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## **Multisensory Literacy Instruction: Efficacy for Struggling Multilingual Learners**

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Multisensory Literacy Instruction:  
Efficacy for Struggling Multilingual Learners

by

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A capstone submitted in partial fulfillment of the requirements for the degree of  
Master of Arts in Teaching.

Hamline University

Saint Paul, Minnesota

May 2023

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## **DEDICATION**

To Cesar, Lesli, Carlos, Evelyn, and Jonny, who became stronger readers despite many obstacles.  
You taught me so much.

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# CHAPTER ONE

## Introduction

### Overview

Literacy skills developed in early childhood can be directly tied to the opportunities a child has in life. According to the U.S. Department of Justice, an estimated “70% of inmates in America’s prisons cannot read above a fourth-grade level” (Nathanson, 2021, para. 1). Consider that approximately 33% of all fourth-grade students in the United States do not comprehend grade-level materials. This number increases to 66% when evaluating only “minority and inner-city” students, a direct indicator of the school-to-prison pipeline (Malatesha Joshi, 2019, pp 1 - 2). These findings represent the dire implications of ineffectual literacy instruction, particularly for children of color or low socioeconomic opportunity. However, teachers are only as capable as their training, curriculum, and other resources, regardless of their commitment.

My experience has been that teachers are not sufficiently trained in literacy instruction and most do not feel confident or skilled during their first years in the classroom. Furthermore, multilingual or neurodivergent learners, or students who may fall into both categories, present additional challenges for these teachers. This was corroborated by Malatesha Joshi (2019), who reported that teachers felt they “had not received adequate preparation during their pre-service training” and “do not feel empowered to implement evidence-based reading and writing instruction” (p. 2). So, a question I came to consider in light of these facts is *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* I explored how multisensory literacy instruction can provide support for the most emergent multilingual learners by

introducing both play *and* greater opportunities for academic growth to direct instruction curricula.

### **Professional Experience**

My experience as an educator began in 2011, serving as a Corps Member for City Year Milwaukee in a 6th-grade classroom. Most students were of Mexican or Puerto Rican descent, and over half of them received special education services. Many students read at a second-grade level and thus could not access grade level curricula. I supported the whole group in the classroom but also provided reading and math interventions to the students who were struggling the most. The following year, I served as an AmeriCorps member in Saint Paul Public Schools, working as a School-Based Tutoring Coordinator. Again, I saw how underserved our students were in literacy instruction, but also how ineffectual untrained tutoring is; interest, dedication, and even passion do not make up for a lack of content knowledge. It was during that year that I decided to become a teacher, working in pursuit of educational equity and closing the opportunity gap.

### ***Formative Professional Experiences***

The most formative years of my professional experience have been the six years I spent working at a charter network in Minneapolis, MN. I began as a special education paraprofessional for a year, then worked as a special education teacher for two years, and finally as a second-grade teacher for three years. During this time, I also completed the teacher certification portion of my Master of Arts in Teaching degree at Hamline University. On this particular campus, approximately 90% of the students were considered multilingual learners, most of whom were of Mexican or Ecuadorian descent. Overall, the majority of students were one year behind grade level in reading, but most of the neurodivergent learners were two or more years behind. Across the network, teachers were receiving weekly professional development,

using Strategic Teaching and Evaluation of Progress, or STEP, Literacy Assessments to analyze literacy data and guide instruction, writing scripted guided reading plans, and teaching phonics using the research-based program Reading Mastery (McGraw Hill, 2008). Yet, students were still falling behind.

There were remarkable results once I began experimenting with different interventions as I supported classroom teachers as a Special Education teacher. With the combination of the STEP Literacy Assessment aligned guided reading instruction in their general education classrooms and the intensive direct instruction intervention curriculums such as Reading Mastery (McGraw Hill, 2008), Foundations (Wilson Language Training, 2012), and Fountas & Pinnell Leveled Literacy Intervention (Heinemann, 2009) in the resource room, I began seeing significant progress with the students on my caseload. Then, when I began using the speech therapy curriculum Visualizing and Verbalizing (Lindamood-Bell, 2008) weekly to increase concept imagery and working memory for my students, I saw progress increase more. This curriculum introduced more play into the classroom and ultimately increased student motivation.

### ***Play and Rigor***

This is when I started considering how I could add more motivation and play into my daily intervention instruction, while still maintaining or even increasing academic rigor and results. Teachers who work in low-income schools hear ad nauseam that their instruction needs to be rigorous and results-driven. This demand for rigor frequently results in teacher voices dominating the classroom and in turn, a lack of concern for the student experience. This is particularly true for linguistically diverse students and students of color. Children who attend low-income schools are often already alienated from their educational experience, and this environment only serves to further disengage them. When I considered what students in middle-class and suburban schools experienced, I questioned why the joy of Black and Brown

children had to be sacrificed in order to close the opportunity gap. Baines (2008) wrote that “the relationship between a positive attitude toward a subject and academic achievement in that subject is one of the strongest correlations in educational research” (p. 15). Knowing a positive attitude correlates with achievement, I began to think about how I could incorporate concepts and activities used regularly in wealthier schools while also increasing structure and rigor.

Because these students were third and fourth-graders who were reading primarily on a first or second-grade level, their goals centered around decoding, encoding, and sight word identification. Decoding words initially utilizes just short-term memory skills in order to maintain the letters in order while “aligning them to their spoken counterparts” (Ordonez Magro et al., 2020, p. 1679). Normally, decoding the same word repeatedly leads to the “creation of a unified orthographic representation in long-term memory” (Ordonez Magro et al., 2020, p. 1679). For most people, repeated exposure to a word will lead to automaticity with that word. I wondered why some students could see, spell, and practice repeating the word ‘and’ multiple times a day for months without retaining it. When educators talk about this phenomenon, they often say the instruction is not *sticky* enough: so I decided it was time to find a way to make it sticky.

I began using any technique I could find. The students said words, spelled words, read words, and made words, in sand, with rice, using play-doh, wikki-stix, paper, chalk, glitter glue, watercolors, crayons, markers, dry-erase boards, shaving cream, the table, and even the air – anything I could get my hands on. They chanted the words out loud as a call-and-repeat and spelled them with their bodies. Students made flashcards of the words they missed on quizzes and differentiated their own practice. I collected data and ensured they were following routines and procedures, but these activities were largely self-led. My students practiced the same words day after day, sometimes week after week. And they did not get bored. They were engaged and



the resource room felt joyful; most importantly, students' progress doubled compared to their general education peers. This is not to say that I stopped direct instruction, but multisensory literacy instruction became both the daily warm-up and an addition to those curricula. I believe the reason this instruction was so much more effective was due to the power of multisensory instruction in capturing interest as well as activating multiple areas of the brain simultaneously.

### ***Recent Experiences***

Following my employment at the charter network in Minneapolis, MN I moved to Durham, NC, and began working as a first-grade teacher at another charter school for the next three years. Approximately 66% of my students in Durham were multilingual learners; they were a diverse mix of Mexican, Salvadoran, Guatemalan, and Honduran descent. While I was again constrained to following a curriculum in the name of consistency, I received ample professional development in its implementation. Using Hoefling's Lifelong Readers guided reading and phonics curriculum (Lifelong Learners, 2020), I witnessed the most growth I had seen with multilingual learners in the general education setting without additional English language development or the implementation of special education interventions. My students and I made joy together where joy could be made because our classroom was a place of love, but that joy was not necessarily inherent in the effective, but rigid, curriculum. Moreover, the same predicament followed me: the curriculum was highly effective for two-thirds of the class, while the other third struggled with language acquisition and developing basic literacy. Students were practicing the word 'and' day after day, week after week, and month after month with little progress.

### **Capstone Context and Rationale**

In 2019, 5.1 million students, or approximately 10.4% of students in U.S. public schools were considered English learners (NCES, 2022, para. 1). And when zooming in on just

kindergarten through second grade, English learners constituted 15% of the overall U.S. public school population (NCES, 2022, para. 6). This upward trend is expected to continue, and it is believed that English learners will make up 25% of all U.S. students by the year 2025 (NEA, 2020, para. 1). As this number continues to rise, teachers who have not been trained to support English acquisition will continue to seek out resources and best practices for multilingual learners. This capstone can contribute to helping teachers learn more about multisensory instruction, and to closing the opportunity gap for students. Additionally, as educators know, identifying learning disabilities can be incredibly difficult with multilingual students. Even for English language development teachers, distinguishing between difficulties with language acquisition and specific disabilities in speaking, language processing, reading, or writing can be quite challenging. As multisensory learning is an effective intervention for both language acquisition and learning disabilities, there is less need for early special education diagnoses.

It is important to clarify the terminology used to identify which students this project can help teachers support. Multilingual learners, who have formerly been referred to as English learners, English language learners, and English as a second language students, are students who are developing speaking, listening, reading, and/or writing skills in more than one language. When highlighting this group of students in the United States, a student is generally considered a multilingual learner if the language spoken in their home is not English, and they do not yet have English proficiency. For my purposes, I specifically considered multilingual learners who are struggling with basic reading skills such as sight word recognition, decoding, and encoding. As the WIDA ACCESS for ELLs is the most widely used English proficiency exam for K-12 students in the United States, I used its proficiency levels to norm my definition of struggling readers. For the purposes of this intervention, I defined a student as struggling with language

acquisition and/or reading if their proficiency level on the ACCESS for ELLs ranges between 1.0 - 2.9.

Additionally, I want to define my use of the term *multisensory instruction* as the use of instruction and/or materials that engage multiple senses during learning activities, specifically the auditory, visual, tactile, and kinesthetic senses (IMSE, 2019, para. 1). Multisensory learning is related to the whole brain approach and is believed to be effective because it activates multiple areas of the brain. Multisensory literacy education could be a catalyst in closing the opportunity gap for multilingual learners, increasing student engagement, and improving teachers' feelings of self-efficacy. All that is needed to implement multisensory learning strategies is teacher knowledge and opportunities for practice, both of which can be achieved through professional development.

My desire to complete this capstone, and eventually work in a teacher preparation program, is a result of years of experience feeling lost and frustrated as a teacher. There are layers of expectations placed on educators: expectations of rigor, cultural relevance, and joy that can certainly be achieved, but not without adequate training or resources. Today, teachers leave pre-service without being prepared as highly effective literacy instructors and are put into service, oftentimes, with little more than a boxed curriculum. Obviously, teachers suffer because of this, but those who suffer most are our students. I completed this project in order to help answer the question: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?*

## **Summary**

The contents of this capstone and resulting project are important to me both professionally and personally. For the past 11 years, multilingual learners have been not just my

students, but my family. Their parents have entrusted me with the safety, love, and nurturing of the most important thing in the world: their children. I have been welcomed into homes, invited to celebrations, and given gifts very precious to me. As a second-generation American, I know that it is not simply a stereotype that immigrants come to the United States for a more prosperous future for their families. And I know that many see education as the key to that future. Many immigrants hold teachers in the highest regard because of this, and I have felt that respect emanate from parents. To feel that I have let them and their child down is the most acute feeling of failure I have had in my life. I want to help other teachers not have to experience this, as well as help all students reach their academic potential while maintaining a love of learning and feelings of belonging in the U.S. school system.

These four chapters explore: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* The focus is on the use of multisensory literacy instruction in the areas of alphabetic recognition, phonemic awareness, and phonics. First, I completed a review of the current literature on best practices in literacy instruction, multisensory learning, and teacher professional development. Next, I described the project, which is a series of professional development sessions and resources for educators around the topic of multisensory literacy instruction for struggling multilingual learners. Finally, I provided a conclusion detailing the actualization and implementation of the project. I hope that this project can, in some small way, contribute to the lack of training that most teacher preparation programs provide educators who are welcoming a growing number of multilingual learners into their hearts and classrooms.

## CHAPTER TWO

### Literature Review

#### Introduction

This author conducted a literature review in service of providing answers to the capstone question: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* The purpose of a literature review is to gain insight into what research has already been conducted on the same or similar topic of a research question and synthesize those findings into context for this new research. The use of multisensory literacy instruction is a small and emergent field, thus this literature review covers converging subtopics.

First, the topic of best practices in literacy instruction for multilingual learners is analyzed, including methods of literacy instruction, key indicators of reading difficulties, and creating safe literacy spaces for multilingual learners. Following that, multisensory learning is examined, specifically, how multisensory learning can impact brain functioning, resources and ideas that exist for multisensory instruction, and the efficacy of multisensory instruction as determined by researchers. Lastly, professional development of teachers and the feeling of self-efficacy in the role of the teacher were examined regarding literacy instruction abilities, how professional development may affect student academic outcomes, and how to optimize teacher learning through professional development. This final section of literature also helped to determine the framework for the final product of this capstone project, with as many best professional development practices taken into consideration as possible.

#### Best Practices in Literacy Instruction for Multilingual Learners

##### *Methods of Literacy Instruction for MLLs*

Research shows that literacy instruction does not need to be delayed for oral language proficiency. In fact, literacy outcomes for multilingual learners are stronger the earlier learning begins in either their first or second language (Dussling, 2018, p. 277; Kibler, 2015, p. 13). Language learners, like all learners, require explicit instruction in phonological awareness, phonics, vocabulary, fluency, comprehension, and writing (August, 2014, p. 491). However, multilingual learners benefit more from modified or additional strategies that serve to both engage them and support language acquisition (O'Day, 2009, p. 116). O'Day (2009) recommended instruction that combines direct and interactive approaches, such as using pictures, realia, and gestures to communicate meaning (p. 99, p. 112). Multilingual learners should also be given opportunities to use multiple modalities to express their learning, such as through visual, oral, and written mediums (Kibler, 2015, p. 30). For decoding instruction in particular, August (2014) suggested mastery learning with frequent teacher modeling (p. 492). Mastery learning is the idea that students must master a concept before moving on to learn new concepts. Students should therefore have repeated exposure to words, concepts, and skills in ways that differ from their initial encounter to reinforce the learned material (August, 2014, p. 495).

### ***Reading Difficulties***

Interestingly, multilingual learners do not experience reading difficulties at a higher proportion than their monolingual peers. This indicates that the cause of reading difficulties is not multilingualism (August, 2009, p. 435). Researchers have found that there are three key indicators of reading difficulties for multilingual learners: phonological awareness, oral language development, and working memory (Swanson, 2016, p. 831). Phonological awareness and oral language development, in either a student's first language or the language they are learning, are most significant during the phases of pre-reading and basic literacy skills. However, working memory seems to be related to reading growth independently of these other skills and becomes

more important as a student progresses in age and the demands of reading increase (Swanson, 2015, p. 765). Working memory is the “active manipulation of information, while also mentally storing other information” (Swanson, 2015, p. 749). It consists of the central executive controlling system which interacts with two storage systems: the phonological loop and the visual-spatial sketchpad. The phonological loop temporarily stores verbal information, while the visual-spatial sketchpad stores visual information but also helps us to generate and manipulate mental images (Swanson, 2016, p. 831).

Cognitive measures such as working memory predict reading difficulties with far more accuracy than just measures of oral language and phonological awareness (Swanson, 2016, p. 846). The temporary storage and retrieval of oral language and phonological awareness skills depend on the ability of the phonological loop to maintain this information for use during instruction, as well as consolidate this information into long-term memory. Working memory also controls attention, which is another key component of effective learning (Swanson, 2016, p. 846). Swanson (2016) referred to the working memory as a “resource pool”; for students with weaker measures of cognitive processes, this pool is more limited than for students with stronger measures of cognitive processes (p. 847). Thus, when executing reading processes such as decoding, encoding, vocabulary, and so on, the student with weaker cognitive processes will deplete this resource pool more quickly, resulting in less learning. This is why even high-quality, research-based direct instruction that is successful for the majority of students does not seem to work for students with reading difficulties. Learners with lower functioning working memory require instruction that will not deplete this resource pool; they require more review and repetition, and the utilization of not just the speech-based phonological loop but also their visual-spatial sketchpad.

***Safe Literacy Spaces for Multilingual Learners***

In order for multilingual learners to develop language skills, teachers must create classrooms that are safe spaces for cultural and linguistic diversity (DeHart, 2018, p. 91). Classroom culture that encourages students to learn about and benefit from differing cultural references must be cultivated, rather than the expectation that all students “conform to American monoculture” (Yoon, 2007, p. 223). When teachers ask multilingual learners to share their experiences, they show interest and appreciation for cultural differences and model desired behavior for the monolingual learners (Yoon, 2007, p. 224). This approach also includes multilingual learners as full participants in classroom learning activities, which helps them feel comfortable and important (Yoon, 2007, p. 223). Kibler (2015) noted that literacy is “learned through participation in activities that both challenge and support participants, in what is conceptualized in sociocultural theory as apprenticeship” (p. 16). When considering the hierarchy of needs, teachers know that students will not be able to participate in these types of challenging activities unless their needs for safety and security are first met.

### ***Summary***

*How can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?*

Multilingual learners benefit from the same kind of direct instruction in phonological awareness, phonics, vocabulary, fluency, comprehension, and writing as their monolingual peers. However, their literacy outcomes are improved by modified or additional strategies specifically meant to scaffold their learning and increase repetition and review. Early indicators of reading difficulties include problems with phonological awareness, oral language development, or working memory processes. The identified strategies for use with multilingual learners are also suggested for use with students experiencing difficulties with reading, particularly greater repetition and review, as



well as the use of visuals. Visual aids support not only understanding but a secondary source of memory input that may be consolidated into long-term memory from the visual-spatial sketchpad. A final suggestion for supporting literacy instruction for multilingual learners is ensuring that the classroom is a safe space for linguistic and cultural diversity. Teachers, as well as their monolingual students, must communicate to their multilingual peers that they are valued and respected members of the group and efforts must be made to support the participation of multilingual learners in all learning activities.

### **Multisensory Learning**

Multisensory Learning integrates auditory, visual, tactile, or kinesthetic inputs with instruction (IMSE, 2019, para. 1). Simply put, it is the engagement of two or more of these senses simultaneously: hearing, speaking, seeing, touching, and/or body movement. It is theorized that engaging multiple “sensory modalities” during learning may lead to improved memory as well as improved academic outcomes for students (Campbell et al., 2008, p. 269; Cuturi et al., 2021, p. 156). A great deal of research has been conducted to determine the efficacy of multisensory learning for students with specific learning disabilities such as dyslexia; however, little research exists on the viability of multisensory learning for multilingual learners. Additionally, there are many flaws in what research does exist, such as research conducted by biased parties and research that fails to isolate the multisensory component of the curriculum (Campbell et al., 2008, p. 269).

Some teachers are familiar with the concept of multisensory learning through the Orton-Gillingham method, a system of teacher training designed for teachers of students with reading disabilities such as dyslexia. This program was first researched and developed by neurologist Orton and psychologist Gillingham in the 1920s (Campbell et al., 2008, p. 269). The Orton-Gillingham model emphasizes direct phonics instruction in addition to multisensory

engagement (Schlesinger & Gray, 2017, p. 220). Their work is now continued by the Institute for Multi Sensory Education, which provides teacher professional development sessions, certification, digital resources, and products like curriculum supplies (IMSE, n.d.). Additionally, several other successful research-based intervention curricula incorporate aspects of the Orton-Gillingham method, such as Language!, Words Their Way, and the Wilson Reading System, which includes Wilson Reading System, Wilson Just Words, and Wilson Foundations (Pearson, 2019; Voyager Sopris Learning, 2022; Wilson Language Training, 2012).

To understand multisensory learning, one must know what it is and who it was developed by. However, one must also possess an understanding of how it is implemented, what brain functions it may impact, and frankly if it has any measurable effect on learning outcomes. This knowledge will help to understand: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?*

### ***The Brain, Sensory Input, and Learning***

To understand the why of multisensory learning, one must first understand the how of multisensory learning. Zhou (2021) stated that “our neurological makeup implies that learning is multisensory” (p. 1086). Most humans simply comprehend information better when applying multiple sensory modalities rather than a single modality; for example, hearing and seeing yield better results than hearing alone (Zhou, 2021, p. 1086). However, one may wonder specifically how multisensory instruction helps students learn how to read. According to Schukraft (2020), the two main components of multisensory learning that improve student reading performance are motor sequencing and sensory feedback (para. 2). Motor sequencing refers to an instructional process with a predetermined order of actions, including both input and output. Therefore, they

believe that multisensory learning should be “explicit, sequential, systematic, [and] cumulative” to be effective (Schukraft, 2020. para. 3). Performing these routines and procedures during learning helps students to concretize the information.

Schukraft (2020) explained that different areas of the brain are utilized for differing reading skills. Speech, grammar, language, and comprehension are engaged in the Frontal Lobe, decoding and sound discrimination in the Temporal Lobe, and the Angular Gyrus links the brain together and synthesizes all of the skills needed to read (para. 2). This literacy research has a basis in dual coding theory, a “theory of cognition” that posits there are two “coding systems” used to represent and consolidate our memories (Schlesinger, 2017, p. 220). The dual codes refer to a verbal system for linguistic information and a nonverbal system for images (Schlesinger, 2017, p. 220). Using this dual coding theory, it can be hypothesized that in addition to engaging multiple areas of the brain with multiple modalities of sensory inputs, multisensory instruction is also effective because it uses both linguistic – hearing and speaking – as well as nonverbal – seeing, touching, moving – systems to increase information retention and memory consolidation. Finally, according to neuroscientists, brain cells have the capacity to “rewire themselves radically – forming new synaptic connections and dissolving old ones – in response to stimulation”, such as multisensory input (Baines, 2008, p. 23).

### ***Multisensory Instruction and Resources***

Many teachers may feel that they are unfamiliar with the concept of multisensory learning; however, a plethora of multisensory learning instructional resources are already mainstream. Some of the more common resources include read it, build it, write it activities for irregular words, in which a student reads a word, builds it with tiles or magnetic letters, and copies the word (IMSE, 2019, para. 8). Another widely used resource is sound or El’Konin boxes, which are used for practicing phonological awareness: a student hears a word, repeats a

word, taps the sounds of that word out into each box, and then runs their finger underneath to blend the word again. For example: cat, cat, c-a-t, cat (IMSE, 2019, para. 15). Other examples that many people remember from elementary school are syllable clapping and whisper phones. And a new addition to this list of multisensory tools that is becoming ubiquitous – pop-its. Thinking about this small subset of activities, one can already see that they practice a variety of reading skills: phonological awareness, phonics, decoding, and encoding. In fact, multisensory instructional activities and resources exist for all basic literacy areas and can easily be developed into a routine for maximizing motor sequencing and sensory feedback (Schukraft, 2020, para. 2).

**Letter Identification.** Many teachers rely on flashcards and other similar rote memorization techniques for letter identification, but a plethora of engaging multisensory activities exist for practicing this skill! Letter names can be repeated with singing, pictures, objects beginning with the same letter, or finger-tracing letter shapes made of sandpaper. Students can play letter gymnastics, in which they create the letters of the alphabet with their bodies. Another example is manipulating textured materials, such as clay or wikki-stix, to make letters (Amico, 2022, pp. 11-12). Zhou (2021) also explored a technique termed “multisensory character learning”, where students are shown a character visually and then given a model of that character made of paper, clay, or plastic in order to feel its structure. After that, students are given materials to make a model of the character themselves, before they copy the character on paper twice (p. 1094). Storytelling can also be utilized within a multisensory framework, such as the Letterland curriculum that incorporates “music, actions, alliteration, movement, song, art, games and role-play” into stories about letter characters (Letterland, n.d., How Does it Work? section).

**Phonological Awareness.** Phonological awareness refers to the skill of understanding and being able to manipulate the individual sounds in spoken words. It is a very important

pre-reading skill that is often skipped in early literacy instruction. One widely used multisensory resource is El’Konin, or sound boxes, which are simply empty boxes printed with one, two, or more demarcations within the box. Students repeat a word, tap each section of the box for each sound in the word, then blend the sounds together, and repeat the word again. Similar to the El’Konin boxes is arm or finger tapping, where a student may tap their arm or finger for each sound they hear in a word (IMSE, 2019, para. 15). Another activity is practicing word family drills, in which students are given a word and told to manipulate it in some way and then repeat back the new word. For example, a teacher may say the word cat, but tell the students to change the final sound to ‘n’ and students would say the word ‘can’ as a response. This activity can be performed for segmenting, blending, insertion, deletion, and substitution (Schukraft, 2020, para. 7).

**Phonics.** Phonics is the relationship between the letters of a written language and the sounds of a spoken language. It is the next logical step in the basic reading continuum after or while students have learned to identify written letters and their sounds, as well as practiced phonological awareness. To practice phonics concepts, Schukraft (2020) suggested teachers run a step-by-step review drill for students. First, the teacher shows students visual representations of letters, and students respond by saying the letter name and sound, or just the sound. Next, the teacher provides a tactile medium such as rice, sand, shaving cream, etc.; the teacher says letter sounds, which students repeat while they write the letters in this medium. Last, the teacher provides entire words visually, which students use any technique already discussed to segment and blend (paras. 9-12). Some students do have difficulties with segmenting and blending sounds, many with vowel sounds specifically. A suggestion for students to practice is to give them mirrors. They then watch to see how their mouths look and feel when saying letter names and sounds (Schlesinger, 2017, p. 223).

**Decoding and Encoding.** Decoding is the ability to pronounce written words while encoding is the ability to write and spell words correctly. Many schools have discontinued direct instruction in spelling, however, teaching encoding has a direct positive effect on not just students' writing but also their decoding. Arm or finger tapping can also be used for decoding and encoding; words can be shown and students can segment and blend them, or words can be said and students can tap out the sounds before stating each letter that spells the word (IMSE, 2019, para. 16). Similarly, a student can touch manipulatives for each sound in a word and then write that word in a phoneme box (Schukraft, 2020, para. 14). A third strategy is air or skywriting, in which a teacher says a word, students repeat it, and they use their arm with a pointed finger to make gross motor movements writing the word in the space in front of them while spelling it verbally (IMSE, 2019, para. 14). Lastly, students can use blending boards, letter tiles or cards, or any other medium to physically create a word rather than writing it.

### ***Efficacy of Multisensory Learning***

To return to the capstone question at hand: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* Multisensory literacy instruction could potentially provide support for our most emergent multilingual learners; however, the literature must be examined to determine whether this hypothesis is supported by data. Amico (2022) found that not only did students feel more confident and engaged when participating in multisensory literacy activities, but they also improved their “foundational literacy skills” (p. 2). They also noted that Bara et. al (as cited in Amico, 2022) established that students engaged in multisensory literacy activities had a stronger understanding of the alphabetic principle than students who learned through only traditional methods (pp. 5-6).

Zhou (2021) also concluded that their multisensory instruction group made the greatest gains in Chinese word reading and character writing compared to both a morphological awareness group and a control group (p. 1099). Similar to other popular programs such as the Orton-Gillingham approach, Zhou (2021) utilized a hybrid model of instruction that combines multisensory learning with a dialogic reading program (p. 1099). Nevertheless, the success of the students in the multisensory literacy group compared to the control group, who received just the dialogic reading program, proves the effectiveness of the multisensory component. These findings support Schukraft (2020), who stated that “by incorporating multi-sensory instruction combined with direct, systematic, cumulative, sequential instruction we can enhance learning pathways through seeing, hearing, and movement” (para. 25).

Conversely, Schlesinger (2017) proposed that the addition of multisensory instruction has little to no effect on literacy outcomes for students (p. 246). In fact, their results indicate that other components of hybrid models such as the Orton-Gillingham approach are more effective than the multisensory components. Specifically, they point to phonemic spelling and the reciprocal teaching of spelling and reading. The aspects they believe are critical to improved literacy outcomes are having “explicit, structured, and systematic” structured language programs (Schlesinger, 2017, p. 246).

### ***Summary***

Multisensory learning is a multimodal teaching approach in which auditory, visual, tactile, or kinesthetic inputs are combined with academic learning in order to increase comprehension and memory. It was first developed in the 1920s by Orton and Gillingham but is now used widely across various educational approaches and curricula. Researchers believe that it is effective when motor sequencing and sensory feedback are both present in the process. The

sensory inputs engage multiple areas of the brain, memory is coded both linguistically and nonverbally, and new synapses are formed in the brain in response to the stimuli.

There are opportunities to explore early literacy skills such as letter identification and sounds, phonological awareness, and phonics through many multisensory instructional resources and materials. The first sensory input is auditory, for example, speaking, hearing, music/singing, call-and-response, and sounding out. Next, visual inputs include pictures, letters, words, and the viewing of the mouth or body of another person. Some tactile inputs are finger tapping, 3D models of letters, textured mediums such as sand, clay, rice, sandpaper, etc., and manipulatives. Lastly, air/skywriting, arm tapping, and letter gymnastics are some of the kinesthetic inputs.

Baines (2008) observed that “most schools respond to struggling students by forcing them to spend even more time in the realm of the abstract”, by which he means lectures, worksheets, and textbooks (p. 19). Obviously, this is not having the desired effect on the academic outcomes of these learners. However, it is also clear that more research is needed on what effects multisensory learning has on literacy outcomes. While some studies have resulted in data that supports a significant and positive effect, others indicate no correlation between multisensory learning and literacy outcomes. Furthermore, very little research has been conducted to study the effects of multisensory instruction on multilingual learners. Therefore, further research on this topic could serve to respond to the question: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?*

### **Teacher Professional Development**

Self-efficacy is a belief in one’s own ability to achieve a goal. It is an important aspect in the examination of the effectiveness of professional development due to teacher level of



self-efficacy being strongly linked to student achievement (Malatesha Joshi, 2019, p. 3). Interestingly, teachers indicate higher levels of self-efficacy while in preservice than after they have begun as a teacher of record, which may also be a factor in teacher attrition rates (Malatesha Joshi, 2019, p. 3). Perhaps professional development, as well as other forms of ongoing mentorship and support throughout teachers' careers, are not effective enough to balance out the difficult reality of teaching, particularly in the first year.

For this capstone, professional development includes any training for in-service teachers provided by either school/district staff or contractors. The final section of this literature review considers professional development design and teacher feelings of efficacy around literacy, multisensory learning, and multilingual learners. Existing literature has been examined for how professional development affects levels of teacher self-efficacy and how it impacts student outcomes. Furthermore, best practices for highly effective professional development were outlined as a precursor to this capstone end-product design.

### ***Literacy and Multisensory Instruction***

**Literacy Self-Efficacy.** Teacher levels of self-efficacy regarding literacy instruction is a critical area of study as teacher self-efficacy is strongly associated with student outcomes. This is particularly true for lower elementary teachers, as lower elementary is the most “critical time period...to prevent later literacy difficulties” (Outlaw, 2021, pp. 242-244). One aspect of this belief is that students have higher levels of reading achievement when instructed by teachers who believe in their ability to influence students, rather than teachers who feel that there is little they can do because of students' circumstances or background (Tschannen-Moran, 2011, p. 751). Tschannen-Moran (2011) found that following a six-month period of intensive teacher professional development in literacy teaching strategies, teacher levels of self-efficacy rose

significantly as did student outcomes (p. 752). These findings suggest that self-efficacy is malleable, and professional development can successfully influence both teachers and students.

**Multisensory Learning Self-Efficacy.** Research has found that “a multisensory approach can be effective in whole class teaching, but only when teachers are trained to deliver this approach” (Boardman, 2019, p. 798). Unfortunately, most teachers do not encounter it in either their teacher preparation programming or during in-service training. When surveyed by Boardman (2019), 157 teachers reported that they believed multisensory teaching was beneficial for all students, however, only 64 of them identified that they currently utilized these strategies (p. 800). Prior to the training program, only 73 of the teachers indicated their knowledge of multisensory teaching as being good or excellent (Boardman, 2019, p. 800). Following the completion of the training program, the number of teachers who indicated their knowledge of multisensory teaching as being good or excellent grew to 178 (Boardman, 2019, p. 803). Two findings are clear from this study: teachers believe that multisensory learning is an effective way of learning for all students, and that teachers can learn to implement this strategy with the correct professional development opportunities.

### ***Multilingual Learners***

Statistically speaking, most general education teachers will have multilingual learners in their classrooms. Unfortunately, research has shown that many general education teachers do not feel prepared to work with multilingual learners (Deng, 2021, p. 489). Vera (2022) posited that this lack of preparedness is a result of the lack of coursework required in teacher preparation programs as well as the scarcity of professional development offered to in-service teachers on this topic (p. 93). In fact, only 29% of teachers with multilingual learners in their classrooms have had any professional development around instruction for multilingual learners (Babinski, 2018, p. 118). This has a clear effect on not just teacher feelings of self-efficacy but also on

practices that are critical for teachers to bring to the classroom (Deng, 2021, p. 490). Teachers lack the “skills, perspectives, theories, and practices” necessary to successfully teach multilingual learners, as well as knowledge of how to integrate “the linguistic and cultural assets students bring to the classroom” (Deng, 2021, p. 490). Professional development opportunities are needed that focus on teacher beliefs and attitudes about multilingual learners. Many teachers place blame for the reading difficulties of multilingual learners on “their cultural and language backgrounds, rather than on teaching methods, materials, and teacher assumptions” (August, 2009, p. 444). However, studies have concurred that teachers can improve their mindsets as well as their instructional practices for multilingual learners through professional development (Babinski, 2018, p. 139).

### ***Optimizing Teacher Learning***

**Characteristics of Effective Professional Development.** The goal of this capstone was to determine: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* A recurring theme from the literature review on the topic of teacher self-efficacy is the overwhelming evidence that teachers can improve their knowledge and practice, and in turn improve the outcome of students, through well-designed professional development (Outlaw, 2021, p. 246). See Table 1 below for a summary of the characteristics of highly effective professional development according to Babinski (2018) and Darling-Hammond et al. (2017) (p. 120; P. 4).

**Table 1***Key Characteristics of Highly Effective Professional Development*

Babinski (2018)	Darling-Hammond et al. (2017)
Workshops	Collaboration
Outside Experts	Coaching and Expert Support
Ongoing Delivery	Sustained Duration
Follow-Up Support	Feedback and Reflection
Activities in Context	Active Learning
Content	Content-Focused
	Uses Models and Modeling

Similarly, Tschannen-Moran (2011) found that between telling alone, telling plus modeling, practice with colleagues, and coaching in the teachers' own classrooms, the last had the greatest effect on teachers' feelings of self-efficacy following professional development (p. 752).

Seemingly, professional development must include a two-pronged approach to be considered well-designed by teacher participants. Teachers must first be active participants engaged in role-playing or working with student data in order to have a significant impact on not only their knowledge but actual practices (Babinski, 2018, pp. 120-121). These learning opportunities should be designed to include a model of the new skills, information, or strategies. Following these opportunities for viewing skills modeled, teachers should "analyze, try out, and reflect on the new strategies" (Darling-Hammond et al., 2017, p. 7). Secondly, teachers must be given "opportunities to transfer their experiences, learning, and skills into practice" through collaborative discussions with their peers as well as coaching within their own classrooms following professional development sessions (Vera, 2022, p. 95). Just as teachers scaffold learning and implement a gradual release of responsibility for students, the same must be done

for them (Babinski, 2018, p. 122). When teachers are able to implement new strategies in their classrooms following professional development, and in conjunction with an expert coach observing and giving feedback, they are more likely to continue the use of these new strategies as well as use them appropriately (Darling-Hammond et al., 2017, p. 13).

**Impediments to Success.** It is important to acknowledge that professional development can be well planned and yet still have little positive outcome for teachers and students. Several factors can be barriers to the success of these types of programs. Darling-Hammond et al. (2017) identified that in addition to the characteristics of highly effective professional development, planning for learning must include elevating teacher voices on the content and type of learning experience they need most, as well as regular evaluation in order to improve the quality of the programming (p. 23). Moreover, well-planned professional development may also be implemented poorly due to a variety of factors, including: inadequate resources, lack of shared vision, lack of time, conflicting requirements, or lack of foundational knowledge on the part of teachers (Darling-Hammond et al., 2017, p. 24). Effective professional development is therefore not simply a result of effective planning, but also an equity issue. Schools that are already the most resource-scarce, and generally serve the most marginalized populations of students, will receive the least effective professional development sessions and follow-up.

### ***Summary***

Whether focusing specifically on literacy instruction for multilingual learners, a multisensory approach, or supporting multilingual learners, it is clear that professional development plays a key role in bridging the implementation gap for teachers. While professional development is present in nearly every school, its frequency, quality, and coaching vary immensely. This is why it is so important to acknowledge the research that already exists on highly effective teacher training and use those findings to develop professional development in

the most high-need areas. *How can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* As evidenced by the growing number of multilingual learners in the American public school system compared to the number of general education teachers who have any formal training on how to support them, this should be a top priority for schools in the coming years. With growing knowledge and skills, as well as higher feelings of self-efficacy, teachers will implement stronger instructional practices for this highly marginalized group of students.

## **Overview**

### ***Literature Review***

This chapter served to review literature that gives insight into the research question: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* As little research has been conducted on this topic, three related subtopics were explored: methods of literacy instruction for multilingual learners, the science and efficacy of multisensory learning, and teacher professional development. First, methods for literacy instruction for multilingual learners were explored, as well as early indicators for reading difficulties and creating safe spaces for multilingual learners. Interestingly, it was found that for multilingual learners, regardless of whether they have reading difficulties, the most important supplements to direct literacy instruction are scaffolding, increased repetition and review, and the incorporation of visuals. Next, multisensory learning was reviewed, including the science of multisensory learning in the brain, teacher materials and resources, and research on its efficacy. In comparing suggestions from the literature for multilingual learners, particularly those with low working memory

function, to multisensory literacy instruction, it is easy to see many commonalities. The phonological loop and visual-spatial sketchpad, also referred to as dual coding theory in the multisensory learning section, require that information is presented both visually and orally. When information is presented utilizing multiple modalities, with enough repetition and review, it is far more likely to be retained by students regardless of their resource pool.

The bridge between multilingual learners and these exciting strategies based on neuroscience is, of course, teachers. However, throughout teacher preparation programming, very few teachers are given specific strategies and resources to use with multilingual learners. Because of this, the final portion of this literature review focused on teacher professional development. Through literacy, multilingual learners, and multisensory instruction, it is clear that if professional development is well planned and implemented, it can be a powerful tool for improving teacher self-efficacy and student outcomes. There is a wealth of research on the characteristics of highly-effective professional development; the conclusions seem to indicate that two facets are the most important: active learning and support following the sessions. Just like students, teachers need to see strategies modeled, and they need to put the strategies into practice and receive feedback in order to improve. While all three of these topics contribute to an overall understanding of the research question posed by this author, it is clear that there is a gap in the literature around the specific implementation of multisensory learning with multilingual learners. The hope is that this capstone will begin to fill that gap, to understand the efficacy of multisensory learning for multilingual learners as well as teacher feelings of efficacy around using these strategies.

### ***Preview***

Chapter three includes a description of the project that has been submitted in completion of this capstone in order to determine: *how can multisensory instruction be utilized to add*

*engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* The findings from this literature review have informed the content and design of the professional development series. Most important were the findings on effective professional development, as they were directly implemented in the design of this series.



## CHAPTER THREE

### Project Description

#### Introduction

The purpose of this capstone project was to determine: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* In chapter three, each component of the capstone project has been described in detail and the frameworks under which the project was created are explained. Additionally, context is given to the setting and intended audience for the project at large. Using a timeline, it is identified when each component of the project was completed, reviewed, and revised before submission. Then, it is shared how the effectiveness of the project was evaluated. Finally, this chapter is summarized and a preview of the final chapter of this capstone is provided.

#### Project Description

To answer the capstone question: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills*, I have created a series of approximately four hour-long professional development sessions for educators regarding the implementation of multisensory literacy instruction for multilingual learners. These sessions focused on an understanding of reading difficulties for multilingual learners and the science of multisensory learning. Additionally, they give teachers a chance to become familiar with different methods and resources for a multisensory approach to letter identification, phonological awareness, and phonics as well as provide opportunities for guided practice/feedback loop cycles. While multisensory learning can

be implemented in various subject areas, for the purposes of this project, I focused on literacy instruction for early elementary students. The purpose of this professional development series is to introduce early elementary literacy teachers to the concept of multisensory literacy instruction, while also giving them the strategies and resources they need to implement it in their classrooms successfully.

For this project, I have built four individual slide decks with outlined notes for facilitators, handouts, and the materials needed for each of these sessions. Additionally, I created an observation checklist to give feedback and support to teachers following and in between sessions. Lastly, I wrote surveys which will be administered to teachers regarding their feelings of self-efficacy before and after professional development. These materials complete a professional development series that could be used by any individual with adequate content knowledge.

## **Framework**

When considering the framework for this series, the research on the what, why, and how of professional development design had to be analyzed. Kennedy (2014) noted that not only is the type of knowledge acquired in professional development important but the “context through which it is acquired and subsequently used that actually helps us to understand the nature of that knowledge” (p. 337). This means that the organization and structure of professional development are as important to consider as the knowledge being disseminated. Within their research, Kennedy (2014) identified nine common frameworks for professional development: training, award-bearing, deficit, cascade, standards-based, coaching/mentoring, community of practice, action research, and transformative (pp. 337-338). These frameworks were organized along a spectrum regarding the purpose of the model, ranging from transmission, to transitional, to transformative. They were also analyzed in their capacity for professional autonomy: the purpose

of the professional development, who sets and influences the agenda, and the hierarchical dynamic between presenters and the audience. The transformative model, determined to be the most desirable, is actually an integration of key characteristics of other models such as being context-specific as well as knowledge focused, but with a “sense of awareness of issues of power” (Kennedy, 2014, pp. 347-348).

As detailed in the literature review, several researchers have defined key characteristics of highly effective professional development. In conjunction with the transformative framework detailed by Kennedy, I utilized the seven characteristics of effective professional development defined by Darling-Hammond et al. These characteristics include professional development that is/has “content focused, active learning, collaboration, uses models and modeling, coaching and expert support, feedback and reflection, and sustained duration” (Darling-Hammond et al., 2017, p. 4). This professional development series is content focused because it centers on lower elementary literacy skills. Learning is active and relies on best teaching practices such as the use of multiple modalities of input and output, including reading, listening, watching, writing, and speaking, as well as the use of models and modeling for technique practice. Participants need to collaborate with their peers in several ways including reflection on readings and videos, cycles of observation-feedback during the modeling process, and discussions grounding the content in context. Furthermore, this professional development is not a single session, but rather a sustained series meant to be implemented throughout a semester or year. Coaching is used to observe and give feedback, as well as support teachers in how to use the strategies and resources with fidelity.

In order to utilize these two frameworks concurrently, I ensured that I included all seven characteristics of high-effective professional development as outlined by Darling-Hammond et al. In addition, I analyzed how my professional development series could be both created and implemented under a transformative model rather than a transmission or

transitional model. To do this, I considered issues of autonomy, purpose, power, and hierarchy. Firstly, I want my initial series to be opt-in rather than required to address the problem of teacher autonomy as well as power imbalance. Another manner of correcting any potential power imbalance is to ensure I am addressing teachers not as a coach, leader, or content expert, but as a peer. The purpose is to support teachers in their development and desire to improve outcomes for multilingual learners, rather than to force content standards or performance review items onto teachers' workloads. Finally, another method of addressing issues of autonomy, power, and hierarchy, is that the majority of time spent in these sessions requires teachers to collaborate together as peers in observation-feedback cycles. The observations and feedback following and in-between sessions can also be provided by a peer, rather than a coach or school leader, in order to avoid hierarchical imbalances of power.

### **Setting and Audience**

The setting for the creation of this project was a traditional public elementary school in Raleigh, NC. The intended audience for my project at large is lower elementary teachers – general education, special education, interventionists, and English language development – who teach literacy to multilingual learners.

### **Timeline**

Chapters one through three of my capstone were completed in Fall of 2022. I began creating the professional development series, as well as observational feedback forms and surveys at the beginning of Spring 2023. The project components were completed by mid-Spring 2023. Finally, I wrote chapter four of my capstone and submitted it in its entirety, both project and paper, at the end of Spring 2023.

### **Assessment**

For this capstone, I have provided two formats for data collection. First, a survey was written that should be administered to teachers before and after the professional development series to identify any changes in feelings of self-efficacy and/or feelings about multisensory literacy instruction. Second, teachers are meant to be observed and given feedback regarding the implementation of multisensory strategies with their multilingual learners. The collection of both these types of data serve to evaluate how effective this professional development series is in giving strategies and resources to teachers for multilingual learners, as well as the positive outcomes for both teachers and students when high-quality professional development is provided.

## **Overview**

### ***Summary***

In chapter three, I described the components of my capstone project and the framework that will be used to anchor it. I also discussed the setting, audience, timeline, and methods of assessment for the professional development series. My project consists of four hour-long professional development sessions, including all materials necessary for implementation, centered on the topic of multisensory literacy instruction for early elementary multilingual learners. The framework I used to create it is based on both the transformative model, as defined by Kennedy, and the seven characteristics of high-effective professional development as outlined by Darling-Hammond et al. It was completed in the Spring of 2023.

### ***Preview***

In chapter four, I reflected on my capstone project and the question: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* I also discuss implications,

limitations, future use, and benefits to the field of education. Chapter four was written following the completion of the project.

## CHAPTER FOUR

### Conclusion

#### Introduction

This project was completed in order to answer the question: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* In chapter four, I explained what I have learned through the capstone process. Then, I discussed the possible implications of my work including policy implications. Next, I considered any limitations of my project. After that, I explored future research projects that could be recommended based on my work. Finally, I described how this project benefits the field of education as a whole.

#### Reflections

This project is significant to me both personally and professionally. As the number of multilingual learners continues to increase in the U.S. public school system, a greater number of teachers will be welcoming multilingual learners into their classrooms and hearts. Over the past decade, I, too, have experienced the struggle of teaching literacy that so many of these teachers currently or will face. Acquiring English while also learning to read is an impressive and difficult accomplishment we expect of our multilingual learners. My hope for this project was to both increase teacher levels of self-efficacy in multisensory literacy instruction as well as improve academic outcomes for multilingual learners.

#### *Revisiting the Literature Review*

The literature review for this capstone project consisted of three major sections: best practices in literacy instruction for multilingual learners, multisensory learning, and the professional development of teachers. Each of these areas of research was critical for developing

a general understanding of what information already exists in regard to the question: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* However, a few key concepts and sources contributed most to the creation of this capstone project.

First, within the subsection, *The Brain, Sensory Input, and Learning* on pages 19 - 20, is information regarding “dual coding theory” from Schlesinger (2017, p. 220). This theory of cognition is linked to memory consolidation and indicates that foundational scientific evidence exists to support the efficacy of multisensory learning. Additionally, their work is corroborated by Swanson’s (2015) research on working memory as described in the section *Reading Difficulties* (pp. 14 - 16). The two memory storage systems as described in Swanson’s (2015) work are used to store both verbal and visual information separately; they conclude that multimodal instruction is, therefore, more successful for students with poor working memory (p. 831). These two sources were most important for substantiating the working premise of this project: that multisensory instruction is more effective for students who are struggling readers.

A second very influential concept to the creation of this capstone was the characteristics of quality professional development as explained by Darling-Hammond et al. (2017) in the table on pages 28 - 29 of the section *Characteristics of Effective Professional Development* (p. 120). This outlined a research-based framework for the creation of my own project, a four-part professional development series. In particular, sustained duration, feedback and reflection, active learning, and models/modeling were each key facets of the series' design. The four sessions this capstone project consists of are meant to be implemented over a semester or year. Each session includes multisensory instructional strategies that are initially modeled and an opportunity for



teachers to participate in demonstrating the modeled skills. Finally, feedback and reflection are incorporated both within these cycles as well as between sessions during observations.

Following the completion of the literature review, I have taken these learnings with me into the classroom and implemented them directly. I have utilized this new knowledge in two ways - as a teacher of children and as a teacher of my peers. In regard to my students, the research on working memory as well as dual coding theory helped me understand the root cause of why many students struggle academically. This connection is important in terms of my own instructional choices as well as my current role on the intervention team making decisions about how to best support students in my school. When facilitating professional development for my peers, I now have a better understanding of research-based best practices. Knowing and utilizing these principles will improve participation and the retention of new learning, and directly benefit students across the school as a result of improved teacher practice.

### ***Major Learnings***

The primary learning I am taking away from this project as a researcher and writer is the power of self-efficacy. Research has identified a direct correlation between a teacher's level of self-efficacy and the academic outcomes of their students. There is also a connection between highly effective professional development and teacher levels of self-efficacy. Therefore, I have learned that through well-planned and implemented professional development, teachers can have a direct effect on student achievement.

Another key learning I am taking away from this project as a teacher is the importance of integrating key pedagogical moves into instruction that have a significant impact on the quality of student learning. For example, multisensory instruction is not a curriculum or content. Rather, it is a manner of implementation that has significant advantages in affecting student neurological

responses to content. By implementing research-based best practices such as those outlined in the literature review, teachers can make a more significant impact without additional work.

### ***Implications***

The main implication of this project is that when provided highly effective professional development teacher self-efficacy improves. This in turn has a direct correlation to improved student outcomes. While multilingual learners are the largest growing population of students in the U.S., an enormous gap exists between the number of teachers who have been trained to serve multilingual learners and the number of teachers who currently or will serve multilingual learners. After my review of the literature as well as my work on this project, I believe that all teacher preparation programs should require coursework on teaching multilingual learners in the mainstream classroom. Additionally, all schools and districts should provide ongoing training opportunities for teachers to improve their content and pedagogical knowledge in regard to multilingual learners. Finally, alternative pedagogical approaches, such as multisensory instruction, should be adopted by schools that are not meeting the needs of their multilingual learners.

### ***Limitations***

This project is limited in several aspects. Firstly, this project centers on the lived experiences of a highly marginalized population – multilingual youth. This is a group I am not a member of due to both my linguistic and age identities, and therefore my work will inherently contain biases. Next, as stated in the literature review, multisensory instruction for multilingual learners is an emergent field of study. Lastly, another limitation is the lack of research into this topic, proving or disproving the theory that multisensory literacy instruction is effective for multilingual learners. Relatedly, research on the effectiveness of multisensory instruction is generally inconclusive. I found literature supporting and opposing its use, which I attempted to

convey in the literature review. Overall, while this project has limitations, it still contributes positively to the field of education and furthers our understanding of improving literacy outcomes for multilingual learners.

### ***Future Research***

As a result of completing this project, I would like to perform future quantitative research on the efficacy of multisensory literacy instruction for multilingual learners. I have personally had success implementing it in my own classroom, but a key facet of scientific research is the ability to replicate results. Multisensory literacy instruction has primarily been researched for teaching students with learning disabilities such as dyslexia. But data supporting its use for multilingual learners could have far-reaching implications on curricula, teacher preparation, and policy.

### ***Results***

The result of this project, namely this paper and my professional development series, will be provided to current and future coworkers who are interested in multisensory literacy instruction. This project will be successful if after completing the professional development series, teachers indicate higher levels of self-efficacy in literacy instruction, as teachers of multilingual learners, and/or in multisensory instruction. Success could also be measured using the multisensory literacy instruction for multilingual learners checklist. Higher levels of teacher self-efficacy in turn lead to increased student achievement, which is the ultimate goal of this project.

### ***Benefits***

This project benefits all educators who have ever struggled, as I have, to find more effective ways to implement literacy instruction for their multilingual learners. It also benefits administrators who need professional development resources for their teachers of multilingual

learners. Finally, it benefits multilingual learners who have a fundamental right to the best instruction teachers can provide.

## **Overview**

### ***Summary***

In chapter four, I made a connection between my capstone project and the focus question: *how can multisensory instruction be utilized to add engagement and rigor in order to improve the literacy skills of multilingual learners between 5 - 8 years old who score between a 1.0 - 2.9 on the WIDA Access Assessment and are struggling with basic reading skills?* First, I explained the major learnings and connections I have made as a result of completing the literature review. Then, I discussed the possible implications of my work as well as any limitations of my project. After that, I explored what future research could be completed in relation to this project. Finally, I described how this project benefits both educators and students.

### ***Final Conclusion***

My hope is that this project will have a positive impact on both the teachers who learn from it and the students who directly benefit from those teachers. Completing this project has given me a new sense of motivation to integrate everything I have learned to benefit my own students, as well. Early literacy skills are the academic foundation of student success throughout school and beyond. Multilingual learners deserve access to teachers who have both the pedagogical and content knowledge necessary to help them succeed in reading and teachers deserve a system that will give them the tools they need to provide it.

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