasis less on control and more on quality of instruction. It also represents a developing comfort level with classroom management procedures combined with a developing knowledge of literacy pedagogy.

Many participants indicated multiple points where they felt uncomfortable in their ability to teach literacy and, at times, they even questioned their own beliefs. These places of struggle represented places where deep reflection took place about what constitutes effective literacy instruction. They provided a platform for our professional, university-based cohort community to see firsthand the messy process of becoming an effective literacy teacher. The participants began to see the interrelated nature of their experiences in the classroom, multimodal content they were experiencing within the university course, and their own life experiences inside and outside of schooling. They were able to begin thinking deeply about how there are a multitude of influences that ultimately shape their vision of effective and valuable literacy instruction. By the culmination of the semester of the paired field experience and multimodal writing course, some participants began to see beyond text as serving as the only valued literacy expression in the classroom. Their notion of what constituted literate practices broadened as they accepted the meaning made through art, technology, and discourse between students and themselves. These participants recognized the importance of connectedness between the students and teacher, authenticity of the learning process, and discourse opportunities. These participants' literacy identity development represented a place where preservice teachers begin to value the literacies of the world (i.e. multimodal and multimedia) rather than focusing solely on the literacies of traditional classroom settings (i.e. print-based, verbocentric).

Conclusion

In this paper, I highlight the need to gain insight into pre-service teachers' literacy identity development as future teachers. If we are expecting teachers to facilitate and value the notion of multimodal literacies within their classroom, they must experience a paradigm shift in their own literacy identity in order to fully embody the complex tasks at hand. This can only be accomplished through multimodal literacy educational experiences at the university level. Not only does multimodal literacy education provided at the university level have strong implications for shifts in construction of literacy identities within pre-service teachers, but arguably, in their overall content learning of literacy. According to Schultz (2009), students who are afforded opportunities to utilize multiple modes for expression demonstrate an increased engaged presence, in essence shifting their modes of participation and sense of themselves as students.

As pre-service teachers enter classrooms as potential activists for change, it is imperative to explore how pre-service teachers develop their own literate identities, and ultimately, develop a fluency for enacting a multimodal literacy curriculum. This study highlights the importance of pre-service teachers' conceptualizations of literacy in the 21st century and how their newly formed conceptualizations of literacy transfer into classroom practice.

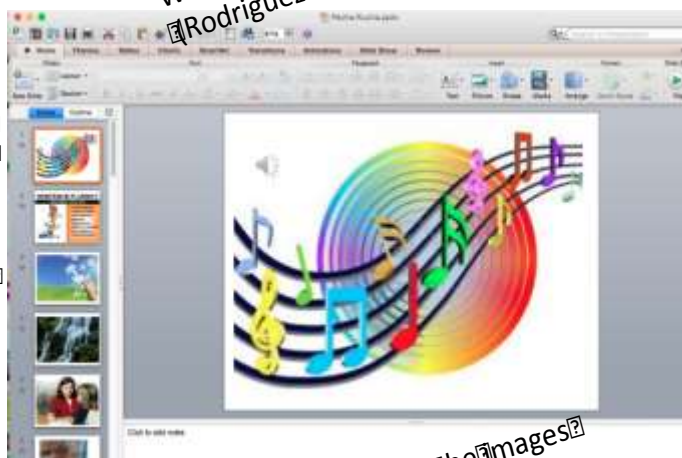
Epilogue

After reflecting upon the study, I realize inconsistencies with the data gathered and the method of analysis. In retrospect, I recognize my efforts in attending to the expanding notion of literacy through the collection of multimodal forms of expression, yet I continue to privilege print-based forms of data in the analysis process. Does this signal a continuation of my own privileging of print in spite of the call to expand notions of literacy? Or, does this point toward my apprehension toward true multimodal data analysis. The findings of the study carry value

when understood as primarily print-based means of understanding data, but the study fails to delve into a more nuanced, multilayered analysis of the data. An example of a more comprehensive, multimodal analysis of data is provided in Figure 11. This multimodal analysis model provides potential for gleaning greater understanding of the data in a more nuanced form

A Visual Analysis of the Pecha Kucha

Researchers (Kress, 2000; Kress & van Leeuwen, 1996; Lemke, 1998) developed a grammar that can be applied to images. The three main components of this grammar are a) representational/ideational structures, b) interactive/interpersonal structures, c) compositional/textual means. In addition, Marantz (1977) highlights that art objects are important because they have the potential for producing a state of mind where new and personal meanings can take shape. The incorporation of Marantz's ideas into the semiotic analysis plan potentially allows me to consider the importance of aesthetics in the process of making meaning.



What interaction takes place between the images and voice?
 What are the analogical qualities of images?
 (Rodriguez and Dimitrova, 2011)
 In what ways do the aesthetic qualities of the images influence meaning-making for the producer? For the consumer?
 What guided the choice for images? Pop culture? Background knowledge?

Figure 11. Comprehensive Multimodal Analysis

Chapter Nine

Places of Expansion: A Model for Understanding Pre-service Teacher Literacy Identity Development

Currently, pre-service teachers face challenges as they enter the classroom. Our highly dynamic, globalized society creates an environment that demands teachers to facilitate learning environments in the classroom where students become keenly aware of how to successfully navigate through the literacies required for living productively in the 21st century. Therefore, as pre-service teachers engage in teacher education programs, it is imperative to explore how they construct their own literacy identities, ultimately influencing how they will enact literacy instruction in their future classrooms.

Pre-service teachers enter into the university with histories of experience in educational contexts. They also have experience with digital media, in various formats and varying amounts. Through these histories, pre-service teachers have appropriated ways of “knowing, being, and doing” (Lave & Wenger, 1991; Lortie, 1975; as cited in Norman & Spencer, 2005). Often, pre-service teachers have experienced a dichotomous scenario regarding digitized literacies inside and outside of classroom settings. Inside the classroom, state testing mandates and school performance largely guided their prior educational experiences. Conversely, outside the classroom, pre-service teachers’ lives are potentially dominated by the use of technology for communication, social-networking, gaming, navigation, reading, and general information. An issue resides in the disconnect between pre-service teachers’ prior classroom experiences and out-of-school experiences, when ultimately, these two environments need to be intertwined in

order to cultivate literacies for the 21st century. Granted this chasm between in and out of school experience may be only a temporary one, as the culture adjusts to multimediated literacies, and increasingly acknowledges their legitimacy for school contexts. But at this time, the issue is a real one for pre-service teachers and their instructors.

The National Council for Teachers of English (2008) calls for competency in a wide range of literacies in order to construct meaning from traditional print texts and evolving digital technologies. . This expanded view of literacies calls for "literacy pedagogy...[to] account for the rapidly increasing fusion of text forms embedded in children's lives by creating new opportunities for learners to communicate using multiple modes of representation in a variety of social contexts" (Kendrick & McKay, 2004, p. 110). While these are viewed as important goals of current educational agendas, the new reality resides in pre-service teachers' familiarity and capacity for embracing the broadening scope of literacies students bring from their out-of-school environments, ultimately providing opportunities or potentially restricting opportunities for the design of multimodal texts as representations of learning and activity.

The purpose of this chapter is to build upon the literature informing pre-service teacher literacy identity construction by providing a framework for understanding pre-service teacher literacy identity development. Following the qualitative case study described in Chapter Eight where pre-service teachers' participated in a literacy methods course with embedded multimodal learning opportunities paired with a field experience, I revisited themes in order to build upon analytic generalizations that potentially contribute to theory building regarding preservice teachers' literacy identity development (Strauss, 1987; Charmaz, 2000). This area of literacy studies research is valuable because as pre-service teachers construct their own understanding of textual meaning, they potentially realize the complexity of cultivating an environment that

emphasizes design, production, and presentation as a ‘multimodal’ (Kress & Van Leeuwen, 1996) constellation of *valuing*, *knowing*, and *utilizing* linguistic, visual, spatial, gestural, and audio characteristics (Cope & Kalantzis, 2000). Perhaps, in pre-service teachers’ own educational histories this type of environment was not cultivated, therefore, the exploration of pre-service teachers’ identity development within current teacher education experiences is critical.

Building upon Vygotsky’s (1978) socio-cultural theory and Lave and Wenger’s (1991) construct of communities of practice and situated learning, I identified places of expansion in preservice teachers’ literacy identity development, which delineated potential shifts in preservice teachers’ literacy identities. Following a brief review of the literature pertaining to multimodal literacies and literacy identity development, I provide a description of the the resulting framework.

Theoretical Framework

In the following section, I provide a backdrop of the existing literature in *multimodal texts* (Jewitt, 2013; New London Group, 1996), *communities of practice* (Niesz, 2007; Wenger, 1998), *preservice teacher literacy identity* (Albers & Harste, 2007; McDougall, 2010) and *literacy-related professional knowledge construction* (Clandinin & Connelly, 1996; Miller & McVee, 2012; Unsworth, 2006; Shanahan, 2013) in order to frame the role of literacy identity construction for preservice teachers.

Multimodal Texts. There are a few assumptions that underpin the notion of multimodality. The first assumption lies within the notion that while language is “widely held to be the most significant mode of communication, speech or writing are part of a multimodal ensemble” (Jewitt, 2013, p. 2). In essence, multimodality takes a stance that while speech and

language often play a central role in communication, this is not always the case- especially in today's society (Norris, 2004, p. 3). From a multimodal perspective, this means the starting point lies within the notion that all modes are part of an ensemble, evident in an interaction or a representation. Therefore, the representations and/or interactions need to be studied through the lens of what choices are available to communicators, and how the communicators select and utilize their modal resources for given purposes (Jewitt, 2013).

Another assumption central to multimodal research lies within the notion that “all modes, like language, (have) been shaped through their cultural, historical, and social uses to realize social functions (Jewitt, 2013, p. 3). Extending this socio-cultural view of multimodality, Goswami (2011) indicates the individual situated within the social context has experience-dependent neurocognitive mechanisms at play when engaging within different modes. Therefore, neurocognitive mechanisms, psychological aspects, and prior experiences collectively contribute to the meaning-making experiences of individuals within social contexts.

A third assumption underpinning multimodality is the idea that individuals “orchestrate meaning through their selection and configuration of modes” (Jewitt, 2013). Therefore, it is through the interactions that take place within and between the modes that are significant for meaning making. Modes are interwoven with interconnected meaning made in other modes in order to create a holistic communicative event. The advent of the digital age has foregrounded new communicative avenues for making meaning and the necessity for researchers to consider the affordances of modes, modal configurations, and the semiotic potential involved in a plethora of contemporary discourse worlds (Jewitt, 2013).

Communities of Practice

The construct of communities of practice frames learning in four “deeply interconnected and mutually defining components” (Wenger, 1998, p. 5). Wenger (1998) contends the core components of communities of practice are learning as belonging (community), learning as becoming (identity), learning as doing (practice), and learning as experience (meaning). Within each component, learning is central to the human activity described. As communities of practice emerge, individuals seek commonalities about shared understandings, which surround the activities in which they engage. It is through this communal process where transformation of old beliefs occurs, leading to the construction of new understandings. Further, it is through the belongingness felt through the participation within the group that ultimately influences transformations in thinking, feeling, and questioning (Niesz, 2007).

The “Literacy Event”: Reading and Writing in Multimodal Contexts

With a call for pre-service teachers to adopt a literacy pedagogy that accounts for the rapidly increasing fusion of text forms embedded in children’s lives, it becomes necessary to understand how pre-service teachers conceptualize the notion of multimodal literacies and how their conceptualizations play a role in their construction of their identities as literacy teachers. Within a multiliteracies framework (New London Group, 1996), print literacies remain important modes that people use to construct and communicate meaning. Print literacies can be defined as “the reading and writing of some form of print for communicative purposes in peoples’ lives” (Purcell-Gates, et al, 2004, p. 26). This definition of print literacies groups reading and writing together in order to acknowledge the reciprocity and interdependence of reading and writing acquisition (Clay, 1993). Therefore, the multiliteracies framework acknowledges that print literacies are an integral part of composing and consuming multimodal texts (Wissman, et al.,

2012). However, from this perspective, print literacies are not privileged as in past definitions of literacy. Instead, they are viewed as modes of communication within a larger communication repertoire (Sanders & Albers, 2010).

The larger communication repertoire depends on a multimodal ensemble to unfold within a communicative event. As the resources of the different modes are combined, meanings are corresponding, complementary and dissonant as they harmonize in an integrated whole” (Jewitt, 2009, p. 301). In a broader sense, multimodal literacy is “the simultaneous reading, processing and/or writing, designing, producing and interacting with various modes of print, image, movement, graphics, animation, sound, music and gesture” (Walsh, 2011, p. 106). These modes of expression “are interconnected in very complex, multifaceted ways using a plethora of image, sound, and print” (Tierney et al, 2006, p. 361). While individuals construct meaning, they “orchestrate multiple modalities in composing and consuming a range of texts” (Wissman, et al, 2012, p. 325). The “orchestration” that occurs between the various modalities (including print) offers potential for literacy development as the different modalities combine and interact within a multimodal ensemble.

As preservice teachers are exposed to the pedagogic agenda proposed by NCTE (2008) and the multiliteracies/multimodal literacies framework, the call is evident for them to evaluate their beliefs about how literacy fits into the framework. Ultimately, the construction of their identities as literacy teachers plays a significant role in the way they privilege various modes in the classroom, and how they perceive modes to interact in meaningful ways for their future students.

Preservice Teachers' Identities as Literacy Teachers in the 21st Century

When considering multimodal contexts and writing, *design* is one of the most important parts of multimodal expression. When learners become the designers, it affords opportunities for imagination, expression, vision, and problem-solving (Albers & Harste, 2007). In most traditional school settings, teachers are the designers of the product, while “students are the producers who try to create the product that the teacher has in mind” (Albers & Harste, 2007, p. 13). The concept of design highlights the “relationships between modes of meaning, the transformation of these modes of meaning in their hybrid and intertextual use, and their subsequent to-be-received status” (New London Group, 1996, p. 81).

McDougall (2010) utilized discourse analysis in order to explore the ways in which teachers talk about themselves. McDougall defines the identity of the teacher as the ways in which teachers discuss their own teaching practices and beliefs, as well as their conceptualizations of others. She analyzed audio-taped interviews, where she focused on the beliefs, values, and mindsets the preservice teachers expressed. Her findings highlight various factors that construct teachers' identities. Some teachers were exposed to and engaged within primarily traditionalist discourses, therefore, these notions dominated their responses to expanding notions of literacy. They expressed anxiety about taking on any new area of learning that might potentially undermine their professional responsibility to advance reading and writing skills for their students. Further, they did not believe they possessed the expertise to incorporate “media” into their classrooms, and they did not demonstrate a willingness to devote time and energy to such an endeavor (McDougall, 2010). While these factors and discourse structures were present among the group of teachers, she, conversely, discovered teachers who embraced media as an integral and necessary component of their pedagogical practice. This suggests she

was able to identify a perspective of an expanding notion of literacy. McDougall (2010) underscores that teaching reading and writing can remain a core responsibility of the classroom teacher without having to be sacrificed in order to incorporate other modes of learning prevalent in the authentic lives of children. She was able to see some evidence of teachers who perceived these endeavors as having potential to enhance meaning-making during literacy events, rather than competing for space- in essence, the valuing of creating multimodal ensembles.

Literacy-Related Professional Knowledge Construction

When seeking to understand the construction of literacy-related professional knowledge, it is important to consider teacher knowledge in terms of “individual-teacher knowledge, the working landscape, and the ways in which this landscape relates to public policy and theory” (Clandinin & Connelly, 1996). Further, the professional knowledge landscape is directly tied to preservice teachers’ histories within educational settings, their work-related experiences both inside and outside of the classroom, and their personal life experiences (Clandinin & Connelly, 1995). All of these factors have a profound influence on how pre-service teachers construct professional landscape. With respect to the changing literacy landscape, the adoption of digital technologies, and the dynamic nature of these technologies, it is imperative educators expand their conceptualizations of meaning-making potential while supporting children in their abilities to write in various modal platforms (digital and non-digital) (Lankshear & Knobel, 2003; Miller & McVee, 2012; Unsworth, 2006; Shanahan, 2013). Therefore, consideration of preservice teachers’ lives in a holistic sense is necessary when understanding how they construct literacy-related professional landscape.

Evans (2005) underscores literacies associated with new technologies should not be viewed as an autonomous set of skills and understandings but as literacy practices “inherently

embedded in one's social context". Therefore, as preservice teachers engage in practices where they are constructing their literacy identities (e.g. teacher preparation coursework, field experiences), it becomes teacher educators' responsibility to bring light to the importance of reading and writing as it exists in the practices of our authentic lives, as well as in professional and schooling lives. If the goal of teacher education is to cultivate preservice teachers who attend to the most effective practices that prepare students who can successfully navigate within 21st century, preservice teachers need to gain a sensitivity and awareness to the importance of effective and authentic instruction. This includes explicit instruction within all modes of learning, including traditional print-based modes (reading and writing), and explicit instruction about how modes potentially synchronize to form more meaningful learning opportunities.

Building a Framework for Understanding Preservice Teachers' Literacy Identities

In order to build on the study described in Chapter Eight, I expand on the findings about how pre-service teachers' classroom pedagogical decisions while participating in a literacy methods course with embedded multimodal experiences help build a framework for understanding preservice teachers' literacy identity construction. In the following section I provide a brief overview of the study that led to the development of this framework, then I describe the framework for consideration.

Overview of Initial Study Findings. During the initial stages of literacy course with embedded multimodal experiences and paired field experiences, participants perceived themselves as motivators working within a community. During this professional entry point, participants constructed their identities through developing a place within their various communities (classroom, professional, university). In these newly established communities, participants felt a desire to engage students in activities however, they viewed the learning

environment as a place for controlled engagement. Participants viewed engagement and control of the classroom environment as an objective, often without recognizing or pursuing deeper learning opportunities created through discourse and exploration. In part, this could be driven by the need to gain initial understanding of the elements of classroom management in order to effectively drive instruction.

The participants' experiences highlighted how, through time, preservice teachers become more comfortable in their communities and seek opportunities for students to move into rich literacy learning opportunities that facilitate higher order thinking. This often occurs simultaneously to their own developing knowledge of literacy practices. As participants become more comfortable in their own knowledge base, they begin considering themselves worthy of serving as a model of thinking for their students. The shift here involves the desire to provide effective literacy instruction with the emphasis less on control and more on quality of instruction. It also represents a developing comfort level with classroom management procedures combined with a developing knowledge of literacy pedagogy.

Many participants indicated multiple points where they felt uncomfortable in their ability to teach literacy and, at times, they even questioned their own beliefs. These places of struggle represented places where deep reflection took place about what constitutes effective literacy instruction. They provided a platform for our professional, university-based cohort community to see firsthand the messy process of becoming an effective literacy teacher. The participants began to see the interrelated nature of their experiences in the classroom, multimodal content they were experiencing within the university course, and their own life experiences inside and outside of schooling. They were able to begin thinking deeply about how there are a multitude of influences that ultimately shape their vision of effective and valuable literacy instruction. By the

culmination of the semester of the paired field experience and multimodal writing course, some participants began to see beyond text as serving as the only valued literacy expression in the classroom. Their notion of what constituted literate practices expanded as they accepted the meaning made through art, technology, and discourse between students and themselves. These participants recognized the importance of connectedness between the students and teacher, authenticity of the learning process, and discourse opportunities. These participants' literacy identity development represented a place where preservice teachers begin to value the literacies of the world (i.e. multimodal and multimedia) rather than focusing solely on the literacies of traditional classroom settings (i.e. print-based, verbocentric).

A Model for Pre-service Teacher Literacy Identity as Future Teachers

Building upon the study described in Chapter Eight, places of expansion became evident in each of the participants' experiences. The places of expansion identified in each of the participants' experiences delineated where shifts in identity construction as future literacy teachers potentially took place. Vygotsky's (1978) socio-cultural theory and Lave and Wenger's (1991) construct of communities of practice and situated learning provide a backdrop for broader notions of identity development. I connect my understanding to these theories in order to describe the places of expansion where preservice teachers shift in their construction in their literacy identities as future teachers.

Vygotsky's (1978) socio-cultural theory provides fundamental insight into how preservice teachers potentially form their identities as literacy teachers. Vygotsky's theory emphasizes the need to examine the intersection between the environment and the individual in order to provide insight into how they mutually construct one another (Vygotsky, 1978). While Lave and Wenger (1991) contend that through the process of sharing information and

experiences with a group, members learn from each other, and potentially develop themselves personally and professionally. Considering the notion of pre-service teachers working within both a university-based and school-based community as they develop in their identity development as future literacy teachers, four places of expansion for literacy identity are illuminated through my findings. These stages include: *self as motivator*, *self as community builder*, *self as multimodal navigator*, and *self as facilitator of empowerment* (see Figure 12).

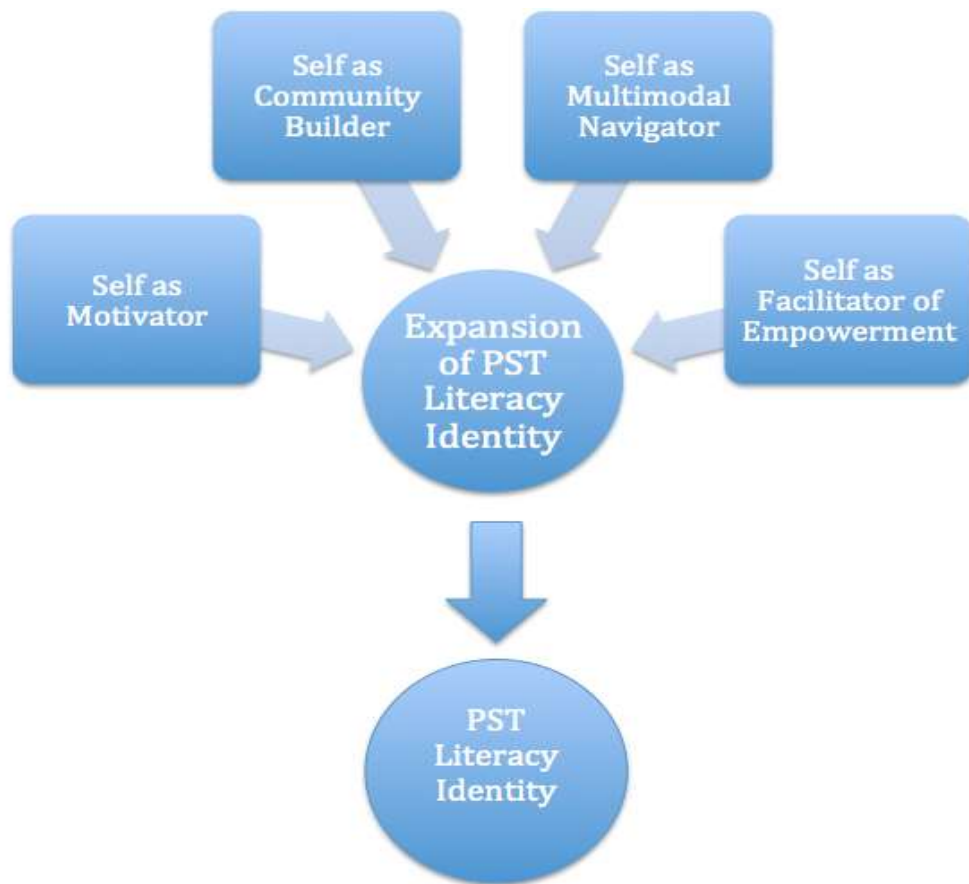


Figure 12. Literacy Identities

Self as a Motivator. Self as motivator can be defined as a preoccupation with learning how to find their own community, both within the classroom and professionally (see Table 1). During the initial efforts toward community building, participants continually searched for ways to make literacy experiences “fun” for the students. Early in field experiences, instead of analyzing deep connections with literacy learning and multimodal experiences, participants see the immediate and surface-level benefits involving the motivating aspects of multimodal experiences. One participant remarked, “I love to use art in the classroom. It is a powerful attention-getter”. This points to the participant’s need to gain a sense of control and find a place within the learning community. All of the participants revealed a need to “gain control of the classroom”, “grab the students’ attention”, and “make learning fun, not boring”. While this finding was identified early in the semester for this particular group of participants, there are potentially places in their identity development where participants revisited the community later in their experiences. This was especially evident in their professional interactions and decisions. Participants revealed an early apprehension about participating in professional discourse about writing instruction, especially the notion of multimodality because it went against the grain of traditional notions of literacy. One student stated early in the semester, “There is no way my collaborating teacher will allow me to incorporate art or technology into writing instruction. We are too busy preparing for the FCAT (state standardized assessment)”. Later in the semester, students continued to express professional power issues with the use of multimodal experience, but they were willing to take more risks and serve as a motivating professional force within the larger school environment. Another participant indicated, “I think my collaborating teacher is now recognizing how students’ learning is enhanced when they are talking with each other, sketching out their ideas, and ultimately creating more complete stories.” This remark highlights

how this particular participants' efforts made her feel as though she was not only a motivating force for her students in the classroom, but also the larger professional community.

As I memo-ed and iteratively read and reread the participants' narratives, I realized experiences in the field early in the semester were largely centered around finding a place in the class where participants felt comfortable interacting with students. This was an initial conflict felt by all of the participants. Through negotiations with collaborating teachers about their "placeness" in the classrooms, they were ultimately struggling to find a "space" to enact literacy practices they were coming to see as valuable. While this was seemingly a "starting block" for the participants in their construction of identity as writing and literacy teachers, arguably they continue to revisit their placeness in the community throughout their ongoing identity development. Wenger (2002) emphasize that learning in communities is central to identity development. She highlights how learning happens within social participation, where the individual is an active participant in social communities, therefore, constructing his/her identity through these communities (Wenger, 2002). Participants' establishment of the *self as motivator* within the educational community marks, perhaps, a point of entry into identity development as a writing and literacy teacher, but arguably, a point that is revisited over time and through various instantiations of power struggles, development of pedagogical and content knowledge, and broader social experiences..

Self as Community Builder. Self as community builder can be defined as seeing oneself as a facilitator of community building for students within a literacy classroom (see Table 1). When engaged in community building, participants have a sense of comfort in their own identity for where they see themselves in the educational community, and they are working toward helping students find a place within the literacy community. Wenger (2002) underscores

that communities create a social fabric for learning that foster interactions and willingness to share ideas. When participants viewed themselves as community builders they moved beyond a preoccupation with classroom management and the need to “make learning fun”, and they searched for ways to facilitate active engagement among students surrounding authentic topics. This was especially evident in their reflections about differentiating for students’ needs. This was often observed through shared and interactive writing experiences, where discourse was actively facilitated. While at this level, participants still largely viewed themselves as transmitters of knowledge or appropriate thinking (a model), they seemed to move beyond their initial need to establish control of the learning environment. At this point, they appeared to be focused on making decisions about effective literacy instruction through building a safe literacy community.

Viewing the *self as community builder* was a common theme identified among my participants. While this view of the self occurred at different time points during the semester, it was often revealed following an expansion of thinking after participants grappled with their identity of *self as motivator*. It appeared that once pre-service teachers found a comfortable place for themselves within the classroom environment, they were able to focus on comfortable places for their students within the literacy classroom. While the facilitation of discourse indicated an increased level of comfort within the classroom environment, elements of control continued to show some prevalence, represented by participants’ desire to provide a “correct way of thinking” about writing or an “effective model for writing a piece”. In essence, the participants revealed their need to combine motivational factors, elements of control, and their newfound understanding of effective writing strategies in order to feel a sense of accomplishment within their instruction. This stage was identified at various time points throughout the study for all of the participants.

Self as a Multimodal Navigator. Self as multimodal navigator embodies the ways participants used multimodal experiences in deeper ways to enhance students' learning (see Table 1). While many of the participants documented the use of multiple modes and multimedia to expand upon their ideas for literacy experiences, this stage represents an expansion in participants' identities as they embrace multimodal experiences in order to enhance themselves as learners alongside their students. It is a step away from feeling as a transmitter of knowledge, and a move toward becoming a facilitator of understanding. In this stage, pre-service teachers potentially release some of the need to feel completely in control of the learning context, instead, promoting discourse, critical thinking, and infusion of student voice as a place of power through multimodal avenues. As participants progressed through their coursework and field experiences throughout the semester, 3 of the 4 participants revealed reaching this place in their identity as a literacy teacher. One participant noted, "I use picture books a lot when I teach writing. I think it helps them see emotion and I point out how the author makes their ideas connected. While there might not always be a lot of text in picture books, I thought it was important for them look at the picture to really determine what the picture told them about the idea the author was trying to convey. I loved seeing how they all shared different ideas. It gave them room to know there isn't always a right way of thinking- we need to share perspectives". Another participant revealed, "The drawing process is so important. Students don't always have the vocabulary to be as detailed as they want to, so the picture is where they add in all of the details. I think it helps stimulate their idea development without feeling so constrained with the reliance on only text". In these contexts, students reveal their analysis of how multimodal experiences transcend the "teacher as transmitter" model of thinking, instead provided room for discourse, openness, collaboration, and higher-order thinking. The data analysis revealed facilitation of learning

through multimodal avenues for 3 of the participants, however, most of the multimodal experiences were in service to reading or writing. As pre-service teachers travel into full-time classroom experiences, research on transference of multimodal experiences for meaning-making in general needs to be explored. While elements of teacher control are still evident, participants' openness to ponder the implications for these practices emphasize an expansion in their identities as literacy teachers.

Self as Facilitator of Empowerment. Self as facilitator of empowerment can be as an expansion of literacy identity where pre-service teachers embody what it means to be a facilitator of literacy learning rather than a partial facilitator or transmitter of knowledge (see Table 1). Only 1 of the participants reached this expansion of identity development within her field experience and simultaneous university coursework. I watched her struggle through each area of writing and literacy identity development until she reached a comfort level with her students, her pedagogy, and her developing knowledge of literacy instruction, which allowed her to be a facilitator of multimodal literacy experiences. In turn, she was intrinsically rewarded as her students naturally expressed increased engagement and deeper learning about literacy as she guided them through meaning-making processes. She remarked, "I learn as much from my students as they learn from me. I watch them struggle, encourage them to talk to one another, and then we reflect together about how to enhance their writing. Often, the students provide better insight for each other than I could provide. It's amazing to see this in action".

This, too, is an area of expansion where the overlapping nature of the thematic categories is recognized. Multimodal literacy experiences are multilayered. They require preservice teacher's value reflection upon their teaching, student needs, the essence of multimodal experiences, and authenticity. In order to truly embody this stage, preservice teachers need to

value these characteristics as part of their own literacy teacher identity, which leads to a synergistic transformation in teaching. It is through the facilitation of learning through multiple modes, discourse, and collaboration where learning transformations take place. As preservice teachers reach this place of expansion, arguably they feel the synergistic nature of the learning process, causing a shift in how they conceive literacy practices.

Discussion

As indicated by the experiences of my participants, I argue pre-service teachers travel through places of expansion as they formulate their identities as literacy teachers for the 21st century (see Table 1). My participants all perceived themselves as motivators when they initially began their field experiences and the multimodal literacy course. While students initially constructed their identities through their *selves as motivators* within their identity development, they felt a driving force to engage students in activities, and they viewed the learning environment as a place for controlled engagement. Participants viewed engagement and control of the classroom environment as an objective, often without recognizing or pursuing deeper learning opportunities created through discourse and exploration. This is not to indicate that this place of expansion is not important. Arguably, pre-service teachers need to understand the elements of managing classrooms in order to effectively drive instruction. Often, at the onset, this appears as a controlled, teacher-as-transmitter environment. However, it is upon the realization, or struggle, the pre-service teacher faces when they realize deeper learning is not being achieved where a further expansion in identity occurs.

Table 1**Identities as literacy teachers**

Places of Expansion in PST Literacy Identity	Definition	Examples
Self as Motivator	Pre-service teachers' preoccupation with learning how to find their own community, both within the classroom and professionally	<ul style="list-style-type: none"> • see the immediate and surface-level benefits involving the motivating aspects of multimodal experiences • an apprehension about participating in professional discourse about writing instruction, especially the notion of multimodality because it went against the grain of traditional notions of literacy
Self as Community Builder	Pre-service teachers perceive themselves as a facilitators of community building for students within a literacy classroom	<ul style="list-style-type: none"> • moves beyond a preoccupation with classroom management and the need to "make learning fun" • searches for ways to facilitate active engagement among students surrounding authentic topics • focused on making decisions about effective literacy instruction through building a safe literacy community
Self as Multimodal Navigator	Pre-service teachers perceive multimodal experiences to enhance students' learning in deeper ways	<ul style="list-style-type: none"> • embrace multimodal experiences in order to enhance themselves as learners alongside their students • release some of the need to feel completely in control of the learning context, instead, promoting discourse, critical thinking, and infusion of student voice as a place of power through multimodal avenues
Self as Facilitator of Empowerment	Pre-service teachers perceive themselves as facilitators of literacy learning rather than a partial facilitator or transmitter of knowledge	<ul style="list-style-type: none"> • An expressed comfort level with students, pedagogy, and developing knowledge of literacy instruction • intrinsically rewarded as students naturally express increased engagement and deeper learning about literacy as she guided them through meaning-making processes

My participants' experiences illuminate how this expansion potentially leads to pre-service teachers' desire for their students to go deeper into their higher order thinking processes. This often occurs simultaneously to the PST's own developing knowledge of literacy practices. As pre-service teachers become more comfortable in their own knowledge base, they begin considering themselves worthy of serving as a model of thinking for their students. I refer to this place of expansion as *identity through self as community builder*. All of the participants reported using reflection, attention to differentiation, and ultimately, metacognitive strategies in order to provide a model for student thinking. Elements of control are still largely at play during this place for expansion, as the participants document themselves as providing a "correct model for thinking" as they provide literacy instruction. The shift here involves the desire to provide effective literacy instruction with the emphasis less on control and more on quality of instruction. It also represents a developing comfort level with classroom management procedures combined with a developing knowledge of literacy pedagogy.

As internal struggles arise, further expansions in pre-service literacy teacher identity are possible. However, it is potentially possible for pre-service teachers feel uncomfortable during certain moments of struggle and move between places of expansion in order to seek greater understanding of who they are as literacy teachers. In fact, I argue that it is likely pre-service teachers will traverse between the places of expansion in often overlapping ways in order to regain footing within their identity construction. Two of my participants felt an identity expansion beyond *self as community builder* within the semester of writing methods coursework and their field experience. Given the context of the multimodal writing course, participants began to see beyond text as serving as the only valued literacy expression in the classroom. Their notion of what constituted literate practices broadened as they accepted the meaning made

through art, technology, and discourse between students. This shift represented a traversal through places of expansion in order to conceptualize themselves as, *multimodal navigators*. Not only did these participants report how multimodal platforms created deeper connection in their own learning, but they also recognized the semiotic potential of multimodal experiences for their own learners. Within this literacy identity expansion, participants recognized the importance of connectedness between the students and teacher, authenticity of the learning process, and discourse opportunities. This stage arguably represents a place where pre-service teachers begin to value the literacies of the world (i.e. multimodal and multimedia) rather than focusing solely on the literacies of traditional classroom settings (i.e. print-based, verbocentric).

One participant reached the final identifiable stage of pre-service teacher literacy identity development, *self as facilitator of empowerment*. This marks the stage of embodying what it means to be a facilitator of literacy learning rather than a partial facilitator or transmitter. The participant who reached this stage reported feeling comfortable in allowing students to explore in highly individualized ways within her literacy community. She felt intrinsically rewarded as she observed students become empowered through discourse with their peers, experimentation with the composing process, and use of multimodal avenues for expression. In this stage of pre-service teacher identity development, the pre-service teacher sees himself or herself as a guide for learning in the 21st century. Therefore, similar to *self as multimodal navigator*, all types of texts are privileged as potential avenues for meaning making. Students highly individualized needs are recognized, reducing the incidence of marginalization of particular students. *Self as facilitator of empowerment* is arguably the most complex level of pre-service teacher literacy identity development.

In order to become and think of oneself as an effective literacy instructor, pre-service teachers need to value their roles of motivator, model, and multimodal navigator within the classroom. Ultimately, it is through developing places of comfort in the classroom with respect to control and engagement that provide space for exploration and potential struggles in search of providing the most effective literacy instruction. While the expansions in identity are not necessarily linear (see Figure 13), instead the progression is often messy. Pre-service teachers naturally face successes and failures within the learning environment that act as catalysts for further identity development or expansions. This framework serves as a model for understanding potential literacy identity development for pre-service teachers. The model potentially provides insight into the highly individualized ways in which pre-service teachers transverse across the places of expansion. Therefore, it should be noted that the model is a highly dynamic and complex array of constructs that potentially impact pre-service teacher literacy identity development.

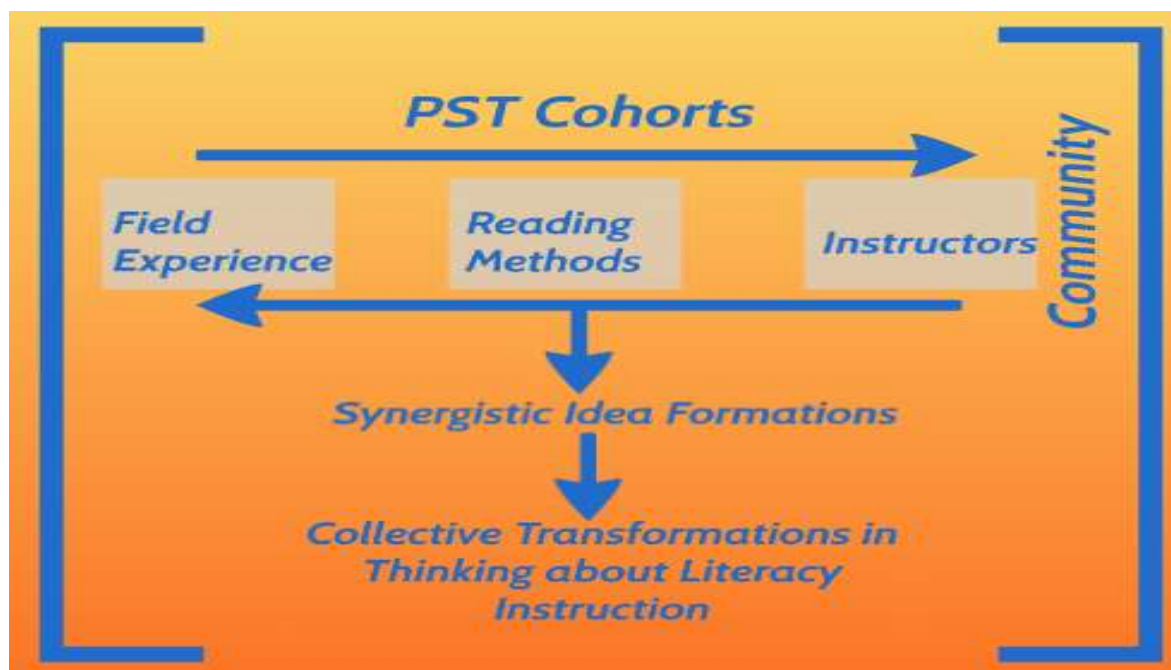


Figure 13. PST Cohorts

Connections to Developmental Stage Theories

This research points to parallels with developmental stage theories seminal to the fields of educational psychology and teacher education. Piaget (1936) was arguably one of the first psychologists to systematically study the cognitive development of children. Piaget proposed children move through discrete stages of development, marked by qualitative differences. Piaget recognized cognitive development to rise from a progressive reorganization of mental processes, resulting from both biological maturation and experiences through time. The developmental model of pre-service teacher literacy identity described in this chapter depicts how pre-service teachers' experiences within the classroom signaled stages of development. The stages of development were characterized by qualitative differences as pre-service teacher's experienced progressive reorganization of their mental processes (Piaget, 1936) through their field experiences.

Further, the findings draw parallels to seminal work conducted by Fuller and colleagues (1974). The researchers suggest that teachers continually express concerns about classroom instruction, and these concerns shift over time. Similar to findings in this study, Fuller and colleagues found teachers enter the field with a high level of self-concern regarding their own abilities to be successful within the classroom environment. As self-concerns are resolved, teachers shift into becoming occupied with task concerns, or a preoccupation with developing effective instructional materials and working with students effectively. According to the researchers, teachers only reach the final category, impact concerns, when they resolve issues with self and task (Fuller et al., 1974).

“Places of expansion” in pre-service teachers' literacy identity development interweaves elements of Piaget's (1936) and Fuller and colleagues (1974) models of childhood and teacher

development in order to provide a backbone for the model suggested in this chapter. As described in the previous sections, pre-service teachers enter into the field with a strong preoccupation with themselves as community builders. Through time, they experience expansions in their thinking and ways of doing in the classroom, which is potentially a product of cognitive reorganization based on experience. These are characterized in discrete ways, however, as pre-service teachers travel through their developmental process through time, the borders between stages become messy and intertwined. The framework for thinking about pre-service teacher literacy identity development proposed in this chapter needs to be explored further in order to unpack the messiness that unfolds in places of expansion as pre-service teachers develop their understanding of literacy through time.

Implications

There is much work to do on every front—helping future teachers understand their own multiple literacies, increasing their awareness of the multiple literacies used regularly and fluently by today’s students, finding classrooms and schools in which future teachers can apprentice in enacting a multiple literacies curriculum, and finally, helping them learn to cope with the forces they will encounter in today’s highly politicized and highly contentious curricular struggles” (Cervetti, Damico, & Pearson, p. 384, 2006).

Hagood (2000) suggests that teachers’ understandings of how students make meaning is born out of teachers’ analysis of their own literacy practices, as well as those of their future students (Cervetti, Damico, & Pearson, 2006). The quote above highlights the dissonance pre-service teachers will face upon entering the classroom in the midst of evolving literacies for the 21st century. This research and the development of a framework for thinking about pre-service

teacher literacy identity development expands upon existing literature by exploring the implications of preservice teachers' development of new literacy identities, given many are a product of the traditionalist views of literacy.

This study underscores the importance of pre-service teachers' conceptualizations of literacy in the 21st century and how their newly formed conceptualizations of literacy transfer into classroom practice. Pre-service teachers will potentially enter classrooms as activists for change, therefore, it is imperative to explore how pre-service teachers develop their own literate identities, and ultimately, develop a fluency for enacting a multimodal literacy curriculum.

Chapter Ten

Infinite Expansion: My Continuing Journey with Multimodal Literacies

Looking, Listening, and Considering: The Dynamic Nature of Literacy Identity Development in the Midst of Multimodalities

In the midst of a long week teaching, mentoring undergraduates, and making sense of research findings based on data gathered from my literacy courses, I had an opportunity to confer with my major professor. As I walked down the quiet hallway of offices within the College of Education where my office, along with many of my fellow graduate student counterparts, instructors, and professors, resides, I saw a glimmer of light shining underneath my major professor's office door. "Perfect timing", I thought. I knew I needed to express some of my thoughts about my students, my teaching, and my direction with research. I could hear the low hum of his voice permeating through the crevasses of his office door, so I strategically positioned myself in the quiet, dark hallway in order to ensure I would notice his door when it opened without appearing too eager. As I anxiously waited, thoughts swirled in my head.

I felt comfortable as an instructor and with my knowledge of literacy content as I facilitated learning for my students. I felt comfortable they were gaining an understanding of widely considered foundational aspects of literacy (Cunningham & Allington, 2007; Harvey & Goudvis, 2007). However, I felt myself delving deep into my own transformations and expansions of what I believed about effective literacy teaching practices... and even deeper, I realized the transformations and expansions felt ongoing. I thought I would reach a point where I would eventually take a stance on effective practices and stick to it, especially given my look at literacy

through a variety of lenses (cognitive neuroscience, literacy, psychology). Instead, I felt a sense of fluidity. I saw the value of continually analyzing and revising my own practices, as well as those of my students. I began to value this fluidity, and I viewed it as an opportunity for continuous learning about literacy. In a sense, I was invigorated that I would never know enough to become bored. I faced the journey of a lifetime through my learning. But, here comes the uncomfortable part, how could I cultivate this quest for continuous learning and openness for expansion and transformation within pre-service teachers? See the YouTube video link provided for a further elaboration on my thinking (Literacy Identity: Journey Continued; <https://youtu.be/jLq-1zDyVMs>).

I heard the steady creak of the door opening and I looked to see my major professor easing out of his office to head down the hallway. “Dr. King, hello!”, I announced. “Hi, Margaret. It’s been a while. Did you just finish teaching?”, my major professor responded. I began describing the logistics of my week, and I asked him if we could speak in his office about some of the “swirling” thoughts occupying my mind.

While we sat across his desk from one another as I described my thinking, he began jotting notes down on his notepad. I noticed his notes were not typical, instead, it looked like he was constructing a diagram of sorts. *Was he thinking I was rambling and making no sense at all at this point? I was talking about my teaching, pre-service teachers, field experiences, my coursework and readings, and making sense of my data. It’s no wonder why he had to take notes. He must think I’m all over the place.* As he wrote and sketched, a smile came across his face. It almost looked as if he was slightly relieved, even content.

He revealed his sketch after I finished my monologue. It resembled a complex Venn (1880) diagram where circles intersected one another and notes accompanied the outer-lying

edges of the circles. Inside each circle, he labeled various disciplines in which I participated through my thinking and my teaching. As I inspected the diagram, I realized the places where circles overlapped provided an entry point into dimensions where expansion and potential transformations took place in my understanding. A simplistic representation of the collaborative diagram is as follows (see Figure 14):

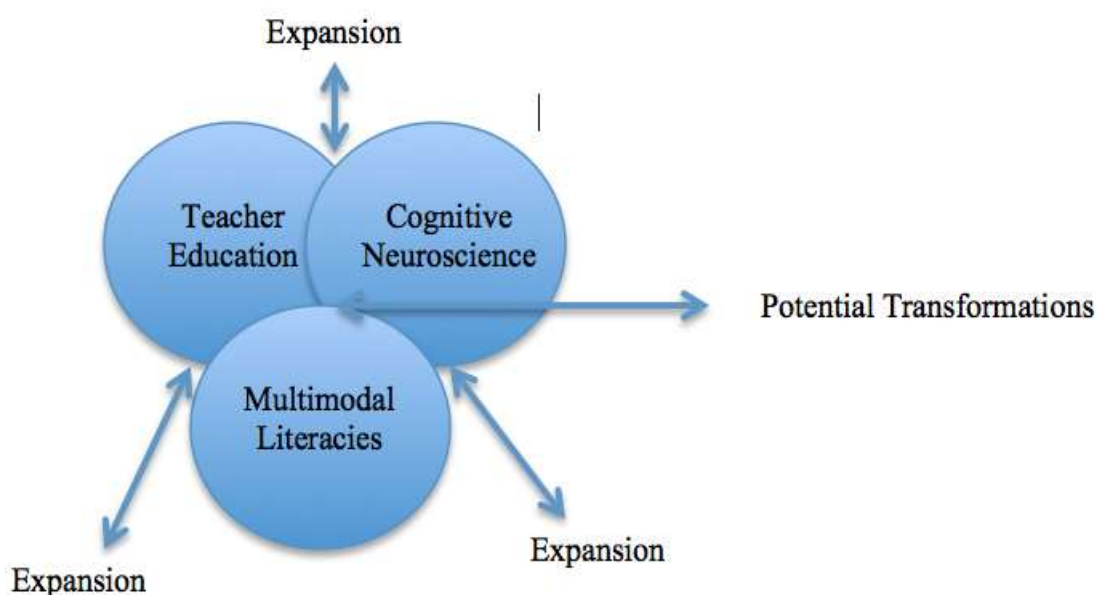


Figure 14: Expansions and Transformations in My Literacy Identity

While the diagram provides a beginning point for understanding the fluidity of moving in and out of expanded and transformed understandings, it was clear the movement in between and within the disciplines was complex and messy, which is nearly impossible to represent in a diagram. Nevertheless, the diagram provided a means for our conversation and a tool to aid in arriving at a collective understanding of my own development as a literacy teacher educator.

Through our conversation that day, I realized my identity development as a literacy teacher educator resembled that of the pre-service teachers whom I studied. I sought to build community within groups of pre-service teachers, facilitate abilities within my students to navigate complex theories and practices related to multimodal literacies, and ultimately, develop feelings of empowerment through their experiences inside my course and within the classroom. However, I realized my desire to take it a step further. As I embodied what it meant to be literate in current society, I hoped to facilitate this embodiment for pre-service teachers. I wanted them to know how to become navigators of the multiliteracies (Cope & Kalantzis, 2009) of our globalized society in order to be productive for themselves and models for their future students. I wanted pre-service teachers to feel fluidity in their continual expansions and transformations in their own literacy identity development. For me, this seemed to be the most logical and authentic pathway toward nurturing authentic literacy practices for the pre-service teachers' future students.

As I came to these logical thoughts, I realized I was still idealistic in my thinking. Was this feeling of being comfortable in the midst of fluidity in the expansion and transformation in literacy identity possible for pre-service teachers? Am I comfortable with the fluidity and embodying the traits I describe only because I have spent time trying to understand literacy identity development, more specifically, my own development?

The places of expansion delineated in the diagram (Figure 14), are representative of places I need to “look, listen, and consider” my expanding understanding of my own literacy identity development. For instance, between teacher education and multimodal literacies, my understanding continues to develop. However, it takes a multilayered approach to understanding literacy by moving toward other disciplines (e.g. cognitive neuroscience) in order to gain

understanding of complexities involved literacy practices in order to lead to transformations in thinking.

As I contemplated these questions about pre-service teachers' literacy identity development in previous chapters, I realized I needed to engage in a deeper process of "looking, listening, and considering" new transformations in my own literacy practices. For instance, in previous chapters I note the outdated nature of print-centric practices in traditional classroom settings. While I feel my own desires toward an expanded view of literacy, I notice my own tendencies toward the use of writing as a means of analysis of pre-service teachers' practices and my own self-analysis. As I "look" into my own literacy practices, I realize my valuation of print (reading and writing) as providing a personal means of expression that has not yet been replaced by alternative modes. Perhaps it is largely related to my personal history as a product of traditional schooling environments where print was the only accepted form of expression. Perhaps, it has translated into my lack of confidence in stepping beyond traditional ways of expression in fear of failure or lack of acceptance of a paper (a dissertation in this circumstance) with less print and more multimodal elements representing my expanding thought process. However, it carries value in looking deeper into the possibility that print, at times, is the most expedient form of expression for me. How can I possess such an adamant stance about multimodalities when I do not embody in every sense of what it means to be multimodal? I might utilize multimodal avenues during my teaching, I might accept multimodal forms of expression of new understandings, but I have hit a roadblock when it comes to feeling comfortable in my analysis of these representations without relying on my most comfortable form of expression- print-centric representations.

Looking deeper into my own use of multimodalities carries potential for “listening” to researchers, colleagues, and pre-service teachers as I contemplate my own literacy identity. While I tend to engage in new literacy practices within my daily life and I value the call for bringing out-of-school literacy practices into school-based literacy experiences, my own research practices suggest that I continue to value print as a primary means of communication. While this is suggested through my research analysis tools, my hope is that I continue to expand in my ability to decipher whether print-based modes (reading and writing) are foundational to the overall literacy process, meaning that without the a certain level of print-literacy, multimodal forms of literacy (digital literacies, drama, art, movement,) beyond print might possibly be hindered. Through listening to researchers, colleagues, and researchers thus far, I have heard the cry for the combinatorial effect (Lemke, 2007) of multiple modes of expression as potentially carrying potential to convey more holistic meaning- but how would these modes combine without a foundational knowledge of print? Is print foundational, and should it have a central value with other modes in service to print, or should it be one of many modes without a necessary central focus? I must continue to listen in order to grow in my understanding of the role of print.

Critically “considering” transformations in my own literacy development is perhaps the most challenging demand when seeking to understand my own conceptualizations of literacy. *Is it ever really possible to step outside of oneself and be critical of your stance, your self-imposed description of who you are as a researcher? Does it take other people, perhaps “critical friends” to shed light on your authentic practices even if you preach another doctrine (Marshall & Rossman, 2014).* I know I have a desire toward valuing all modes of expression as carrying potential for expression, I have not yet been able to decipher the place where I feel traditional,

print-centric means of expression fits into the scheme of literacy. *With this, I feel like it is my responsibility to explore and consider a variety of analysis techniques as I explore multimodal data (Halverson et al., 2012). If I claim to be a researcher with expanded notions of literacy, my theoretical, methodological, and pedagogical stances must be aligned. I feel the tension that comes with the exploration of my authentic identity and my practices at this point.*

My self-analysis led me to the identification of many areas in need of exploration in future literacy research, specifically in the areas of multimodal literacies and transdisciplinarity as denoted previously in Figure 14. In Chapter Eleven I propose areas where I identify “cracks and crevasses” for further exploration.

Chapter Eleven

Cracks and Crevasses: Places for Exploration

The variety of studies and theoretical discussions presented in this paper point to the need for teachers to gain richer understandings of the affordances available within multimodal experiences, with a recognition of the potentials and constraints within particular modes and platforms (Unsworth, 2014). Individualized needs of learners deserve the utmost consideration as they become consumers and composers of multimodal texts (Kress, 2014). The vast demands of the social and cultural contexts of learning experiences interplay with complex neurocognitive mechanisms. Therefore, teachers have the responsibility to consider how multimodal aspects of making meaning might look different for individual learners within educational environments, and potentially offer alternative means for processing information. As teachers develop an expanded view of literacy teaching practices, an avenue opens for students and teachers to understand learning as a process of meaning-making through individualized, orchestrated, multimodal experiences.

In Chapter Three, the study highlights the need for further exploration of how pre-service teachers who have reading difficulties feel empowered through multimodal learning experiences, and how this might transfer into feelings of empowerment through the use of multimodalities in their classroom teaching experiences. While there is evidence of pre-service teachers lacking understanding of the core concepts of language (Washburn et al., 2011), there remains a paucity in the literature describing pre-service teachers with reading difficulties. Further, I was not able

to locate studies that explore potential affordances of infused multimodal experiences within the context of literacy courses for pre-service teachers with reading difficulties. This calls for a need of research in this area given the high number of individuals (approximately 10%) with expressed reading difficulties throughout schooling experiences (Shaywitz & Shaywitz, 2003). Not only could this exploration provide insight about the affordances of multimodal experiences for pre-service teachers, but also about how pre-service teachers potentially embody attitudes toward differentiation through multimodalities for their future students. In order to strengthen research in this area, studies on pre-service teachers with reading difficulties need to include methodologies encompassing multimodal data collection and analysis tools that illuminate the true phenomenon of students with reading difficulties working with multimodalities as alternative avenues of expression. At this point, even the study described in Chapter Three, falls short of providing true insight of what is happening during multimodal work. At this point, pre-service teachers' describe experiences through print-based means, however, it is important to gain understanding into the true essence and meaning-making potential that happens during multimodal work.

Pre-service teachers' perceptions about multimodal work highlight the need for continued exploration of pre-service teachers' literacy identity development as they develop who they will be as future teachers. As stated in Section 3, if teachers are expected to facilitate and value the notion of multimodal literacies within their classroom, they must experience a paradigm shift in their own literacy identity in order to fully embody the complex tasks at hand. An initial entry point into developing these dispositions occur within teacher preparation programs at the university level. Arguably, multimodal literacy experiences provided at the university level have strong implications for shifts in construction of literacy identities within pre-service teachers and

in their overall development of literacy content knowledge. Schultz (2009) emphasizes students who engage in multimodal experiences demonstrate an increased engaged presence, potentially shifting their modes of participation and sense of themselves as students. If pre-service teachers experience a shift in the sense of themselves as learners, perhaps they will embody a stance that seeks to create a similar environment for their own students.

Section 2 casts light upon the importance of looking at literacy practices through a critical and transdisciplinary lens. The complex nature of learning differences, as highlighted through the lens of talented boys or through the lens of individuals with dyslexia, demands a consideration of how multimodal learning experiences provide potential for alternative processing opportunities. In the case of talented boys, teachers need to be aware of students who demonstrate a lack of interest or motivation. There is a loud cry for teachers to broaden their lens of what constitutes reading and literacy through becoming more “tech-savvy”, encouraging thoughtful discourse within the classroom, and by making shifts in their own conceptualizations of what texts should be valued. After all, it is through these actions that potential exists for talented boys, and arguably all learners, to become engaged and interested in literacy practices, propelling them toward success in the real world. While evidence suggests these classroom practices are important for students with a demonstrated level of proficiency of print as demonstrated through traditional schooling, how might multimodalities impact learning for struggling readers, and what role does print literacy play?

The synergy between cognitive neuroscience, literacy, and psychology hold value when considering the needs of individuals with dyslexia, as outlined in Section 2. It is imperative researchers consider the complex nature of dyslexia. While there is clear evidence for deficits in attentional mechanisms as an underlying deficit of the disorder, manifestations of the disorder

are varied and multifaceted, which points again, toward the affordances of individualizing experiences through multimodal experiences. Educators and researchers need to pay attention to these subtle behaviors and develop an understanding of core deficits and how deficits emerging from the core might require varied types of remediation, both attentional and phonological. This underscores how multimodal experiences provide pathways for learning that might not otherwise be afforded through traditional learning environments.

All of these places for exploration demand us to think about what constitutes *average* in the learning environment. Is there such a thing as *average*? In the varied studies addressed in this paper, multimodal literacy experiences afforded opportunities for enriched learning for a wide spectrum of learners. Whether multimodal experiences provided a place for choice and control of learning, feelings of empowerment, increased interest and motivation, or alternative means of accessing information, they accommodated for a wide variety of learners' needs. Transdisciplinarity offers opportunities to weave epistemologies together to form a more holistic understanding of multimodal literacies. Differing from more traditional models of research, transdisciplinarity requires openness to other perspectives, potentially outside of fields of expertise, and a willingness to consider outside research (i.e. cognitive neuroscience, psychology, teacher education, etc.) practices.

This paper highlights synergy between the fields of multimodal literacies, teacher education, psychology, and cognitive neuroscience. This is a beginning toward a transdisciplinary understanding of multimodalities, however, transdisciplinarity calls for a continuous quest for synergy between varieties of disciplines, even those not initially considered (Leavy, 2011). Given the context of the studies and focus on digitally-mediated multimodal texts, further understanding of the complexities of digitally-mediated multimodal experiences

deserve attention through the exploration of the fields of instructional technology and communication in conjunction with the fields aforementioned. Therefore, through commitment to the consideration of a variety of disciplines, synergy between the disciplines has the potential to unlock how multimodal experiences potentially provide affordances for all learners.

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Appendix A. Researcher Reflexive Journal Example (Chapter 8)**Researcher Reflexive Journal Entry : 11/23**

As I observed 2 participant literacy lessons today, I noticed the participants exuded a sense of comfort with me in the classroom. I felt like their teaching behaviors were more authentic. Rather than viewing me as an observer, they treated me as though I were an integral part of the classroom setting, even encouraging me to walk around to ask students questions and view their work. I also noticed that both participants incorporated innovative teaching strategies, with attention toward multimodal ways of learning. One participant incorporated an interactive phonics game, and one participant encouraged children to incorporate art into their writing time. I wondered if this was strategically planned for me because they know my partiality toward multimodal literacies. As I observe next week, I will see if I continue to sense of comfort with my presence, and I will enter the classrooms in an unscheduled time period in order to gain insight into whether the multimodal activities were a product of my presence. As I seek to understand their stories as they construct their literacy identity, I want to make certain that their portrayals of their classroom experiences are authentic.

Appendix B. Theoretical Memo Example (Chapter 8)

Memo- Early Focused Coding/ Topic: Reflection 10/15/13

Reflection:

As I was reading through codes for early data, I began to identify preservice teacher "reflection" as a possible theme constructed from the data. At first, it seemed isolated from other categories (classroom management, multimodal/multimedia, authenticity, differentiation), but then I began to see the overlapping nature of this category with the other categories I identified. Zeichner (2013) believes that reflective teaching is about "the importance of examining our thoughts and understandings that we bring to our teaching and the efforts in which we are engaged while we are teaching." If we keep this notion central to our thinking, it becomes evident that reflection is an overlapping construct present within each of the parceled out categories mentioned previously. It would be nearly impossible for preservice teachers to make decisions about their teaching without reflection playing an integral role in the decision-making process. As their identities as literacy teachers develop, arguably, they will reflect on different aspects of their teaching. Initially, the data reveals that preservice teachers reflect upon decisions that impact their classroom management.

Zeichner, K. M., & Liston, D. P. (2013). *Reflective teaching: An introduction*.
Routledge.

Appendix C. Initial Coding with Conceptual Labels (Chapter 8)

Initial Codes	Mary's Coaching Observation Reflection
Saw value in reflection	I recorded this lesson so I could reflect on
Reflection is difficult	it more effectively. Watching myself teach
Vulnerable to self-criticism	is extremely difficult, I think I am being
Identified strengths and weaknesses in instructional delivery	way too critical of myself. I have several
Strength is use of specific praise	strengths and weaknesses that I have
Rationale for importance of specific praise	identified in this lesson. I think one of my
Seeking more positive ways of managing student behavior	strengths for the lesson was my use of
Specific strategy for specific praise use	specific praise. In kindergarten, especially
Indicates success with strategy	this early into the year, it is crucial to use
Describes "typical" kindergarten behavior to strengthen rationale	specific praise, otherwise you would be
Indicates another strength	scolding the same kids over and over again.
Strength is explicit communication strategies	I try to refer to the good listener poster we
Specifies example of communicative strategy	have in the class, and that helps a lot. It is
Connects strategy to real-world applications	so hard for these kids to sit still for five
Specific example of real world application/ authors use real words	minutes, so they need constant reminders
Notices children's desire to write at this age	of the expectations. I think I did a good job
	of stating the objective, I told the students
	that today they were going to be real
	authors and use their sounds to write the
	words to their stories. This made a real
	world connection for the students as well.
	These kids want to write, they want to be

Appendix D. Focused Coding Example (Chapter 8)

Focused Coding	Initial Coding	Cathy Beg Observation 10/2/2013
Creates explicit lesson, but has uncertainties about various aspects.	Small group lesson Focuses on one, explicit concept	Cathy is teaching a small group, guided reading lesson. The focus of her lesson is on the concept of silent-e. Prior to her lesson, she expresses a wondering about how to incorporate multisensory tools into her instruction. She also indicates that she plans to use anecdotal notes as an assessment tool.
Managing students' responses through specific praise techniques.	Wonders how to use multisensory tools Plans to use anecdotal notes as an assessment tool Provides background for silent e Students read group of words chorally Uses specific praise to emphasize word attack skills Uses specific language to describe positive behaviors	At onset of lesson, she provides background for students by having student chorally read a group of silent e words. She notices students breaking words apart as they attacked the words, so she used specific praise: "Nice work. I see how you are taking the words apart by..." Following the brief intro to silent e words, Cathy had the group read a story chorally. The story incorporated frequent usage of silent e words (controlled readers). While the story seemed appropriate for the activity, I noticed that some children were struggling, and I wondered how this was impacting their comprehension.
Lack of differentiation for student who struggled with text	Students read story chorally Controlled reader (predictable) was used for story Some students struggled through story Some students displayed lack of comprehension	As students read, Cathy asked children to put a "thumbs up" as they encountered a silent e word. Then, Cathy engaged in a short discussion about the
Assessing students' understanding through an interactive strategy	Cathy used strategy for monitoring silent e recognition Short discussion about story Transition to students writing words	

Appendix E. Constant-Comparative Data Analysis (Chapter 8)

Operational Definitions Derived Through Memo Writing	Categories	Initial Frequency in Focused Codes (9/13-10/13)	Ending Frequency in Focused Codes (11/13-12/13)
<i>Pre-service teachers’ thoughts and understandings that they bring to their teaching and the efforts in which they are engaged while they are teaching.</i>	Reflection	12	20
<i>Pre-service teachers’ attention toward managing student behaviors during learning activities.</i>	Classroom Management	10	4
<i>Pre-service teachers’ use of a combination of linguistic, visual, audio, gestural, or spatial modes in order to facilitate meaning-making for students.</i>	Multimodal/ Multimedia Engagement	4	19
<i>Pre-service teachers’ attention toward providing learning opportunities, which connect to real-world scenarios.</i>	Authenticity	2	12
<i>Pre-service teachers’ attention toward providing individualized learning experiences based on students’ unique needs.</i>	Differentiation	8	4
Overlapping Categories		Initial Frequency in Focused Codes (9/13-10/13)	Ending Frequency in Focused Codes (11/13-12/13)
Reflection/Classroom Management		2	1
Reflection/Authenticity		1	4
Reflection/Differentiation		6	2
Reflection/Multimodal		0	9
Reflection/Multimodal/Authenticity		0	4

Appendix F. Coaching Tool for Field Experience Observations



FEAPS COACHING TOOL
Formative Evaluation
College of Education
Elementary Education Program



Name:	Observer:	Date:
School/CT:	Grade/Subject:	Level:

Domain 1: Planning and Preparation

BENCHMARKS	EVIDENCE	Observer Comments
(1a) Aligns instruction with appropriate standards; (1b) sequences lessons and concepts to ensure coherence & required prior knowledge; (3e) relates and integrates the subject matter with other disciplines and life experiences	1.a. Demonstrating Knowledge of Content and Pedagogy	
(1e) Uses diagnostic student data to plan lessons; (1f) develops learning experiences that require students to demonstrate a variety of applicable skills and competencies; (4a) analyzes and applies data from multiple assessments to diagnose students' learning needs;	1.b. Demonstrating Knowledge of Students	
(1a) Aligns instruction with appropriate standards; (1b) sequences lessons and concepts to ensure coherence & required prior knowledge	1.c. Setting Instructional Outcomes	
(2) Organizes, allocates and manages classroom resources; (3g) applies varied instructional strategies and resources, including appropriate technology, teaching for understanding	1.d. Demonstrating Knowledge of Resources	
(1c) Designs instruction for students to achieve mastery; (3e) relates and integrates the subject matter with other disciplines and life experiences; (1b) sequences lessons and concepts to ensure coherence & required prior knowledge	1.e. Designing Coherent Instruction	
(1d) Selects appropriate formative assessments to monitor learning; (4b) designs and aligns formative and summative assessments that align with objectives and lead to mastery; (4c) uses a variety of assessment tools to monitor student progress, achievement and learning gains	1.f. Designing Student Assessments	

Appendix F (continued)

Domain 2: Classroom Environment

BENCHMARKS (FEAPs)	EVIDENCE	Observer Comments
(2d) Respects students' cultural, linguistic & family background; (2e) maintains a climate of openness, inquiry, fairness & support; relates & integrates subject matter with other disciplines & life experiences	2.a. Creating an Environment of Respect and Rapport	
(2c) Conveys high expectations to all students; respects students' cultural, linguistic, & family background; (2e) maintains a climate of openness, inquiry, fairness & support; (2g) integrates current information & communication technologies; (3e) relates & integrates subject matter with other disciplines & life experiences	2.b. Establishing a Culture for Learning	
(2a) Organizes, allocates and manages the resources of time, space, and attention; (2b) manages individual and class behaviors through a well-planned management system; (2c) conveys high expectations to all students	2.c. Managing Classroom Procedures	
(2b) Manages individual and class behaviors through a well-planned management system; (2h) adapts the learning environment to accommodate the differing needs and diversity of students	2.d. Managing Student Behaviors	
(2a) Organizes, allocates, and manages the resources of time, space, and attention; (2h) adapts learning environment to accommodate differing needs and diversity of students (2i) utilizes current & emerging assistive technologies to enable students to participate in high-quality communication interactions & achieve educational goals	2.e. Organizing Physical Space	

Appendix F (continued)

Domain 3: Instruction

BENCHMARKS (FEAPs)	EVIDENCE	Observer Comments
(2e) Models clear, acceptable oral and written communication skills; (3b) deepens & enriches students' understandings through content literacy strategies, verbalization of thought & application of the subject matter; (3d) modifies communication to respond to preconceptions or misconceptions; (3i) supports, encourages, and provides immediate & specific feedback;	3.a. Communicating with Students	
(3a) Delivers engaging and challenging lessons; deepens & enriches students' understandings; (3c) identifies gaps in students' subject matter knowledge in discussions and through use of questioning; (3f) employs high order questioning technique	3.b. Using Questioning & Discussion Techniques	
(3a) Delivers engaging and challenging lessons; (3b) deepens & enriches students' understandings through content literacy strategies, verbalization of thought & application of subject matter; (3e) relate & integrate subject matter with other disciplines and life experiences; (3h) differentiate instruction based on student learning needs and individual differences	3.c. Engaging Students in Learning	
(3c) Identifies gaps in subject matter knowledge, modifies instruction to respond to preconceptions or misconceptions; (4a) analyzes and applies data from multiple assessments to diagnose students' learning needs; (4c) uses a variety of assessment tools to monitor student progress, achievement, and learning gains; (4e) shares the importance of outcomes of student assessment data with the students and the students' parent/caregiver(s); (4b) designs and aligns formative & summative assessment that match learning objectives and lead to mastery	3.d. Using Assessment in Instruction	
(3d) Modifies instruction to respond to preconceptions or misconceptions; supports, encourages, and provides immediate & specific feedback; (3j) utilizes student feedback to monitor instructional needs & to adjust instruction; (4d) modifies assessments and testing conditions; (3h) differentiates instruction based on learning needs and individual differences of students	3.e. Demonstrating Flexibility & Responsiveness	

Appendix F (continued)

Domain 4 – Professional Responsibilities

BENCHMARKS	EVIDENCE	Observer Comments
(6) Reflects on extent learning goals were met & how instruction can be changed to facilitate learning; (5c) uses a variety of data independently & in collaboration w/ colleagues to evaluate learning outcomes and adjust planning; (6) demonstrates a sense of efficacy; (5e) engages in targeted professional growth and reflective practices	4.a. Reflecting on Teaching	
(4f) Applies technology to organize and integrate assessment information; (1e) uses diagnostic student data to plan lessons; (5c) uses a variety of data independently & in collaboration w/ colleagues to evaluate learning outcomes and adjust planning; (6) demonstrates responsibility for maintaining student records	4.b. Maintaining Accurate Records	
(5d) Collaborates with the home, school and larger community to foster communication and to support learning and continuous improvement; (4e) shares the importance and outcomes of student assessment data with the student and the student's parent / caregiver(s)	4.c. Communicating with Families	
(5d) Collaborates with the home, school and larger community to foster communication and to support learning and continuous improvement; (4c) uses a variety of data independently & in collaboration w/ colleagues to evaluate learning outcomes and adjust planning (6) builds professional relationships with colleagues	4.d. Participating in a Professional Community	
(5a) Designs purposeful professional goals to strengthen the effectiveness of instruction based on students' needs; (5b) examines and uses data-informed research to improve instruction & student achievement (5e) engages in targeted professional growth and reflective practices, both independently & in collaboration with colleagues	4.e. Growing and Developing Professionally	
All of the above and... Understands that educators are held to a high moral standard in a community and adheres to the Code of Ethics and Principles of Professional Conduct of the Education Profession of Florida; (6) demonstrates responsiveness to supervision	4.f. Showing Professionalism	