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Improving Early Literacy Outcomes Through Play

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IMPROVING EARLY LITERACY OUTCOMES THROUGH PLAY

by

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DEDICATION

To my favorite weirdos, Ethan and Julian for your continuous support, encouragement, and playfulness. This work would not have been possible without you.

TABLE OF CONTENTS

CHAPTER ONE: Introduction…… 4

Rationale …….. 5

Context …… 7

Summary and Conclusion …… 10

CHAPTER TWO: Literature Review ……. 12

The Study of Play …… 13

Brain Structure and Rules …… 19

Play and Culturally Responsive Practices …… 24

Benefits of Play ……. 26

Play and Literacy…… 31

Summary and Conclusion …… 35

CHAPTER THREE: Project Description ……..… 38

CHAPTER FOUR: Conclusion…… 45

REFERENCES …..…….. 57

APPENDIXES …… 65

CHAPTER ONE

Introduction

If the average adult were asked to define rigorous learning, it is unlikely that the first response would include the words “unstructured” “imaginative” or “play”. Play is often seen as separate from learning; and yet, there is a growing body of research in the areas of neuroscience and education that suggests play is one of the most powerful pedagogical tools that can be leveraged by educators.

All human beings share a natural inclination toward play. Shortly after birth, children are actively learning about their world through play and exploration. Just a few short weeks after being born, babies show increased awareness when their caregivers provide them with a variety of sounds, textures, smells and social interactions. This hardwired desire to play has a host of benefits. When engaging in play, the brain releases dopamine and noradrenaline, both of which have been identified as key players in motivational processes (Achterberg et. al, 2016). Play does much more than activate the reward centers of our brains, it actually makes them stronger. Children who have opportunities to engage in a variety of play behaviors tend to have better memories, are more creative, have higher levels of neural plasticity and problem solving abilities. Additionally they are better at regulating their emotions, form stronger social bonds, and are more likely to succeed both socially and academically. A savvy educator understands the benefits of play, and learns how to intentionally embed play throughout their instructional plans. School age children who have the opportunity to engage in both free play and guided play - known together as playful learning - are provided opportunities for conceptually rich and joyful understanding. Which begs the question, how might

incorporating playful learning practices into a literacy framework help improve early literacy outcomes?

Rationale

My interest in the overlap between early literacy and play is a deeply personal one. I have a three-and-a-half year old whom, like all parents, I find fascinating. As a literacy and communication teacher, I have been particularly interested in watching the ways my son engages in pre-literacy activities and how I, as his caregiver, can foster a love for reading and strong literacy skills in our home. Thanks to my educational and professional background - I already had a lot of knowledge at my fingertips. I knew the importance of a literacy-dense environment, so we filled our house with books. I was aware that reading comprehension begins long before children are able to decode - and so I sing songs and play rhyming games to help my son develop his phonological processing system. We point out letters not just in books, but at the bus stop, grocery store, and throughout his daily activities in order to help him develop his print knowledge. While those activities are vital to his literacy development, that isn't why he engages with them. He joins in because his mama is making silly sounds. He joins in because we move our bodies and engage all of our senses. While I know he is learning really cognitively complex things, he simply thinks we are playing.

This realization has changed the filter through which I observe his play. Recently we were at a playdate with friends and my as son and his friends were building an airport with blocks and miniature planes. One of the oldest children in the group looked up and asked how to write DELTA, the airline her daddy works at as a pilot. As her mother spelled it out, she dutifully wrote each letter before continuing with her play. Prior to

beginning the research for this project, I might not have given this simple interaction a second thought. Now, I recognized that the opportunity to engage in pretend play with her little brother and his friend helped her connect her family world, and her built schema around it, with the literacy skills she was practicing in kindergarten. She excitedly labeled the play airport in a way that was deeply relevant and engaging. Through play she was able to engage in something at the very edge of her zone of proximal development! I couldn't help but wonder how much longer the learning would have taken if she had been asked to complete the same task at a small-group table, in isolation from the play and her lived experiences.

That question haunted me as I started to reflect on my own teaching experiences. As a secondary English Language Arts teacher, I worked hard to help my students improve their abilities to critically read and discuss texts of all types. My aim was to help mold young adults who are able to fully engage with and contribute to the world. Seems pretty exciting to me, but unfortunately, my students didn't always see it that way. I found that my teenagers weren't all that different from my toddler - they loved learning, so long as they thought they were playing. So, I worked to incorporate elements of play throughout my lessons by "gamifying" my approaches. I embedded friendly competition, choice, and exploratory options into our daily lesson plans. When framing the lesson, I brought in storytelling elements and encouraged students to role play - providing them powerful opportunities to take perspectives and deepen their understanding of both character development and a writer's craft. Students engaged more and were more motivated to push past the tough stuff, simply by framing the same skills with elements of play.

Of course, I am not the only one to stumble upon this teaching "hack". As an instructional coach, I had the opportunity to observe my colleagues across grade levels and subject areas. During my years as a coach, I got to see a lot of incredible educators, but one in particular sticks out as having understood the benefits of play as a pedagogical tool. My colleague, a math instructor, who worked primarily with students who were significantly behind grade-level was the first to open my idea to these small shifts. In her class, students were moving their bodies to better understand angles, they were competing with one another to come up with as many solutions as possible, they brought in rhymes and music to help them remember formulas. Their teacher expertly wove play, choice, real-world relevance and more into their math instruction and she saw unprecedented levels of success. Students were engaged and motivated and most importantly they were learning. In fact, looking over my decade of teaching and coaching, it is clear that the most engaging lessons I observed, the best units I ever taught, and the areas where my students showed the most growth all had one thing in common; we embedded elements of play into them. Reflecting back, it is clear that human brains thrive while playing.

Context

Play is usually subdivided into two categories: free play and guided or structured play. Free play is characterized as child-directed. "Children thrive when they engage in free play, which involves active engagement and is fun, voluntary, and flexible" (Golinkoff, R.M., & K. Hirsh-Pasek, 2016 p. 17). During free play, students are allowed to engage in play without adult-imposed rules. Whereas guided play or structured play still allows for some student autonomy, but includes adult intervention to emphasize,

embed, or extend an academic concept. "Guided play takes advantage of children's natural abilities to learn through play by allowing them to express their autonomy within a prepared environment and with adult scaffolding" (Golinkoff, R.M., & K. Hirsh-Pasek 2016 pp. 18-19). Allowing time for students to engage in guided play provides educators opportunities to scaffold academic vocabulary, build background knowledge, and introduce new concepts in a natural and motivating way. During guided play, teachers can reinforce academic content within student's play activities. For the purposes of this project, I will be focusing on playful learning - a balanced approach that seeks to embed both free and guided play into direct literacy instruction.

The benefits of including play into early education and primary grades have been widely explored. Most obviously, play is fun. While that may not seem to be immediately relevant when discussing academic and cognitive gains, the role of emotion is an important one to consider. Neuroscience research continues to find that cognitive development and emotions are closely linked. (Immordino-Yang & Damasio, 2007). Students who are having fun show improvement in attention, motivation, and memory. Even more promising though is that the release of dopamine present when playing primes the brain for more cognitively complex tasks.

In addition to priming the brain's reward systems, play itself is linked to a variety of other benefits. Students who engage in playful learning tend to be more creative and demonstrate a higher level of neuroplasticity, the brain's ability to adapt to new situations and information. Those with high levels of plasticity tend to have less reactive stress responses, more synaptic connections, and demonstrate an ability to transfer skills beyond the context in which they were taught.

In addition to skills listed above, the body of research surrounding play and literacy development includes some promising results. Play provides opportunities for children to engage in a number of foundational literacy practices. Through play, children are exposed to more oral language development including exposure to new vocabulary with contextualized background knowledge, improved phonemic awareness, and improved symbolic understanding, which is foundational to understanding print and orthographic concepts.

There seems to be a strong link between play and cognitive growth, but it is not the only benefit to incorporating more opportunities for playful learning. Brain-based research and its application in education suggests the importance of limiting the brain's natural threat responses and lowering overall stress levels. Understanding the role of the body's stress hormones is vital to creating safe, nurturing, and developmentally appropriate learning environments. This is especially important for students who have experienced trauma in their lives and for students of color. As Zaretta Hammond, in her book *Culturally Responsive Teaching and the Brain,* points out, "When we look at the stress some students experience in the classroom because they belong to marginalized communities because of race, class, language, or gender, we have to understand their safety-threat detection is already cued to be on the alert for social and psychological threats based on past experiences" (Hammond, 2015 p. 45). Meaningfully incorporating opportunities for playful learning is especially important for creating Culturally Responsive classrooms.

There is strong evidence to support the use of more play-based practices. I am particularly interested in the overlap between playful learning and literacy. Here in my

home state of Minnesota, just over half (51.5%) of all students failed to reach grade-level literacy benchmarks according to the 2020 MCA exam. My home district has similar results with just under 50% falling below benchmark (*Minnesota Report Card,* 2020). Internal data shows similarly concerning patterns.

This work feels especially relevant now. As the effects of the Covid-19 pandemic continue into their fourth year, it is nearly impossible to open a newspaper or turn on the radio without hearing about learning loss and the importance of getting students caught up. Teachers feel a great deal of pressure to improve academic outcomes, and as a result many are looking for even more structured time and more teacher-led explicit instruction. This is the wrong course of action. Especially because it isn't only academic achievement that should be considered. Many of our students who are entering our schools have spent three of their most formative years in very small social groups - and they are entering our school systems with fewer social skills, and higher mental health needs than previous cohorts. Additionally, concerns for these students' mental health and social-emotional wellbeing provides a perfect opportunity to reexamine our assumptions about best practices. Rather than running toward more teacher-led instruction, perhaps playful learning could better address these concerns. Play may be just the remedy we need.

Summary and Conclusion

This project will further focus on the question, how might incorporating playful learning practices into a literacy framework help improve early literacy outcomes? In this chapter, I have shared how my experience as a parent and as a literacy teacher has shaped my interest in the overlap between play and literacy acquisition. I explored how

play-based learning has impacted my classroom practice including anecdotal evidence of increased engagement and motivation. We broadly explored the benefits of play in early education, including a more specific look at literacy outcomes. Finally we connected play-based practices to Culturally Responsive practices and social-emotional learning.

With these benefits in mind, I have created a series of supplemental play-based learning activities designed for kindergarten teachers to embed within their literacy block. These activities aim to provide a mix of free-play and guided play and will be designed to improve early literacy through increased background knowledge, oral language and phonological processing, knowledge of narrative, and symbolic thinking. In addition to the gains in literacy, they will embrace Culturally Responsive practices and brain-based instructional practices for overall improvement in student well-being and academic success.

In Chapter Two we explore literature from a broad base of disciplines including evolutionary biology, neuroscience, sociology, as well as pedagogical research. This research will support the benefits of playful learning in the classroom as well as highlight best practices that will inform the creation of the play-based curriculum. Chapters Three and Four outline the finished project, the process of creating the curriculum, and reflections from the completion of the curriculum.

CHAPTER TWO

Literature Review

Introduction

Chapter One introduced the research question, how might incorporating playful learning practices into a literacy framework help improve early literacy outcomes? In the first chapter, the general benefits of play-based learning were discussed including connections to Culturally Responsive practices, student engagement, and literacy outcomes.

This section explores the relevant literature from a broad base of research fields including evolutionary biology, sociology, neuroscience, and education. This review will be organized into five themes: the study of play, brain structures and roles, play and Culturally Responsive practice, the broad benefits of play, and play-based literacy instruction. The review of literature will illuminate the intersections of Culturally Responsive Pedagogy, brain-based learning, and literacy practices in order to lay a foundation for the ways play-based learning can be embedded into current practices to improve literacy outcomes while creating safe and engaging learning environments

After outlining the relevant research and literature, the next chapter will apply these new understandings by creating a play-based curriculum that will supplement a kindergarten literacy block. The curriculum will be designed to provide playful learning options during small group differentiated instruction. The next chapter will explore the methods used to harness the benefits of playful learning for increasing overall literacy outcomes.

The Study of Play

Human brains are hardwired to respond to play in profound ways, and understanding the ways in which other species engage in play can help shed light on human's inclination toward playful behavior. For as long as humans have been observing animals they have been seen engaging in play. Dogs will strike faux-fighting poses, whales and dolphins will playfully splash and circle one another, researchers have even taught lab rats to play hide-and-go-seek (Reinhold et. al, 2019). Mammals, reptiles, amphibians, and several bird species have all been observed engaging in play. To better understand the natural inclination toward play, and the benefits that it may offer, one must look at multiple fields of study including zoology, cognitive psychology, ethology, neuroscience, and more. Yet finding unified theories of play amongst these diverse studies is surprisingly difficult. Play, it seems, is not as simple as one might think. While play is ubiquitous across nearly all taxonomic groups - it appears that animals engage in play in a variety of ways and for a variety of reasons.

Initially, the study of play began with observations, especially of companion animals such as dogs and cats. In one such example, an 170 year old text of comparative psychology by Edward Thompson (1851), animals were observed engaging in a variety of playful behaviors ranging from mock fighting, playing with toys, running, jumping, and swimming with a "playfulness of manner and exuberance of spirit" (p. 61). While in some ways these early observations correctly identified many types of play, they were limited by the observer's understanding of the natural world. Upon the introduction of Darwin's theories of natural and sexual selection, many researchers explained that the

wide-spread observations of play must mean that playful behaviors serve an evolutionary purpose.

Playful fighting, mimicry, and even social play could be argued to improve overall fitness and survival chances. However, not all play can be tied to survival outcomes. "Play, if viewed as not serious or not important to survival or reproduction, posed a problem for evolutionists" (Burghart, 2005, p.124). Several theories came out to explain the variety of playful behaviors observed in the wild which were then compiled in an entry into the seminal 1901 *Dictionary of Philosophy and Psychology*, edited by James Baldwin, the founder of developmental evolutionary psychology. Baldwin summarized the work of his contemporaries including the work of Gross and Spencers, two names who were foundational to the study of play. The three theories that came from Baldwin's work that are most often cited include: surplus energy, instinct practice, and recuperation theories. The surplus energy theory hypothesized that play was primarily a way of regulating body systems, by expelling excess energy. Instinct play argued that play was hardwired into animals by instinct in order to practice skills that would improve their overall fitness and sexual success rates. Finally, the recuperation theory argued that it allowed animals to rest and regain equilibrium. Eventually these three theories were dismissed as over-simplifications, but interestingly have been revisited and revised, and their roots can be seen in modern theories of play.

The most recent theories of play rely heavily on the five characteristics of play that were identified by Gordan Burghardt. In his 2005 text, *The Genesis of Play*, Burghardt outlines five characteristics that can be applied to all species who engage in play. The first characteristic that he outlines is that playful behavior is not fully

functional in form or context. This means that it can be differentiated from the actual act; for example, when a child is engaging in pretend play they are not really feeding their family or fighting crime. This is true across other species, when baby chimpanzees mimic their mother's tool usage their primary purpose is not to find insects to eat (though that may be a bonus).

The second criteria is that play is spontaneous, voluntary, and intrinsically motivated. Creatures engage in play for its own sake. This, as mentioned above, has evolved from the purely evolutionary standpoint. While play may reap other benefits, like increased fitness, that isn't its primary motivation.

Burghardt's third criteria explains that play is incomplete - it tends to be exaggerated, awkward or stops before the act it mimics is complete. For example, when puppies wrestle and play-bite they stop short of hurting one another.

His fourth criteria is that play behavior is repeated in a similar but not identical manner. A toddler will repeatedly pretend to be a firefighter racing to save a stranded kitten until his tired parents redirect him.

Burghardt's fifth and final criteria is that play happens when an animal is well - that it has enough food, safety and security to be able to engage in play. This final characteristic has been criticized when researchers attempt to apply to human behavior- which seems more complex than animal play. Even in heightened stress, human children will often engage in play as a way of regulating themselves.

Today, it is still difficult to find consensus regarding how to define play among animals and their human counterparts. However, in an attempt to improve cross-disciplinary collaboration and deepening of understanding of play, a group of

scientists from sixteen different content areas met in Chicago in 2016 to collaborate around a shared set of definitions. The result was a list of seventeen different characteristics, split into two categories: function and structure. Functional definitions provide descriptions of the end result of a behavior, whereas definitions based on structure focus on the observable behaviors of play (what it *looks* like) (Miller, 2017). This work pulled heavily from Burghardt, but the scientists did expand his criteria further.

As part of their collaboration, the Chicago sixteen identified five functions of play. The potential outcomes of play include: pleasure/enjoyment, for no immediate benefit (this is typically contextualized as no increase to the individuals current survival), contextual, social, or for evolutionary benefit.

Additionally, there were twelve structural characteristics that define play in animals and humans alike. While not all play fits each and every one of these, in order to be considered play it must fit at least one. These twelve explain that play can be: intrinsically motivated, dominated by the young of the species, voluntary, repetitive, spontaneous, associated with a state of positive welfare, fragmented, exaggerated, includes play-signals, includes turn-taking, is non-literal, and follows a set of rules/process (Miller, 2017).

These definitions and characteristics provide an important starting point in understanding human play. While human play is often more complex than their animal counterparts, understanding the types and functions of play will be vital to creating a play-based curriculum that is able to engage students in meaningful and motivating learning experiences.

Another aspect of the study of play that has pedagogical implications comes from the field of neuroscience. Several studies of lab animals, typically rats, have found that animal brains reward playful behavior. It is worth noting that much of the structural and neurological research is isolated to animal studies, as testing these theories on human children creates ethical and moral dilemmas. As non-invasive scanning equipment continues to evolve, there is likely to be even further clarity on how play impacts the human brain. In several studies, researchers have found that rats who have been engaging in play see a rush of dopamine, which provides pleasure and motivates the individuals to repeat the playful behavior (Siviy, 2016, p. 30-37).

Interestingly, while playing, rats also release another chemical, norepinephrine, a chemical that is linked to a threat response. While it is true that norepinephrine does increase when an animal is in a dangerous or stressful situation. In these cases, norepinephrine and another stress hormone, cortisol are released to increase attention, improve mobility and help the animal survive that danger. "Cortisol is a stress hormone that helps us in genuinely dangerous situations by redirecting resources to the most urgent needs, such as repairing a wound or fighting an infection" (Siviy, 2016, p. 37). When playing, only dopamine and norepinephrine are both released (the stress hormone cortisol is not present) resulting in increased attention and motivation.Most interestingly, neuroscientists have discovered that, "the prefrontal cortex of the brain is refined by play, and play stimulates the production of a protein responsible for the differentiation and growth of new neurons and synapses" (Fantuzzo and Hampton, 2000 p. 5). These findings suggest that play can be a powerful pedagogical tool that not only increases

motivation and attention, but also grows the parts of the brain most responsible for higher level thinking and emotional intelligence.

These findings are further supported when mammals are denied the opportunity to play. For example, in a series of experiments that restricted juvenile rats' access to play the researchers found that when tested as adults, the rat's whose access to play had been limited showed significant impairments to their social, emotional, and cognitive skills. (Pellis et al., 2014Baarendse et al., 2013; Van den Berg et al., 1999; Vanderschuren & Trezza, 2014; Von Frijtag et al., 2002). It has been demonstrated multiple times that the brains of adolescent animals benefit from play.

In education specifically, several researchers and theorists have come to similar conclusions. More than a century ago, Dewey (1910) drew attention to the parallels between children's inclination toward play and scientific thinking. Another foundational theorist, Vygotsky (1978) noted that play has an undeniable impact on children's development by fostering language acquisition and development, cognitive processing, as well as emotional intelligences such as self-awareness and self-regulation. Likewise the works of Friedrich Froebel and Maria Montessori emphasize the importance of play on a child's cognitive and social development.

The ongoing examination of play-based learning, underscores a few key ideas. First is that play and learning are interwoven in rich and complex ways. Next that playful learning practices may contribute and foster not only children's social, emotional and physical development but also their academic and cognitive development in a holistic and mutually supportive manner (Pyle, DeLuca, and Danniels 2017; Samuelsson and Johansson 2006; Stephen 2010; Wallerstedt and Pramling 2012).

Brain Structures and Roles

Although the body of research continues to grow and evolve, understanding the human brain's structures and roles can inform pedagogical choices in truly profound ways. In order to fully capitalize on the benefits that brain-based pedagogies promise, educators should have a foundational understanding of the human brain. Neuroscientists divide the brain into four lobes: the occipital lobe, temporal lobes, and the parietal lobe. The occipital lobe is primarily responsible for vision. The temporal lobes are just above the ears on both sides of the brain. These lobes are connected to hearing, memory, and language. The frontal lobe is located by the forehead and is associated with higher-level thinking, judgment, creativity, and planning for the future. The parietal lobe processes higher sensory and language functions (Jensen, 2005. p. 9-10).

The brain is made up of neurons whose primary function is to receive and communicate stimulation and sensory information. In addition to neurons, the brain is also made up of glial cells. "Recently, scientists have discovered that glia - also known as interneurons- are not, as once thought, just a "support" or "housekeeping" cell but are quite important in brain development, function and growth" (Jensen, 2005. p. 8). Glial cells carry vital nutrients, speed repairs, provide myelin for axons, and support the blood-brain barrier.

While it isn't necessary for educators to have in depth knowledge and memorization of each of the brain's lobes - there are a few general ideas that they should have a good understanding of in order to teach most effectively. The first idea is that the human brain is incredibly adaptable and has been found to physically change based on the experiences a person has (Cacioppo, Berntson, Sheridan, & McClintock, 2001).

Things like repetition, trauma, stress, and learning can change the brain dramatically. It has only been understood since the late 1990s that humans can grow new neurons well into adulthood (Kempermann, Kuhn, and Gage, 1998). While that in itself is vital for educators to understand, in even more recent learnings, a follow up study (Van Praag et el., 1999) found that we are able to influence and anchorage the growth of neurons through things like exercise and stress control.

In addition to the lobes outlined above, another key component of the brain are the structures that comprise the limbic system: hippocampus, thalamus, hypothalamus, cingulate, basal ganglia, striatum, and the amygdala. This portion of the brain is responsible for emotions, sleep, attention, body regulation, hormones, sexuality, sense of smell and the production of many brain chemicals (Jensen, 2005 p.10). It is this area of the brain that educators should be focusing on, as it houses the reward and threat-detection systems of the brain. Understanding the ways in which the reward systems in human brains react to play is essential to harnessing play as a pedagogical tool. Much has been written about increasing student engagement and motivation, but those conversations rarely explain the brain-based mechanics behind those strategies. Human motivation is a complex thing, but much of human behavior can be simplified to two patterns - minimize threats and maximize rewards (Gordon, 2000).

Neuroscientists have found clear evidence that play affects human brains in similar ways to their animal counterparts. “While the exact structure of the behavior may differ between those mammalian species that play the core neural circuitry that motivates an animal to engage in playful social interactions is shared among these species” (Siviy, 2016 p. 37). Just as in the studies of rats, human brains release rushes of dopamine and

norepinephrine when engaging in new, novel, or fun things. This surge of dopamine and norepinephrine increases attention, rewards the behavior, and tells various parts of the brain that playful behavior is worth repeating. The effect is connected to a host of cognitive benefits, including: enhanced attention, improved working memory, quicker mental shifting, and improved stress regulation. Each of these benefits have a strong correlation to improved learning (Cools, 2011; Dang, Donde, Madison, O'Neil, Jagust, 2012; McNamara, Tejero-Cantero, Trouche, Campo Urriza, & Dupret, 2014).

In addition to the chemical transmissions that are triggered by play, neuroscience has also found evidence of something we've always known - play results in joy. "Emotions were previously thought of as secondary to cognition in learning, but developmental and neuroscientific research is quickly revealing that the two are interwoven" (Immordino-Yang & Damasio, 2007 p. 98). The research of Immordino-Yang and Damasio continues explaining that human brains tend to process "bottom up", first through lenses of survival and emotion (the limbic system) before connecting to the parts of the brain responsible for higher-level thinking and reasoning (frontal lobe). Human emotions can help facilitate higher-level thinking by providing a lens through which an individual can reflect on their experiences and learning. Positive emotions, such as joy, prime the brain for more cognitively complex thinking - making playful learning a perfect vehicle for cognitive tasks.

Understanding the mechanics of motivation and engagement is important but in order to fully capitalize on that understanding, educators must consider how to apply this understanding to their instructional practices. The literature around increasing motivation and engagement points to certain predictable patterns in regards to what individuals find

motivating: choice, social relationships, relevance, curiosity, and creativity are just a few. Play can be a particularly powerful tool when trying to increase motivation, as it naturally harnesses the things that are most closely tied to intrinsic motivation. For example, a lesson on character traits could embed playful learning with some socio-dramatic play options. After the first reading, teachers could show students costumes and props from the read-aloud book they just finished and encourage them to pretend to be the characters from the text. This would allow for student choice, peer-to-peer interactions, creativity, and more. This also aligns with brain-based practices. Research suggests that activities that allow students to engage in movement, such as socio-dramatic play, will elicit a state of aroused attention (Saklofske & Kelly, 1992).

It is also important for educators to understand the ways the human brain has evolved to protect itself from threat. The key to understanding the human brain is understanding its evolutionary origins. The oldest parts of human brains, sometimes known as the reptilian region, are made up of the brainstem and cerebellum. This part of the brain is responsible for survival, and as such is constantly scanning for threats. According to Zaretta Hammond, author of *Culturally Responsive Teaching and the Brain,* this part of the brain, "doesn't think. It only reacts" (Hammond, 2015 p. 36). When a threat is detected, a critical brain feature, known as the reticular activating system (RAS), responsible for activating the body's fight or flight responses kicks into high gear. If a child's RAS thinks there is a threat in their environment it triggers the limbic system, in particular the amygdala. The amygdala has the "authority to bypass the brain's communication dispatch hub in the thalamus and send distress signals directly to the lizard brain in the form of the stress hormone cortisol" (p. 37-38). While cortisol plays

an important role in keeping humans alive, it supersedes whatever else may be happening. When the human brain is stressed, and flooded with cortisol, "all other cognitive functions such as learning, problem solving, or creative thinking stop" (Hammond, 2015, p. 40).

Often when discussing the brain's threat response system the conversation is framed around physical threats. However, it is important to understand that the brain reacts to both physical threats and threats to social standing in much the same way. "In most people hearing, 'can I offer you some feedback' generates the same [physical] response to hearing fast footsteps behind you at night" (Rock, 2008 p.3). Human beings are social creatures, whose very survival was dependent on fitting into the social groups and therefore evolved to avoid threats to their status with the same vigilance of avoiding predators in the wild.

Imagine for a moment that you are a teenager arriving at your chemistry class. As you enter the room, a group of popular students seem to look at you and start whispering. Those whispers are accompanied by a few giggles. In many individuals, this will trigger the body's threat response - effectively shutting down your prefrontal cortex and limiting your cognitive functioning. This example is common in modern classrooms, and all the more reason for teachers to understand and minimize threats whenever possible.

When the stress response is triggered, play can help students regulate their stress hormones. When a human's flight, fight, freeze, or flee responses are triggered there are a series of physiological components that occur at the same time as the cortisol release. In order to signal to the brain that it is safe, the body must complete the stress cycle and send the message that your body is no longer in danger. According to Dr. Nagoski and

Dr. Nagoski, authors of the book *Burnout: The Secret the Solving the Stress Cycle,* say the body must end the cycle by engaging in movement, deep breathing, social interaction, interacting with loved ones, crying, or engaging in creativity. Play provides a natural context for students to engage in many of these behaviors that can interrupt the stress cycle and help them return to a regulated state by, "by overturning amygdala hijack, enable the child to engage in higher-order processing" (O'Mahony, 2021 p. 50). In a regulated state, students are more likely to be able to learn and engage in academics.

Play and Culturally Responsive Practices

Understanding and creating opportunities to manage the stress response is particularly important when designing for a Culturally Responsive Classroom. When students detect a threat, "resources available for overall executive functions in the prefrontal cortex decrease. There is a strong negative correlation between the amount of threat activation and the resources available for the prefrontal cortex" (Rock, 2008 p. 3). While this is true for all humans, as noted in chapter one, BIPOC students often arrive to the school environment primed for threat activation. Consider our chemistry student from the earlier section. Consider how that situation may shift if he or she were a student of color. In addition to the social threat that the giggling peers represent, this student may also be dealing with hypervisibility, microaggressions, implicit bias, over policing, and a host of additional traumas many of which are linked unconsciously (and consciously) to white people. "When anyone experiences others in an environment like a classroom that is inattentive or hostile, the body picks up that information through the autonomic nervous system and sends it up the RAS and amygdala" (Hammond, 2015 p.45).

Knowing how to mitigate and prevent threat responses is a critical tool for anyone who wants to embrace Culturally Responsive practices.

Play-based learning is one approach that can help send the message of safety and well-being that all students need to be able to engage cognitively with the learning. "Marginalized students need to feel affirmed and included as valued members of a learning community" (Hammond, 2015 p.45). Play-based learning allows for opportunities for students to socialize with classmates, find common interests, and build positive relationships which are vital components of creating a Culturally Responsive classroom.

Play has been recognized as a vital component of healthy development. A report from the American Academy of Pediatrics highlights the benefits of play, specifically targeting children raised in poverty (which continue to disproportionately affect children of color) whose, access to playful experiences may be lacking (Milteer, Ginsburg, The Council of Communication and Media, & Committee on Psychosocial Aspects of Child and Family Health, 2012).

Additionally, thoughtful inclusion of common cultural learning aids such as song, music, movement, and repetition helps students create deep conceptual understanding of new materials because that new learning has been sifted through their cultural experiences. Education has known about the importance of tapping into student's schema and internal funds of knowledge for decades (Freire, 1970). When new understanding is coupled with existing experiences and cultural practices students' frames of reference have been affirmed and the new learning has been given important context which connects with longer-term retention and deeper understandings.

Play also provides an opportunity to send a clear and unambiguous message that a student's classroom is one where their cultures, practices, and narratives are represented, valued, and celebrated. According to Jay Johnson Thiel, "when we say a child 'can't play' or engage in particular narratives because those narratives aren't part of the privileged discourse a powerful and marginalizing silence takes place in the classroom" (2014 p. 13). Play provides opportunities for students to bring in their own narratives all while reinforcing academic skills. This dual purpose is important for all students, but has been proven to be especially effective for English Learners. Play allows for teachers to monitor and make corrections to students' English language use in authentic contexts and far more privately than in front of an entire classroom. Play also provides powerful peer to peer language modeling (Porchelli & Tyler, 2008).

There are many other ways that the play based learning and Culturally Responsive practices can complement and bolster a student's academic achievement and overall well-being. Both support cognitive development, social emotional learning, and self regulation. They both aim to increase language skills through social interaction and increased peer-to-peer discourse. Both aim to cultivate creativity, self-awareness, and to positively reinforce a child's self-identity (Pyle & Daniels, 2018; Gay 2010; Ladson-Billings 2009). Allowing students to engage in play in Culturally Responsive settings increases, "success in play, achievement, social relationships, and cooperation" (NAEYC, 2009). Play can be a natural component of Culturally Responsive classrooms.

Benefits of Play

While this project will focus in on the role of play-based learning in literacy achievement, we will begin with a more holistic view of learning. Research in the last

few decades has repeatedly shown the interconnected nature of learning. The various aspects of human development, physical, social, cognitive, emotional, and creative, have often been considered in silos of one another.

Recent research has argued that this practice needs to stop. Instead, educators should consider each aspect of a child's development as interconnected systems that influence and support the development of each other (Zosh, J.M, Hopkins, E.J., Jenson, H. Liu, C., Neale, D., Hirsh-Pasek, K., Solis, S.L., & Whitebread, D. 2017). Instead of thinking about these skills as separate blocks (physical education class, music specialists, social-emotional curriculum) educators would do well to consider how they might view learning in a more dynamic and interrelated way. Playful learning experiences seem to be an especially effective mechanism for the development of the Six Cs: collaboration, communication, content, critical thinking, creative innovation, and confidence (Golinkoff &Hirsch-Pasek, 2016). Play has broad benefits ranging from social-emotional development to improved math and reasoning skills - but more importantly it allows children to develop these skills simultaneously and with greater context.

One of the primary benefits of adopting play-based learning practices is the benefit to a student's social emotional wellbeing. Adopting play-based learning provides students multiple opportunities to develop positive peer relationships. Primarily, it serves as an opportunity to develop friendships and a sense of safety and belonging - the importance of which has been discussed extensively above. Research has shown that mere exposure to others outside an individual's culture is not enough to erase implicit bias; but rather, individuals must have opportunities to make frequent, informal interactions where they are allowed to share things about their personal lives. These

interactions build trust and a sense of togetherness. (Cacioppo 2008; Rock 2008). This is an important finding when considering the research question - for traditional small group work will not harness the brain's reward centers in the same way that play can. It isn't enough to have students turn to an elbow partner, or work at table groups; in order to reap the benefits of social interactions individuals need authentic opportunities to connect.

Additionally, as students play together they are offered opportunities to practice communication skills. They get authentic opportunities to problem solve, resolve conflicts, cooperate toward common goals. They practice turn taking, patience, and sharing. By the time students reach kindergarten, the focus of this project, students are especially attuned to their peers (Nelson, 2017). Social interactions with their peers allows students to practice self-regulation, such as waiting for a turn with the toy rather than pushing their classmate over and taking it. Social interactions are also critical for the development of higher order processing skills.

When students regularly engage in social and pretend play they are able to better understand differing perspectives and develop empathy for others. (German, Neihaus, Roarty, Giesbrecht, & Miller, 2004). Play exposes children to a variety of emotional reactions. As they play they may see a peer cry in frustration when they struggle to balance a final block on a tower. They may see that same peer gleefully knocking over structures later in the day. These experiences help students infer not only the mental states of others, but also how the context affects those emotions (Spinrad et al., 1997). This ability to truly understand the emotions of others is vital to true compassion and empathy.

While a child is gaining social and emotional skills, they are also improving overall cognitive ability and depth of understanding. In fact, multiple studies (Clements et al., 2015; an Oers & Duijkers, 2013; Walsh et al., 2006) have shown that classrooms engaging in playful learning outperform classes that engage primarily in teacher-led direct instruction.

Students who have regular exposure to play have higher levels of neural plasticity, meaning that the brain is able to adapt to new information (Nelson 2017). Students are also able to transfer their learning to novel situations. This ability to transfer skills is sometimes known as analogical reasoning.

> "Analogical reasoning is a type of thinking that helps us see beyond surface-level differences to understand underlying similarities in objects… Evidence shows that this type of thinking recruits domain-general regions of the brain operant in abstract thinking, as well as domain-specific regions related to the analogical task at hand" (Jensen et al., 2017 p. 56).

For example, when a toddler learns about shapes a child who is told a fact about shapes (a square has four sides) has a tougher time identifying squares in other situations than a child who is exposed to shapes through playful learning. The children in the latter group remember details about the shape longer and are able to identify non-standard shapes, such as a square that has been set at an angle or an askew triangle. (Fisher, Hirsh-Paske, Newcombe, and Golinkoff, 2013). Play helps students gain the skills to be independent and lifelong learners.

Playful learning also increases creativity and divergent thinking in children. Multiple studies have shown that students who regularly engage in play, specifically

socio-dramatic play, score higher on divergent thinking measures. “Social interaction experiences may be a necessary prerequisite for divergent thinking. The exchange of ideas and resulting disequilibrium involved in peer interaction may serve as a type of brainstorming for young children enhancing their ability to produce divergent ideas” (Dunn & Herwig, 1992 p. 44). These skills are often cited when discussing how to best prepare students for an ever-changing world, and play helps unlock their future success.

The purpose of outlining the various benefits of play-based learning is not to undermine the importance of building content knowledge. Rather, it is to emphasize that play-based learning provides invaluable opportunities for students to contextualize, deepen, and explore those concepts in ways that are brain-based and Culturally Responsive. For example, critical thinking and reasoning is easier to engage in when a student has the full context of the problem (Willingham 2006). Educators often lament that students are unable to hold on to concepts from year to year - and that is because traditional instruction often lacks the necessary context for students to make deep synaptic connections. “Exposure to abstract concepts that are not connected to children’s real-life experience may lead to shallow memorization of information, but not foster the type of deeper, flexible learning we wish to encourage” (Zosh, J.M, Hopkins, E.J., Jenson, H. Liu, C., Neale, D., Hirsh-Pasek, K., Solis, S.L., & Whitebread, D. 2017 p. 88-89). Play provides opportunities for students to connect and contextualize those ideas in positive ways.

Literacy and Play

Play is a powerful pedagogical tool with wide-ranging benefits to the social, emotional, cognitive, and general academic success of individual students. Now it is time to look specifically at the literature surrounding play and literacy.

It is important to begin by acknowledging the obstacles faced when attempting to implement more play-based literacy in kindergarten. In the world of high-stakes testing and accountability measures, educators often feel pressured to reach literacy outcomes. This pressure often results in more direct instruction and teacher-led learning. It is difficult for teachers to see the value in play-based activities when accountability measures are looming. Additionally, play based learning is more difficult to plan for while balancing the demands of other content areas on the educator's plate. In a 2018 study aimed at quantifying the challenges of implementing play-based literacy instruction into kindergarten classrooms, the authors Angela Pyle, Daniel Poliszczuk & Erica Danniels, note that many of their teachers struggled with giving up control. Playful learning required that teachers take a back seat to the children's ideas which had implications for management, scheduling, and more. The fear of letting go of some control is understandable, especially when paired with concerns about meeting adequate growth. Additionally, there may be some uncertainty about implementing play-based approaches. In the same 2018 study Pyle, Poliszczuk & Daniels state, "Sixty-seven percent of the participating teachers expressed some uncertainty when discussing the implementation of guided play in their classrooms" (p.9). These considerations are important to address when creating a supplemental play-based curriculum, as they pose real roadblocks for implementation.

The first benefit of play-based literacy that the literature points to comes from an oft-cited meta-analysis of play conducted by Nigel Hall in 1991. Hall cites four patterns that emerged from play-based learning in relation to literacy outcomes, the first of which is, "play as a fundamental cognitive activity is preparation for more complex cognitive activities such as literacy" (Hall, 1991 p.3). In his analysis, Hall points to a 1983 study by Gentile and Hoot who state, "through painting, children become aware that images on paper are meaningful and say something" (as cited in Hall 1991, p.8). At the heart of the argument, Hall points out that children gain recognition of meaning through play. He admits that the relationship between play and literacy is "incidental", that the positive impact of play on literacy happens naturally rather than intentionally.

Hall's second finding explains that the ability to practice and engage in symbolic play helps prime early readers to gain a stronger understanding, "of a representational system like written language" (Hall, 1991 p. 33). Part of the cognitive load asked of early readers is the ability to understand the symbolic nature of written language. While human beings are naturally wired to understand oral language - written language is a human construct and is not a natural process. If you've ever noticed that early readers and writers often mix up and turn their letters around, this is a result of the way the human brain developed spatial reasoning. "One thing our visual system is naturally good at is recognizing three-dimensional objects - a car, a Lego, a puppy - from any direction so even if the puppy is lying on its back our brains know that it is a puppy" (Burkins & Yates, 2021 p.13-14). Yet, this three dimensional thinking does not work with letters, a "b" is only a b if it is written correctly, otherwise it might be a q or d. "To learn to read,

we must actually “unlearn” this mirror invariance (Dehaene et al., 2010) because letters work differently” (Burkins & Yates, 2021 p. 66).

Children engaged in play based learning often engage in symbolic play. Children may pick up a large wooden block and pretend it is a cell phone - this is an example of symbolic play. Both literacy-based and symbolic play require the “ ability to use words, gestures or mental images to represent actual objects, events or actions” (Isenberg & Jacobs, 1983, p. 272). Play-based learning can be especially helpful as students learn to encode or express their thinking in writing or other means. Play provides autonomy to children to tell stories or pretend in ways that are meaningful to them. According to Isenberg and Jacobs (1983), these instances of play are important milestones in literacy development.

Perhaps the most compelling evidence for the benefits of including play-based learning into a literacy program is the importance of early language acquisition. Hall’s metastudy points out that language behavior in play is related to literate language (Hall, 1991). Long before students are asked to recognize letter sounds or decode a passage, they must first learn to understand spoken language (Hogan, Adolf and Alonzo 2014). This process is innate in humans, and is organized into three different processing systems: the phonological processing system, the meaning processing system, and context processing system. The phonological processing system hears sounds and recognizes that sound combination as a word. This then triggers the meaning processing system, which reviews stored vocabulary information for possible meanings. Finally the context processing system scans the contextual information to filter and select the correct option.

To demonstrate this process, consider the word card, the meaning of which can vary wildly depending on the context: it can be used as a noun (birthday card, credit card) or as a verb (I was carded). These three systems grow as children are exposed to new languages. "The more spoken language children process and store through this system - learning language syntax, developing vocabulary, building background knowledge and more- the more developed their neuronal structures will be and the stronger their listening comprehension will become" (Burkins & Yates, 2021 p.13-14). This is vital as students move into written language and decoding practice because listening comprehension skills are directly tied to reading comprehension because, "Reading comprehension actually involves translating the words on the page into spoken language and "listening to them," either by saying them aloud or saying them in our heads" (Burkins & Yates, 2021 p.12). Exposure to oral language is vital to improving reading comprehension.

Which means, of course, that sound pedagogical approaches will include opportunities for exposure to authentic language from a variety of sources. Play-based learning is strongly tied with increased language acquisition. Each child in a kindergarten class comes from diverse backgrounds and experiences. What one student may have experienced, having gone to a baseball game or learning about a new baby brother, may have taught them vocabulary to which other students haven't been exposed. As they explore and play, the teacher can offer additional vocabulary that is immediately contextualized and more easily stored for long term retrieval.

Research that supports Hall's third conclusion indicates that in addition to language acquisition, "that the language that children use during play is similar to the language children will use when they begin to read and write" (Mileon and Patterson,

2009). For example, students were often observed developing "scripts", including discussion of character, plot, and setting - as they engaged in socio-dramatic play, a natural way of embedding reading and writing skills into play. "Having practice with these skills allows children to transfer their knowledge to reading texts within a school setting" (Hall, 1991, p.11).

Hall's final finding, "when children are offered play experience with literacy-related resources, they act in literate ways" (p.41) indicates the way children and teachers can integrate literacy-related objects into their play environments, so that children have opportunities to engage and develop literacy skills. Having three dimensional letters, props that mimic read-aloud stories, opportunities to sing songs or play rhyming games are all examples of deliberately introducing literacy scaffolds into a play environment. In a 1985 study Jacob and Isenberg concluded that, "young children can develop literacy skills by engaging in play (as cited in Hall, 1991, p.11).

Since Hall's initial research was released, additional research has shown that when an educator intentionally includes literacy-based objects in a play environment, children will mimic reading and writing behaviors. "A play and literacy relationship become more striking as play helps young children explore and comprehend the interactions between the two realms of activity" (Saracho & Spodek, 2006 p. 73). This quote, pulled from the Journal of Inquire and Action in Education, explains that pairing these two realms can help improve overall literacy outcomes.

Summary and Conclusions

This chapter began with some foundational knowledge about the complexities and history of play research. The characteristics of what play looks like were explored. Next

the potential outcomes of play were discussed before turning toward the ways that animal and human brains react to play.

Next, the literature around human motivation was reviewed. The literature that was collected focused on two aspects of human motivation: maximizing rewards and minimizing threats. When humans engage in new, novel, or fun activities the release of dopamine and norepinephrine increase motivation, engagement, attention, and send the signal to the brain that this behavior should be repeated. Playful learning has been found to trigger the brain's reward center. Additionally, when individuals play they experience joy - which itself primes the brain for higher functioning and improves overall retention.

Just as importantly, the mechanics of threat detection were discussed within the frame of education. When the brain detects threats it reverts to its evolutionary roots and shuts down the higher-level thinking processes in favor of survival. This is vital to educators to understand because children whose threat response has been activated are not going to be able to excel academically in that state. Next, the similarities between the brain's response to physical and social threats were discussed.

This led to connections to Culturally Responsive practices. This section discussed how crucial minimizing threats is when serving BIPOC students, many of whom come to schools with a sensitized threat response. The work of Zaretta Hammond, Gloria Ladson-Billings, and Geneva Gay were briefly explored - especially in regards to cultural learning aids and their integration with play-based learning.

Finally, the broad academic and social benefits of play-based learning were explored before diving specifically into the benefits of play on literacy acquisition. In addition to increasing engagement, motivation, and improving social competencies and

cognitive skills, play is a promising pedagogical tool for literacy because of its potential for oral language acquisition, symbolic play, the ways that students engage in literacy scaffolding while playing.

The next chapter will explore how to apply the understandings of brain-based instructional strategies, Culturally ResponsiveTeaching, and early literacy instruction to capitalize on the variety of benefits linked to playful learning. Chapter Three will outline a supplementary play-based curriculum that will be designed to be embedded within a kindergarten literacy curriculum, specifically within the time designated for independent and small group instruction. Within that work, the role the teacher plays will be explored including strategies to overcome some of the most common challenges to implementing play-based learning. This curriculum will aim to answer the research question: how might incorporating playful learning practices into a literacy framework help improve early literacy outcomes?

CHAPTER THREE

Project Description

Introduction

The research question addressed in this capstone is, *how might incorporating play-based learning into a literacy framework improve literacy outcomes?* In order to answer this question, I have created a play-based curriculum meant to align to and supplement the kindergarten literacy framework and curricular materials. The project aligns with the new Minnesota English Language Arts (ELA) Standards and focus on reinforcing direct instruction through playful learning.

In this chapter, I will acknowledge the unique cultural and lived experiences that I have brought to the design of this project. Through the examination of these positionalities, I will highlight specific biases and blindspots that I needed to be cognizant of while supplemental curriculum that is not only aligned to best practices but is also Culturally Responsive. After examining my own lenses, I will apply the *Understanding by Design* framework and explain how research behind this design approach will impact the design and implementation of my capstone curriculum.

After exploring the personal and theoretical foundations of this work this chapter will then outline the specifics of the capstone project in depth. This overview will include details regarding the specific audience, timeline, and particular literacy approaches that have been embedded within the finished project. The chapter ends with a summary and transition into chapter four which shares what I have learned in the process of creating the project and what could be done to further develop this curriculum.

Positionality

As an educator it is vital to have a deep understanding of the lenses through which I experience the world. Without developing this self-awareness it is far too easy to continue to contribute to systems that perpetuate societal inequities and do unintentional harm. However, developing this cultural awareness is not only about reducing harm but also about finding ways to leverage and celebrate the cultural perspectives my students and colleagues bring with them.

As a white, middle class, able bodied woman I carry a lot of privilege and power. I live in a society that treats my cultural experiences as the norm, and centralizes white narratives and white experiences. Being a member of the privileged culture means that it is fairly easy for me to exist in this world without considering the perspectives and experiences of others. However, as an educator who is dedicated to transforming the systems that have historically and continuously contributed to inequities and injustices I cannot stay within my own comfort zone. By doing so, I further marginalize and invalidate the lived experiences of my students of color, English Learners, queer students and maintain the status quo.

As I created this play-based curriculum, I had to be hypervigilant to the blindspots that can so easily come with being a member of the dominant culture. As a white woman, I needed to be thoughtful about the cultural learning aids, modes of play and socialization that BIPOC and other historically-marginalized students may bring with them. I considered the variety of identities and experiences my students have including their sex, gender expression, and ability levels. This means being thoughtful about representation in the toys, songs, and games that are included in the curriculum in order

to avoid harmful stereotypes and erasure of individual cultures and experiences. As an able bodied person, I also had to remember that play and learning can come in a variety of modes. I also needed to be thoughtful about accessibility and inclusion. Being mindful of cultural identities that differ from my own is paramount when creating an inclusive and engaging play-based curriculum.

Since this project aims to increase literacy outcomes, it is especially important to consider my own perspective on what constitutes valuable literacy behaviors, since that is shaped by and reflective of my own personal culture. However, valuable literacy practices are not limited to my own experiences. One essential tenet of Culturally Responsive Teaching is adopting a strengths-based approach that honors the unique experiences and talents of each student. Recognizing that not every student grows up in a print-rich environment, or has the time to sit in the laps of their parents and read three books a night is important, but more important is understanding that the songs, chants, religious experiences and more can build a rich literacy background and early reading skills. I needed to make sure that those ways of knowing are honored and represented in the curriculum I created.

Research Frameworks

This work was deeply informed by the work of Jay McTighe and Grant Wiggins, authors of the 2005 instructional framework *Understanding by Design* (UbD). UbD outlines the process of backward design, where instructional leaders begin with the end in mind. McTighe and Wiggins argue that the UbD process helps avoid common educational design problems including: treating the textbook like a curriculum, rather than a resource, moving straight to stage three and planning around activities without first

gaining clarity around priorities and purposes, or teaching test prep, whereby students concentrate on short term retrieval of tested content without deeper conceptual understandings.

Understanding by Design encourages educators to start by building a deep, shared understanding of standards and benchmarks, as well as clarifying the instructional priorities which include long-term transfer goals, meaning-making goals, essential understandings and skills. After establishing the desired results, teachers move to stage two which focuses on assessment and acceptable evidence of student learning. Finally, the framework asks educators to begin planning the learning experiences and instruction that will align with the goals and assessments identified in stages one and two. This is the framework that I used in order to design and implement the capstone project.

Additionally, this work is strongly influenced by my home district's literacy framework. This framework (appendix a), was developed in partnership with our district's literacy coaches, classroom teachers, academic support and administration. This was heavily influenced by the works of Michael Heggarty (2015) and Jan Richardson (2016).

The framework reserves 120 minutes for literacy instruction everyday. Of those 120 minutes, thirty are exclusively reserved for students to learn process writing, grammar, and addressing the writing standards. The other ninety are focused on core reading instruction. Within those ninety minutes teachers are asked to do 15-20 minutes of phonemic awareness and/or phonics instruction, forty minutes of small group instruction (two groups, 15-20 minutes each), 15-30 minutes of reading comprehension work, and 15-20 minutes of writing in response to reading. While this block of

instruction is fairly rigid, there is time to incorporate some student choice and playful learning in the forty minutes of small group instruction. While the teacher works with their small groups, the current practice is to have the remaining students work independently on skills, handwriting, choice reading or other literacy related activities. This curriculum provides play-based alternatives for students to engage with during that time they are not with their teacher.

Project Description

For my project, I created a supplemental play-based curriculum that aligns with both my district's literacy framework, the newly adopted ELA curriculum, and follows the UbD framework. The content of the curriculum includes a set of play-based options to include with each of the five units throughout the student's kindergarten year, with each unit taking five weeks to complete. Each play-based activity aims to support the individual unit goals, which are outlined in more detail below.

One of the primary goals of this new curriculum is to make its integration into current practices as seamless as possible. In order to do this, it is aligned to the goals, themes, and focuses of the newly adopted ELA curriculum. The curriculum, MyView from Savaas, has five units. Each unit is thematically organized.

- Unit One: Exploration- Going Places
    - Essential Question: What makes a place special?
- Unit Two: Patterns - Living Things
    - Essential Question: What do living things need?
- Unit Three: Expressions: Tell me a story!
    - Essential Question: Why do we like stories?

- Unit Four: Connections: Then and Now
    - Essential Question: What can we learn from the past?
- Unit Five: Our World: Outside my Door
    - Essential Question: What can we learn from weather?

In order to achieve this alignment, it was important to thoughtfully consider the time constraints and logistical challenges that come with adopting play-based learning in primary grades. In order to be a viable option for teachers, it was designed with flexibility and ease of set-up in mind. It also closely aligns with the instructional goals of each unit, so as not to feel like a waste of precious instructional minutes. These activities will be designed in a way that there can be some flexibility with when it can happen within a unit while still reinforcing the foundational or comprehension strategies that are essential to that unit.

Timeline and Implementation

This project began in the spring of 2022. I have continued researching specific best-practices in relation to play-based literacy as well as additional research on approaches best suited for primary students. Each unit was designed and presented to a small group of teachers in the instructional review process for feedback and tweaking during the spring of 2023. The curriculum has been finalized in the spring of 2023, with the intended implementation of the 2023-2024 school year.

Summary and Conclusion

In this chapter I began by exploring the personal and cultural lenses I bring to this work, including acknowledging the professional implications of my own positionality. After exploring my personal foundations, I explored the instructional frameworks that

will be guiding my design, namely *Understanding by Design* and our district's K-6 Literacy Framework. After exploring these foundations and frameworks, I detailed the specifics of the play-based curriculum I will be designing. Finally, the timeline for design and implementation was discussed. In Chapter 4, I will reflect on what has been learned throughout this process as well as discuss opportunities for further refinement and growth.

CHAPTER FOUR

Conclusion

Overview

Recently, while I watched my preschooler engage in a dramatic reenactment of his favorite bedtime stories, I had an opportunity to reflect on the learning I've experienced both through the foundational research and the development of my capstone curriculum. As a mom to an almost-four-year-old, I have watched in wonder as my child has rhymed, danced, and played his way through so many pre-literacy milestones and I yearned to find ways to embed that same joyful learning into our public school classrooms. As I began this work, I sought to find high-impact instructional strategies that would synthesize brain-based educational research, early literacy interventions, and Culturally Responsive practices that answered the question, *how might incorporating play-based learning into a literacy framework help improve early literacy outcomes?*

In chapter one, I introduced the research question by sharing how my personal and professional lives influenced my interest in both play and literacy acquisition. I provided rationale by broadly examining the benefits of play in early education and more specifically on early literacy development. Finally, I drew connections between play-based instruction and Culturally Responsive practices. In chapter two, I reviewed the existing literature from several branches of study including: evolutionary biology, neuroscience, sociology, as well as pedagogical research. In chapter three, I examined how my particular lens and positionality impacts the capstone project as well as other considerations I had while planning the curricular design. In this chapter, I will reflect on the learning and growth I've experienced while completing my capstone project.

Additionally, I will explore the implications and impact of the project for both my home district and for the teaching profession as a whole. Finally, I will outline future research and applications that could continue this work.

Major Learnings

The research and development of this capstone project has had a profound impact on my professional practice. Through this work I've gained a deepened understanding of not only early literacy development but also of the importance of brain-based education. In particular this process has helped me understand the importance of play for primary student's academic and social development, motivation and engagement, and creating trauma-informed and culturally responsive classrooms.

Early Literacy Implications

Over the last twenty years public schools have seen a rather dramatic shift in the academic benchmarks expected of kindergarten students. This increase had led many school districts to shift away from play-based kindergarten models into more teacher-led direct instruction. It is clear to me that this shift, while understandable, is misguided. Play-based learning serves a vital role in children's social, cognitive, and emotional development.

Play-based literacy should be seen as a necessary component of any literacy framework as it benefits all aspects of early literacy including: foundational skills, word recognition, and background knowledge. In fact, according to their 2009 study of children's language development Hirsh-Pasek, Golinkoff, Berk and Singer argue that, "Children demonstrate their most advanced language skills in play/fun environments, and these language skills are strongly related to literacy development" (31). Students who

have opportunities to engage in literacy-rich playful learning opportunities show greater use of expressing language, larger vocabularies, stronger phonological awareness, and more excitement and motivation to read and write.

Play and Motivation

It isn't only primary grades that would benefit from more play-based instruction. One of my greatest insights after completing this work, is the connection between play and motivation. As I am writing this, we are in the fourth year of the COVID 19 pandemic, and while much of society and school has returned to normal the impacts of the last three years are still being felt. Anecdotally, it seems as though students are more disengaged with school than ever before. It seems that students are less motivated by traditional means such as grades and it is up to educators to find new ways to engage students in deep, meaningful learning.

It is important to note that motivation, mental health, and trauma are inextricably linked for many of our students. Trauma-informed learning spaces aim to reduce student's stress responses, while reinforcing signals of safety and belonging. When students are in prolonged periods of stress, their brains prioritize safety and survival, while deprioritizing higher-level thinking, long-term planning, and a host of other cognitive functions. It is no wonder that after three years of isolation, stress, and lack of support many students have returned to school lacking motivation for school. It is vital that educators are able to see disengagement, not as a behavioral problem, but as a survival mechanism. Play-based learning provides authentic and joyful opportunities to build relationships with students, embed social-emotional learning, and to signal

students' brains that they are safe. Opportunities for play will not only result in increased engagement, but happier and healthier students.

Play and Culturally Responsive Practices

Additionally, throughout this process it became clear to me that play can be a powerful tool for creating more Culturally Responsive classrooms. The connections to Culturally Responsive Practices are outlined extensively in Chapter Two, but here I want to focus on the specific benefits play has for multilingual learners. One of my learnings was how easily play-based learning can be adapted to support English learners. Playful learning, especially dramatic play provides rich opportunities for all students to develop their contextual knowledge of new words and concepts. Culturally relevant dramatic play allows students to make connections to their own lives and experiences. Students will often reenact what they've seen parents, teachers, or the media all while gaining exposure to new vocabulary and conceptual understandings. This can be especially helpful to multilingual learners as it provides teachers and other students with opportunities to help model verbal-mapping and contextualizing new vocabulary. An easy adaptation would be adding labels to the drama stations and the provided props in multiple languages to help students make connections. One simple example would be labeling props as both "Weather Station" and "estación meteorológic". This simple adaptation benefits all students, but can be especially useful for diverse language learners and students who are struggling with concepts of print, orthographic knowledge, and more.

Revisiting the Literature

Due to the nature of this project my initial dive into the research came from a broad cross-section of disciplines including evolutionary biology, sociology,

neuroscience, and education. While this broad base was helpful to contextualize the history and evolution of the study of play, I quickly found that the most helpful literature was concerned with the intersection of play, pedagogy, and the brain.

Implications to the Capstone Design

While designing the play-based curriculum for our kindergarten literacy block, I aimed to embed two or three playful-learning activities for each of the five units in our English Language Arts curriculum. Those activities can be categorized into three types of play: dramatic or symbolic play, free or child-directed play, and locomotor or movement play.

Five of the playful learning activities that I've embedded within the capstone project would be considered dramatic or symbolic play. Dramatic play provides vital opportunities for students to gain literacy skills and social. In the 2006 text *Play = Learning: How Play Motivates and Enhances Children's Cognitive and Social Emotional Growth,* coauthors Christie and Roskos showed that make-believe play results in stronger vocabularies, more emotional intelligence, and increased expressive language skills. Additionally, "because fantasy play often requires the substitution of one object for another, it also develops abstract thinking" (Mraz,Pocelli & Tyler, 2016, p. 16). Dramatic play allows children to explore complex themes, develop understandings of symbolic representation, and engage in a huge variety of prosocial behaviors like cooperation, negotiation, regulation and more.

Another type of play that is reflected in the curriculum is free or unstructured play. There are two learning activities that simply set out playful props and allow students to design their own playful learning experiences. These types of student-led

play activities have shown to have multiple positive outcomes for student including: foster social skills, enhances self-regulation and executive function, improves language skills (Ramani 2012; Ramani & Eason 2015; Becker et al. 2014; Cavanaugh et al. 2017; Christie & Roskos 2009; McCrory, Debrito, &Viding 2010; Ramani & Brownell 2014; Savina 2014).

The final category of play that is included in this curriculum is locomotor or movement play. Movement play focuses on gross or fine motor skills while also reinforcing other cognitive skills. The benefits to movement play include: improved neuron growth, strengthens key areas of the brain that are directly connected to improved learning (Fordyce &Wehner, 1993).

Additionally, the work of Zaretta Hammond and her contemporaries helped me connect the dots between Culturally Responsive practices, play-based pedagogies and brain-based learning. In particular her 2015 text *Culturally Responsive Teaching and the Brain: Promoting AuthenticEngagement andRigorAmong Culturally and Linguistically Diverse Students* which argues that school systems can, unintentionally, create unsafe spaces for BIPOC students and how those spaces trigger a threat response that can shut down higher levels of thinking and make it even harder for children to learn. Play-based learning provides an opportunity for teachers to lower threat responses, embed cultural signals of safety and belonging and better serve all of their students.

Implications and Limitations

Since the era of No Child Left Behind, there has been a marked increase in accountability measures targeting early literacy. The increased scrutiny of standardized testing data has had some unintended consequences, specifically implications for policy

and practice. Despite the dearth of evidence that play-based learning is not only an effective pedagogical tool there seems to be a disconnect between that evidence and policy.

Through this process, it became clear to me that play-based learning should be intentionally embedded into primary classrooms and beyond. Not only are there broad emotional, social, and cognitive benefits but play-based learning can also be used to target particular skills and benchmarks. Teachers needn't rely on direct instruction, drill-and-kill memorization or other teacher-led strategies exclusively to get their students to grade-level proficiency. Rather, embedding playful learning can help reach those same goals in ways that are more engaging, more culturally responsive, and provide deeper, more contextualized, and more transferable learning. Simply put, play provides more bang for the buck.

Project Limitations

Of course there are specific barriers and limitations that need to be considered. The first of which is getting the school board and community on board with a shift toward more play-based learning. Many likely hear play-based learning or playful learning and dismiss it as frivolous or something that only belongs in preschool and is therefore incongruous with the academic rigor expected of primary school. In order to combat this misconception, some practitioners have replaced playful learning with synonyms like, for example "active learning" in order to achieve legitimacy at school (Martlew et al., 2011; Smith, 2015). This semantic barrier would need to be addressed in order to get buy-in from the majority of the community.

With the increased scrutiny tied to assessment scores, play-based learning's lack of quantifiable data will also pose a challenge to its implementation. The lack of established assessments and consistent approaches will likely make many school administrators and community members hesitant to adopt it within their schools and its proponents will struggle to capture the gains made with playful learning approaches (McAloney and Stagnitti, 2009; DeLuca and Hughes, 2014).

In my home district this will require some specific shifts in policy and structure. Our current model of literacy instruction includes a 120 minute block (see Appendix A). Within those two hours teachers are asked to spend 90 minutes on core literacy instruction - including whole group and small group with an additional 30 minutes dedicated to writing. I specifically designed this curriculum to fit within this schedule, but it would be beneficial to consider embedding playful learning into the scheduled day.

There are also practical considerations for implementing playful learning. While I attempted to embed playful learning activities that would require minimal preparation or outside materials it is important to note that when implementing playful learning, especially at the beginning, there will be additional costs associated with props, materials, and storage. Without a dedicated funding source provided from the district to all teachers, the benefit to students will be dependent on the individual educator's ability and willingness to purchase and make props, toys, and materials.

There is also the added burden to teacher's times to set up and clean up playful learning stations that should be considered. At its most ideal, this curriculum supplement would be responsive to student data. As students progress through standards and foundational skills, teachers should be reflecting constantly on what play-based choices

should be reinforced or extended to meet their particular students' learning needs. Despite my best attempts to limit the planning and preparation that would fall to teachers, it is important to note that those cannot be limited completely.

Future Research and Recommendations

The field of education would benefit from additional research into play-based learning. While the study of play and its intersection with education date back over a century, there are still considerable gaps in the existing literature. For example, the strongest body of evidence focuses on play as key to high quality early childhood education (Wall et al., 2015; Nilsson et al., 2018). Studies of play beyond age five are scarce (Howard, 2010; Jay and Knaus, 2018) despite the fact that international policy standards define early childhood as the years from zero to eight (Irwin et al., 2007).

It is my belief that playful learning can be beneficial well beyond early childhood and primary grades, but there simply is not enough case studies on how embedding playful learning practices might look at the intermediate and secondary levels.

Overall, one of the biggest gaps within the research is a lack of "hard" qualitative data. The research I found uses observational and anecdotal evidence to show improved holistic learning as well as evidence of literacy gains. There is a need for additional qualitative measurements of play-based learning's impact on literacy, math, and all content areas.

Another area my research focused on was brain-based pedagogy. There is a growing body of research that explores the intersection of neuroscience and pedagogy but, like many things in education there seems to be a disconnect between research and educational policy. In my experience, most educators are not well versed in brain-based

pedagogies, and therefore may be missing out of the vast benefits of brain-based practices such as playful learning.

Communicating Results

This capstone project will be made available to several audiences including Hamline University students, my home district's Curriculum and Instruction Committee and via our curriculum website. This project will first be made available to my colleagues at Hamline University at the completion of my MALEd program, as a resource for future research as well as as a resource for those interested in integrating play-based learning into their literacy frameworks.

Additionally, prior to piloting this supplement in our kindergarten literacy block I will share the research, findings, and resources to my home district's Curriculum and Instruction Committee. When that is approved, it will begin a pilot in the 2023-2024 school year, at which time it will also be available via my district's curriculum website.

Benefits to the Profession

This play-based curriculum will serve as an important step toward creating more joyful, safe, and academically successful classrooms. Throughout this process I began to see play-based learning, and indeed brain-based practices, as an opportunity to meet several student needs with one approach. First and foremost play-based learning helps lower students' threat detection and helps create a sense of safety. This helps prime student's brains for higher levels of thinking and helps scaffold more cognitively demanding tasks. This is particularly helpful for creating trauma-informed classrooms and can be an invaluable tool in helping students engage more successfully in school. Not

only is this good for students,but it provides educators with evidence-based practice that is both effective and joyful.

Additionally it provides an important support for classroom management, as play-based learning provides broad benefits such as increased independence, emotional regulation, cooperation and collaboration skills.. This project provides an opportunity for students to learn these life-long skills in an authentic and engaging way. This play-based curricular supplement can provide educators with several choices to differentiate according to their students' needs, interests, and cultural backgrounds while also increasing engagement in the learning experience overall.

The research shared in this capstone provides a succinct overview of the vast benefits of play-based learning brain-based pedagogies. For those unfamiliar to the literature, it can be rather eye-opening to this immensely powerful body of knowledge that has yet to be widely adopted, and sometimes runs contrary to policies and practices that have been put in place.

Finally, improving literacy scores in early elementary is vital to overall success throughout the K-12 programming and beyond. Children who are exposed to play-based literacy programs are more likely to succeed academically throughout their schooling career.

Summary and Conclusion

In this chapter, I've shared my personal reflections as well as the major learnings that I've gained while working through the capstone project. I've revisited the most impactful literature, citing specific research that was particularly helpful in the creation of my play-based curriculum. Finally, I examined the implications, barriers, and benefits of

this work both to my home district and to the profession as a whole. Throughout the capstone process, I've been able to gain a deeper understanding of the unique intersection of play, literacy, brain-based learning, and culturally responsive practices. While literacy has always been a passion of mine, this process has led me to explore and embrace how to leverage the growing field of educational neuroscience in order to better serve my students and continue growing as an educator.

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Appendix A: Forest Lake Area Schools Literacy Framework