SELF-REGULATION AND EMERGENT CURRICULUM INQUIRIES IN THE KINDERGARTEN CLASSROOM

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ABSTRACT

This doctoral dissertation explores and defends my belief that when teaching teams co-construct emergent curriculum inquiries with children in their Kindergarten classrooms, this teaching practice supports the children's ability to self-regulate. My research brings together two broad areas of study: emergent curriculum and self-regulation. Emergent curriculum inquiries are sustained investigations built around children's interests. Self-regulation is a reflective learning process where children become aware of what it feels like to be overstressed, recognize when they need to up-regulate or down-regulate, and develop strategies to reduce their stress. It has been acknowledged as fundamental to learning in the Kindergarten program. Self-regulation is a prominent issue today because children are experiencing much more stress than in the past and many consider it a better indicator of school success than IQ.

The data for my research was generated during an ethnographic case study of four Kindergarten classroom environments where teaching teams co-constructed emergent curriculum inquiries with the children. My analysis of the data relied on the distinction between four components of emergent curriculum: inquiry design, design of the environment, documentation, and conversation. Assertions grounded in the data about these components of emergent curriculum provide new evidence of a relationship between inquiries and self-regulation.

When looking across all the findings, four especially compelling arguments emerged to support my belief that when Kindergarten teachers co-construct emergent curriculum inquiries, this teaching practice supports the children's ability to self-regulate. The first argument is that, just as they do in play, children learn how to self-regulate during emergent curriculum inquiries. The second argument is that during emergent curriculum inquiries the teachers used scaffolding and that this process supports the children's ability to self-regulate. The third argument is that emergent curriculum inquiries promote positive emotions such as elation, inspiration, pride and

curiosity that generate energy. This energy improves children's concentration and strengthens their ability to self-regulate. The fourth argument is that children use oral language as a self-regulatory tool during emergent curriculum inquiries, which helps them to regulate their own emotions and behaviours. My conclusion is that emergent curriculum inquiries in Kindergarten do support the children's ability to self-regulate.

This doctoral dissertation is dedicated to the people I love most in this world,

my husband Les and our four children Aaron, Grace, Oliver and Noah.

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Self-regulation is the cornerstone of development and is the central building block of early learning. Self-regulation is the ability to adapt one's emotions, behaviours and attention to the demands of the situation. Attention skills, working memory and cognitive flexibility underlie planning and problem-solving. The capacity to make inferences about others' mental states, such as intentions, emotions, desires and beliefs, is used to interpret behaviour and regulate social interactions. The regulation of attention is essential to children's learning dispositions or habits of mind and action, including persistence, curiosity and approaching new experiences with confidence.

(Charles Pascal, 2009, p. 4)

Chapter One: Introduction

This doctoral dissertation explores my belief that when teaching teams co-construct emergent curriculum inquiries with children in their Kindergarten classrooms, this teaching practice supports the children's ability to self-regulate. My research brings together two broad areas of study: emergent curriculum and self-regulation. Emergent curriculum is a teaching practice where the curriculum is built around the children's interests and is co-constructed between the teachers and children as the inquiry unfolds (Jones & Nimmo, 1994; Wien, 2008, 2014). Self-regulation, is "a child's ability to deal with stressors effectively and efficiently and then return to a baseline of being calmly focused and alert" (Shanker, 2012b. p. 12). Self-regulation has become a prominent issue in recent years because children are experiencing much more stress than in the past (Shanker, 2012c, 2013a). The result has been an explosion of emotional, social, learning, behaviour, and health problems in children (Shanker, 2016). Many researchers consider self-regulation to be a better indicator of school success than IQ (Blair & Diamond, 2008). As the epigraph from Pascal (2009) above suggests, self-regulation has come to be recognized as fundamental to learning in the Kindergarten program.

Origins of the Research

The origins of this doctoral dissertation can be traced to my interest in emergent curriculum and self-regulation as a teacher, graduate student, and parent. Although I had already taught in public schools for fifteen years, I first learned about emergent curriculum as a graduate student while working on my Masters of Education. This new knowledge led to a rich four-month-long ethnographic research study in my Kindergarten classroom that focused on children's conversations during an emergent curriculum inquiry (see Jacobs, 2008). After finishing my M.Ed., my interest in this kind of curriculum planning ultimately led me to teach at an independent school for four years where I had the freedom to explore emergent curriculum

inquiries with my Grade 1 students. I found the last few years I spent teaching young children to be the most exhilarating, as this type of curriculum planning was much closer to my own personal beliefs about exemplary teaching and learning.

In 2010, I attended a conference where Dr. Stuart Shanker was a keynote speaker talking about the importance of self-regulation. His address had a huge impact on me because it helped me to understand why my youngest son Noah had had difficulty self-regulating at school. Noah found it hard to form social relationships with his peers, reacted impulsively, and as a result got into trouble. This left him feeling ashamed and embarrassed, extremely anxious, and uncomfortable in his own skin. It also had a huge impact on him academically as he had difficulty paying attention in class and learning how to write. A year before Shanker's keynote I had moved Noah to a gifted program in a public school where he started to flourish. As a parent, I regretted that I had not heard Stuart speak about self-regulation years earlier as it would have helped me to understand what Noah was going through at the time. I came home from that conference feeling like I had experienced an epiphany in terms of my own understanding of self-regulation. As a result, I was able to reflect back and think about how self-regulation had impacted both my personal life and professional career over the years.

It was my interest in emergent curriculum inquiries and Stuart's keynote address about self-regulation that inspired me to pursue this doctoral research. My hunch at the time was that one of the very significant, but largely unexplored, benefits of emergent curriculum as a teaching practice is that it supports the children's ability to self-regulate, which, as Pascal (2009) states, "is the central building block of early learning" (p. 4). By studying four Kindergarten classroom environments where teachers co-construct emergent curriculum inquiries with the children, I hoped to offer insightful findings that would help educators to better appreciate the potential of emergent curriculum inquiries to support children's ability to self-regulate at an optimal learning

level. The empirical research findings I ultimately report on in this dissertation offer new evidence of a relationship between emergent curriculum inquiries and self-regulation.

Overview of Chapters

In Chapter Two, I provide a review of selected literature and research findings on self-regulation as it pertains to my research. I define self-regulation in terms of arousal regulation, describe the five domains that are sources of stress, explain how self-regulation develops, examine self-regulation in the Kindergarten classroom and its significance in *The Kindergarten Program* framework for Ontario, and review recent research on self-regulation in Full-Day Kindergarten classrooms.

In Chapter Three, I introduce some key assumptions of emergent curriculum as a teaching practice and then organize my discussion around the idea that emergent curriculum can be understood in terms of four core components. These components of emergent curriculum are inquiry design, design of the environment, documentation, and conversation. This chapter is structured to correspond to the presentation of the research findings and the argument about the connection between emergent curriculum inquiries and self-regulation in Chapters Six to Nine.

In Chapter Four, I explain my methodology by starting with pedagogical documentation as a conceptual framework. I then describe my qualitative research method in terms of how I negotiated entry into contexts, the participants (including the teachers, Early Childhood Educators), and students, research ethics processes, data generating processes and my role as a participant observer, and finally the analyses processes.

In Chapter Five, I introduce the four Kindergarten teaching teams, the classroom environments, and the emergent curriculum inquiries—The Invisibility Inquiry, The Office Inquiry, The Running Club Inquiry and The Community Inquiry—in order to help the reader put

the research findings in context and acquaint them with each of the multiple sites in this case study. These sites generated the data for my analyses that I discuss in Chapters Six to Nine.

In Chapter Six, I report my findings on the inquiry design component of the four emergent curriculum inquiries. I have organized the presentation of the research findings around five assertions that characterize broadly the shared inquiry design of the four inquiries. These findings are then used to illustrate how the design component of emergent curriculum supports the children's ability to self-regulate in the Kindergarten classroom.

In Chapter Seven, I report my findings on the design of the environment component of the four emergent curriculum inquiries. I have organized the presentation of the research findings around six assertions, which are then used to illustrate how this design component of emergent curriculum supports the children's ability to self-regulate in the Kindergarten classroom.

In Chapter Eight, I report my findings on the documentation component of the four emergent curriculum inquiries. I have organized the presentation of the research findings around five assertions that are then used to illustrate how the documentation component of emergent curriculum supports the children's ability to self-regulate in the Kindergarten classroom.

In Chapter Nine, I report my findings on the conversation component of the four emergent curriculum inquiries. I have organized the presentation of the research findings around four assertions, which are then used to illustrate how the conversation component of emergent curriculum supports the children's ability to self-regulate in the Kindergarten classroom.

In Chapter Ten, I conclude the dissertation by revisiting my belief that when teaching teams co-construct emergent curriculum inquiries with the children in their Kindergarten classrooms, this teaching practice supports the children's ability to self-regulate. When looking across all the findings in the previous four chapters, four especially important and compelling arguments arise to support that belief.

Chapter Two: Self-Regulation

In this chapter, I position my research in relation to current scholarship on self-regulation. The term self-regulation has no universal definition and has been used in many different ways, depending on the discipline and the interests of researchers (Rimm-Kaufman & Wanless, 2012; Shanker, 2016; Wasik & Herrmann, 2004). However, there are significant overlaps among how most researchers understand self-regulation. Some researchers think about self-regulation as executive functions (see Blair & Diamond, 2008; Blair & Razza, 2007; Blair and Ursache, 2011; Bodrova & Leong, 2008; Diamond, Barnett, Thomas & Munro, 2007; Fitzpatrick & Pagani, 2013; McClelland, Acock & Morrison, 2006; McClelland & Cameron, 2011; Ponitz, McClelland, Mathews, & Morrison, 2009; Welsh, Nix, Blair, Bierman & Nelson, 2010) Other researchers think about self-regulation as self-control (see Bauer & Baumeister, 2011; Duckworth & Carlson, 2013; Rimm-Kaufman, Curby, Grimm, Nathanson & Brock, 2009; Rimm-Kaufman & Wanless, 2012). Still other researchers think about self-regulation as self-regulated learners (see Grolnick, Kurowski & Gurland, 1999; Horner and Shwery, 2002; Schunk & Zimmerman, 2007).

My doctoral research aligns with scholars who think about self-regulation as arousal-regulation (see Greenspan & Shanker, 2004; Lillas & Turnbull, 2009; Mastrangelo, 2012; Porges, 2011, 2015b; Shanker, 2013a, 2013b, 2016; Vohs & Baumeister, 2011). Vohs and Baumeister (2011), for example, define self-regulation as the ability to: attain, maintain, and change one's level of energy to match the demands of a task or situation; monitor, evaluate, and modify one's emotions; sustain and shift one's attention when necessary and ignore distractions; understand both the meaning of a variety of social interactions and how to engage in them in a sustained way; and connect with and care about what others are thinking and feeling—to empathize and act accordingly.

Although there is no agreement on how precisely to define self-regulation, there is a broad consensus in the research that how well students do in school depends on how well they can self-regulate (Blair and Diamond, 2008; Blair & Razza, 2007; Fitzpatrick & Pagani, 2013; McClelland, Acock, & Morrison, 2006; McClelland and Cameron, 2011; Ponitz, McClelland, Matthews, & Morrison, 2009; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009; Shanker, 2013a, 2016; Welsh, Nix, Blair, Bierman, & Nelson, 2010). In recent years, self-regulation has received a lot of attention from teachers, researchers, and policy makers because it is so beneficial to children's learning.

I provide here a review of selected literature and research findings on self-regulation as it pertains to my research in the Kindergarten classroom. The first section defines self-regulation in terms of arousal regulation, which is how I have approached self-regulation in this doctoral research. The second section describes the five domains that cause stress and affect a child's ability to self-regulate. The third section explains how self-regulation develops. The fourth section examines self-regulation in the Kindergarten classroom. The fifth section discusses the importance of self-regulation in *The Kindergarten Program* framework (Ontario Ministry of Education, 2016). The final section reviews some recent research on self-regulation in Ontario's Full-Day Kindergarten classrooms.

Self-Regulation as Arousal Regulation

My own research follows, in particular, the understanding of self-regulation as formulated by Shanker (2012b),

> In essence, 'self-regulation' refers to a child's ability to deal with stressors effectively and efficiently and then return to a baseline of being calmly focused and alert. The more smoothly a child can make the transitions from being hypo-aroused (necessary for

recovery) to hyper-aroused (necessary to meet a challenge) and return to being calmly

focused and alert, the better is said to be his or her 'optimal regulation'. (p. 12)

Optimal regulation is the capacity to recover back to baseline when making gradual and rapid

changes along the arousal continuum as well as to modulate the highs and lows of energy within

each level. Shanker (2013a, 2016) explains that optimal self-regulation includes six critical

elements: when feeling calmly focused and alert, the ability to know that one is calm and alert;

when one is stressed, the ability to recognize what is causing that stress; the ability to recognize

stressors both within and outside the classroom; the desire to deal with those stressors; the ability

to develop strategies for dealing with those stressors; and the ability to recover efficiently and

effectively from dealing with stressors. Other empirical research on self-regulation in Ontario's

Kindergartens also draws heavily on Shanker's work (Pelletier, 2014a; Hawes, Gibson, Mir &

Pelletier, 2012; Timmons, Pelletier and Corter, 2016).

> Shanker (2013b) claims that,
>
> When children are calmly focused and alert, they are best able to modulate their
>
> emotions; pay attention; ignore distractions; inhibit their impulses; assess the
>
> consequences of an action; understand what others are thinking and feeling, and the
>
> effects of their own behaviours; or feel empathy for others. (p. 23)

He emphasizes that teachers should implement strategies at school that enhance children's ability

to respond efficiently and effectively to everyday challenges that cause stress. Teachers can alter

children's educational and life trajectories by providing them with strategies that promote self-

regulation (Shanker, 2013a, 2016).

Although the term self-regulation is used in hundreds of ways, Shanker (2016) maintains

that the original psychophysiological sense "refers to how we manage the stresses that we are

under" (p. 5). Stress here means, "all those stimuli that require us to expend energy to maintain

some sort of balance" (p. 5). These stresses can be psychosocial, environmental, positive or negative emotions, patterns that are hard to recognize, and the stress of others. The sympathetic nervous system works by releasing adrenaline and cortisol, thereby activating energy to up-regulate, whereas the parasympathetic system works by releasing acetylcholine and serotonin to down-regulate. Shanker (2016) argues that arousal-regulation, "is a function of the complementary forces of sympathetic nervous system (SNS) activation, which makes us more aroused, and parasympathetic nervous system (PNS) inhibition, which slows everything down" (p. 19). We constantly shift up and down this arousal scale and as arousal goes up so does energy consumption; as it goes down we are able to restore our reserves. The autonomic nervous system is the system that regulates the transitions between these arousal states.

Throughout the day, because of the sympathetic and parasympathetic nervous systems, children move through different arousal states. These systems meet the demands for energy expenditure and then replenishing energy and recovery. When a child is overstressed, her brain finds it harder to manage these transitions and the recovery function is less resilient so the child becomes stuck in an aroused state. When a child is in chronic hypoarousal or hyperarousal, she has difficulty attending to and processing internal and external sensations both physically and emotionally. When this happens, she is highly susceptible to impulsivity and aggression (Shanker, 2016; see also Berger, 2011).

Some children need to work much harder to block out stressors (Shanker, 2010). Focusing attention over a long period of time drains children's energy, which diminishes their ability to sustain their attention. The harder they have to work the less energy they have left over to learn. Children need to be able to access the appropriate arousal level (asleep, drowsy, hypo-alert, calmly focused and alert, hyper-alert and flooded) for the situation in which they are engaged. When a child is hyper-alert and her nervous system is overloaded, she feels fatigued

and it can be difficult for her to focus on a task or listen to what someone else is saying. When a child is hypo-alert, and her nervous system is overloaded, she might be withdrawn and show a lack of engagement in learning tasks or daydream for prolonged periods of time. A hypo-alert child is less inclined to become engaged in social interactions and is more likely to miss out on shared learning experiences with her peers. A hyper-alert child, on the other hand is less able to remain engaged in social interactions and cannot sustain the necessary focus to learn (Shanker, 2013a). By reducing the stressors on the nervous system, children have more resources to control their impulses and can access the arousal level appropriate for the learning situation.

The terms self-control and self-regulation have often been conflated even though they are fundamentally different. Self-control is about inhibiting impulses whereas self-regulation is about identifying the causes of stress, reducing their intensity and, if necessary, having enough energy to resist (Shanker, 2016). Self-regulation occurs when a child deals effectively and efficiently with everyday stressors like noise, movement, light, or frightening experiences and then recovers, whereas self-control requires a child to resist an impulse or to comply with a norm by suppressing a behaviour to avoid punishment or receive a reward (Shanker 2010, 2013a). Self-regulation involves identifying hidden stressors and reducing the causes of problems in children's moods, thoughts and behaviours. Self-control only identifies surface behaviours and seeks to inhibit or manage problems only when they occur (Shanker, 2016). Self-regulation is what makes self-control possible or even unnecessary. A child needs to be calmly focused and alert to learn the skills that underpin self-control. Children's self-control skills can be significantly enhanced but first we have to work on their self-regulation (Greenspan as cited in Shanker 2012a). Pascal (2009) adds further that, "Self-regulation is not about compliance with external authorities - it is about establishing one's own internal motivation for adapting to, and

understanding emotional and social demands. In fact, for many children, requiring compliance undermines their own abilities to self-regulate" (p. 4).

Self-regulation, according to Shanker (2012c; 2013a), is a prominent issue today because children are experiencing much more stress than in the past. In his review of research, Shanker (2012c) found that a major new worry for researchers is "that urbanization brings with it all sorts of physical and psychological stresses that test a child who might have coped better in a more rustic setting" (p. 106). In cities, there are lots of visual, auditory and social stimuli and a lack of green space. Many stressors are also affecting children who live outside cities. There have been fundamental changes in family and social patterns in recent decades. Children are experiencing a decline in exercise and participation in sports, as well as a change in eating and sleeping habits. There are fewer experiences with nature and a dramatic increase in the amount of time children spend playing video games. Children are also exposed to violent or troubling emotional themes in the media. In addition, young children are spending longer periods of time in formal education settings and many children are having trouble meeting this challenge, which has led to an apparent rise in behavioural problems (Shanker, 2012c; 2013a).

The Five Domains of Self-Regulation

For Shanker (2013a, 2016), too much stress is an important explanation for why a child might be having difficulty paying attention, ignoring distractors, inhibiting impulses, modulating their emotions or staying calmly focused and alert. While the sources of stressors can be biological, cognitive, emotional, social or prosocial, the underlying mechanisms for self-regulation reside in the biological domain. Often a child's stressors come from a combination of some or all of these domains. These five domains are linked in complex ways and influence one another, so that a problem in one domain can exacerbate problems in the others. The multiplier effect occurs when one stress makes the child more sensitive to other stressors.

The biological domain is the level of energy in the human nervous system that varies depending on a child's disposition and the situation he or she is in. Lewis and Todd (2007) state that the brain is designed to regulate bodily processes and is the fundamental organ of self-regulation. The brain regulates our nervous system by releasing chemicals to control arousal. In order, for the brain to perform this function, it needs to know what is important and be in tune with the ever-changing stream of events in the world. Shanker (2013b, 2016) explains that when a child encounters stress he or she burns energy. The brain will then deal with the stressor by releasing adrenalin and cortisol, which will get your heart racing, increase the pace of your breathing, and raise your blood pressure so that you can deal with the stress. This can lead to hyper-alertness and a rapid depletion of energy so the child needs to down-regulate. Then the brain will release acetylcholine and serotonin to calm the system down. This can lead to hypo-alertness so the child needs to up-regulate.

Children who fidget or flit from one activity to another are self-regulating to allow for optimal functioning where they can change their arousal level quickly to match the energy level needed to fit with different learning situations in an efficient manner (Shanker, 2012b). Some children need more energy to reach a state of equilibrium and then have less energy to attend to other demands on them. Some of these children, for example, are hypersensitive to sensory input in the environment. Their nervous system becomes quickly overloaded and either shuts out the stimuli by withdrawing (hypo-alert) or becomes overstimulated (hyper-alert). Children who are hypo-alert need to up-regulate by increasing their level and expenditure of energy so they are aroused sufficiently enough to learn. Children who are hyper-alert need to down-regulate by decreasing their level and expenditure of energy (Shanker, 2013a). In the biological domain stressors include: poor nutrition; lack of sleep; not enough movement or exercise; motor and

sensorimotor challenges; sensory stimuli; allergens; pollution; and extreme temperatures (Shanker, 2016).

The emotional domain is the realm of feelings and moods such as overexcitement, frustration, or fear, which are generally easy to identify (Shanker, 2013a). Positive emotions generate energy while negative emotions consume energy, making it difficult for students to concentrate and pay attention. Excessive negative emotions can damage a child's mental health and cripple their ability to learn. We need to recognize that emotions are not an aspect of the mind that need to be controlled or suppressed. Cultivating a child's positive and prosocial emotions is just as important as learning how to control negative ones, which is to say, "that emotions are not simply the object, but also the vehicle for strengthening the mind" (Shanker, 2012c, p. 134). Without positive affective interactions, we run the risk of reducing emotion-regulation to behaviour management. Children can communicate their negative emotions through "affect signals" which include tone of voice, gestures, and facial expressions and modulate their emotions in response to others. These affect signals instill confidence in the child because he or she has a strategy to deal with disruptive emotions (Shanker, 2013a). The more difficulties a child has in other domains the more likely he or she is to have negative emotions and low self-esteem. Cognitive abilities are dependent on how a child is functioning emotionally. In the emotional domain, stressors include new and confusing emotions, intense emotions, and complicated relationships (Shanker, 2016).

Shanker (2013a) explains that the cognitive domain refers to thinking and learning, which includes mental processes such as memory, attention, problem solving and the acquisition and retention of information. Self-regulation here means that children can efficiently sustain and switch attention, sequence their thoughts, keep different pieces of information in their mind simultaneously, ignore distractions, and inhibit impulsive behaviour. Metacognition (the

awareness and understanding of one's own thinking) and executive functions (cognitive processes that regulate areas like planning, working memory, mental flexibility, multi-tasking and problem solving) are both important for self-regulation. Shanker (2013b) adds further that self-regulation serves as a critical foundation for the effectiveness of executive functions. The more regulated a child is, the better he or she can develop and exercise their executive functions. Cognitive processes like perception and awareness are the foundation for the development and operation of executive functions. In the cognitive domain stressors include: limited awareness of external and internal stimuli; sensory information that is difficult for a child to process; sensory experiences that are hard for a child to understand; too much information presented too quickly or slowly; information that is too abstract; and information that requires too much concentration (Shanker, 2016).

Diamond, Barnett, Thomas, and Munro (2007) explain the link between self-regulation and executive functions. There are three components of executive functions: inhibition, working memory, and cognitive flexibility (See also Blair & Razza, 2007; Blair & Ursache, 2011). Inhibitory control, or effortful control, is the ability to resist doing one thing in order to do something else that is more appropriate or needed. In general, you avoid giving in to your first impulse and provide a more considered response. Our ability to inhibit attention to distractions makes it possible to sustain attention and remain focused. Inhibition allows us control over our attention and actions. Working memory is the ability to hold onto information and be able to work with or manipulate that information. It means the ability to hold information in mind despite distraction or while you do something else. The information can be newly learned or retrieved from long-term storage. Cognitive flexibility or attentional set-shifting is the ability to adjust to new priorities and consider something from a new perspective or "think outside the

box". It builds on inhibition and working memory. These three aspects of cognition are important for planning, monitoring of behaviour, and future-directed thinking (Blair & Ursache, 2011).

Bodrova and Leong (2008) note that self-regulation involves the ability to control our impulses and inhibit doing something, as well as the capacity to do something even if you don't want to. Children who can self-regulate can delay gratification and suppress impulses in order to think ahead about the possible consequences of their actions and consider alternative choices. Executive functions refer to aspects of cognition that are called upon when the brain and behaviour cannot run on automatic. Blair and Diamond (2008) subsequently found that maladaptive cognitive and emotional regulation skills can undermine a child's performance in the Kindergarten classroom. Children who are angry, frustrated, and exhibit impulsive behaviour have difficulty concentrating in the classroom and are more aggressive towards their peers and teachers. This affects the child's self-perception and confidence around academic and social challenges. Having difficulty following instructions and cooperating with others at the start of school is likely to forecast later academic and social problems.

In the social domain, children who are optimally regulated understand, assess and act on social cues and behave in a socially appropriate manner (Shanker, 2013a). Children who have strong social intelligence are good at co-regulation. This is a process where two people can adjust their own behaviour to help each other remain calm, focused and alert. They understand what the other person is thinking and can interpret their affect cues and gestures. This process can be very difficult for some children. When these children experience problems in the social domain, it also effects their biological and emotional regulation in a profound way, and the reverse is also true (Shanker, 2013a). A child might be anxious so she becomes tense and this depletes her energy. She finds it harder to pick up on subtle social cues and becomes even more anxious and less able to connect with friends. When her energy is low it is harder for her to

manage her impulsivity. The child finds it hard to explain with her words and too much stress shows in her behaviour, mood, and inability to get along or listen to others. When children become chronically stressed, they rely on adrenaline and cortisol to keep going and they become hyper or manic. In the social domain stressors include difficult social situations, interpersonal conflicts, being victimized or witnessing acts of aggression, and social conflicts that arise from not understanding how our words and actions affect others (Shanker, 2016).

The prosocial domain for self-regulation is where children engage in behaviours that are positive and helpful (Shanker, 2013a). These behaviours promote social acceptance, friendship and empathy. A lack of skills in the prosocial domain can cause dysregulating effects across the other domains. Children who are optimally regulated in the prosocial domain have a heightened ability to stay calmly focused and alert when faced with stressors in the other domains. Empathy means to care about someone else's emotions, to try and help others deal with their emotions, and being able to distinguish between other's emotions and your own. Empathy is based on a child's own experiences of what it feels like to be in the same situation as well as the ability to empathize more with some emotions rather than others. Children who lack empathy can experience emotional, psychological, or behavioural problems such as low self-esteem and/or bullying. Often these children have difficulty joining in social interactions with others, which makes school very difficult for them. When children co-regulate they turn to one another for support and this encourages the development of empathy. Children find the prosocial domain stressful because they must make the effort to resist selfish impulses and put the interests of others before their own (Shanker, 2013a).

Shanker (2016) explains that in the prosocial domain stressors include: dealing with other people's emotions, putting the needs of others ahead of your own, tensions between differing values, feelings of guilt, and moral uncertainty. It is important to remember that these are

potential stressors; what makes it a stressor is how it affects us and then how we respond.

Stressors from any of the domains can trigger a stress cycle especially when a child is in a low energy/high tension state. When a child is in this state, "the more difficult he is going to find any one domain or, in some cases, all of these domains. And the more challenging he finds one of these domains, the more this is going to deplete even further his overall energy reserves" (Shanker, 2016, p. 82).

The Development of Self-Regulation

Children learn how to self-regulate by first being regulated by others (Florez, 2011; Greenspan & Shanker, 2004, Shanker, 2016). A baby's brain and their caregiver's brain share an intuitive channel of communication which Shanker (2016) calls the "interbrain". The interbrain is established and maintained by shared emotion, touch, eye contact, and voice. Babies have limited self-soothing reflexes and they have difficulty moving between arousal states smoothly so they need a caregiver to help them make these transitions. The caregiver reads the baby's cues: facial expressions; movements; and sounds and adjusts their own behaviour to help up-regulate or down-regulate the baby as needed. These responses are physiological so the caregiver feels what their baby is feeling. These intimate exchanges help set the baby's baseline state of arousal. The more stress a baby endures the higher her baseline level of arousal, and the more reactive she is to stress. Some babies are more susceptible to heightened arousal and harder to calm.

The interbrain remains a feature of the parent-child relationship and is the foundation for other social relationships. The interbrain helps a child develop the ability to self-regulate. Shanker (2016) states that, "It is by being regulated a child develops the ability to self-regulate. Regulating a child…[is] concerned with managing the child's arousal states until such time as the child can do this on her own" (p. 69). Greenspan and Shanker (2004) note that when a child

is around 18 months old, she begins to make the transition from being regulated by others to self-regulation. This happens when she can convey her own emotions to others and understand her parents' emotional signals. The toddler starts to take a more active role in self-regulatory process using emotionally expressive gestures and language to convey her feelings.

When children are between the ages of two and three, they begin to use oral language as a self-regulatory tool. Bodrova and Leong (2007) explain that for toddlers and preschoolers, "thinking and speech merge…When children become capable of thinking as they talk, speech actually becomes a tool for understanding, clarifying, and focusing what is in their minds" (pp. 67-68). The origins of this idea can be traced back to Vygotsky (1978) who believed that oral language is fundamental to learning how to self-regulate. He explained that the "human capacity for language enables children to provide for auxiliary tools in the solution of difficult tasks, to overcome impulsive action, to plan a solution to a problem prior to its execution, and to master their own behavior" (p. 28). Bodrova and Leong (2007) note that for Vygotsky language makes "humans more efficient and effective problem solvers" (p. 64).

Vygotsky distinguishes between speech as a means of communication with others and egocentric or private speech. Private speech is defined by Kohlberg, Yaeger, and Hjerholm (1968) as, "speech which is not addressed or adapted to a listener (other than the child) and which is carried on with apparent satisfaction in the absence of any signs of understanding by a listener" (p. 692). Bodrova and Leong (2007) explain, "Public speech, the term used for language directed at others, has a social, communicative function. It is spoken aloud and directs or communicates with others…Private speech describes self-directed speech that is audible but not intended for others" (p. 66).

Vygotsky found that private speech is prevalent in the conversations of Kindergarten-aged children. He claimed that private speech was not failed communication with others but

rather has the different function of "cognitive self-guidance" (Kohlberg, Yaeger, and Hjertholm, 1968). Oral language is used by children during private speech as a tool for self-regulation. Bodrova and Leong (2007) explain, "Speech directed outward enables us to communicate with other people, while speech directed inward allows us to communicate to ourselves, to regulate our own behavior and thinking" (p. 65). Children use private speech to think out loud and organize their thoughts while they work through problems independently. Private speech for children increases as tasks become more challenging and stressful (Diamond et al., 2007). Over time self-directing private speech dissipates and becomes verbal thought (Kohlberg, Yaeger, and Hjertholm, 1968). Vygotsky believed that for young children, "the speech used for communication and for private speech is not easily distinguished and occurs simultaneously in the same context. Public and private speech gradually separate into two distinct strands in older children and adults" (Bodrova & Leong, 2007, p. 69).

When children are between the ages of three to six, the rapid development of oral language plays a pivotal role in social development (Dickinson, McCabe & Essex, 2013). Shanker (2016) points out that our brain needs other brains, not only when we are babies but throughout our entire lives, even though this can cause additional stress. Porges (2011) uses the term neuroception, "to describe how neural circuits distinguish whether situations or people are safe, dangerous, or life-threatening….neuroception takes place in the primitive parts of the brain, without our conscious awareness" (p. 11). It is a neural process where our body reacts to features in the environment and will shift arousal states to deal with any potential risk (Porges, 2015a). Neuroception explains why social interaction can be both a stressor in itself and also the first line of defense to deal with stress. Self-regulation is concerned with neuroception and the social engagement system. When a neuroception of safety is triggered, our body calms down so we can attend or socially engage with others. When a neuroception of danger is triggered our body

prepares to move. Porges (2011) explains that we might not be aware of danger on a cognitive level. However, our body has already started neural processes to signal a fight, flight, or freeze response. Even if cognitively we know there is no need to be frightened our bodies betray us with an increase in heart rate, trembling, perspiring, or becoming dizzy. When our neuroception detects safety, it promotes physiological states that support positive social engagement behaviours. In order, for the nervous system to switch effectively from defensive to social engagement strategies, it must assess the risk and if the environment seems safe it must inhibit the defensive reactions to fight, flee or freeze.

Porges (2015a) sees play as an opportunity to exercise our nervous system in order to foster social behaviour and learning. Play for him is a neural exercise where neuroceptions of danger and safety alternate. The social engagement system uses a prosodic voice, head gestures, and facial features to help us calm down. Play can transition into aggressive behaviour if the social engagement systems do not down regulate a neuroception of danger. Play as a neural exercise improves the efficiency of the neural circuit to down regulate a fight or flight behaviour. It enables children to transition efficiently from active to calm states. The ability to move rapidly to a calm state optimizes spontaneous and reciprocal social behaviours as well as facilitates efficient learning. Play can strengthen our neural circuits that can down regulate our defense systems. During play, children can down regulate because of the social engagement system, although the effectiveness of this system requires practice. As the neural regulation of our social engagement system grows stronger, we become more resilient and can deal with challenges (Porges, 2015a).

Vygotsky (1978) found that play is a major mechanism for developing executive functions and using oral language as a self-regulatory tool. During dramatic play, children engage in learning that is within their zone of proximal development and on the edge of their

capabilities (cited in Diamond, Barnett, Thomas, and Munro, 2007). Children can plan their play scenario together ahead of time using conversations and private speech. Teachers are then able to approach play scenarios and prompt a discussion of what the children will do next. Role-playing facilitates the internalization of rules and expectations and imposes constraints on behaviour.

Csikszentmihalyi (1975) claims that there is a common experiential state that he refers to as "flow", which is a sensation that is present when we are totally engrossed in an activity. The most typical kind of flow experience is play. He explains,

> It is the state in which action follows upon action according to an internal logic which seems to need no conscious intervention on our part. We experience it as a unified flowing from one moment to the next, in which we feel in control of our actions, and in which there is little distinction between self and environment; between stimulus and response; or between past, present and future. (p. 43)

Flow is experienced when there is a match to our capabilities; it "seems to occur only when persons face tasks that are within their ability to perform" (p. 45). A person in flow is in control of his actions and their environment: "A sense of control is definitely one of the most important components of the flow experience" (p. 52). When children are in the experiential state of flow, I believe they are optimally self-regulated. "A flow activity allows people to concentrate their actions and ignore distractions. As a result, they feel in potential control of the environment…people performing it can temporarily forget their identity and its problems" (p. 55). Csikszentmihalyi (1975) argues that flow, "appears to need no goals or rewards external to itself" (p. 53). One finds the process intrinsically rewarding.

Curiosity, exuberance and receptivity are elements that connect play and self-regulation in the social domain (Shanker, 2013a). When play emerges from children's interests, it helps them to stay focused, consider other perspectives, and figure out their own thinking (Shanker,

2010). When play is self-initiated and authentic, children are highly motivated to generate strategies to sustain the play. In other words, children have an incentive to self-regulate to sustain the play. Being sensitive towards others encourages them to continue playing. Understanding social cues is important for developing the ability to play cooperatively with others. It demands perspective taking, as a child has to figure out what others think. It encourages communication about what one wants and what others want (Greenspan & Shanker, 2004). If teachers or other adults intervene, this intervention can take away from the benefit play has for helping children develop problem solving and logical thinking strategies as well as the sense of self-worth and confidence that comes from independent self-regulation (Shanker, 2013a).

Self-Regulation in the Kindergarten Classroom

Research on self-regulation in Kindergarten has emphasized the role of teachers and classroom environments in scaffolding children's learning. Bruner (1983) defines scaffolding as, "a process of 'setting up' the situation to make the child's entry easy and successful and then gradually pulling back and handing the role to the child as he becomes skilled enough to manage it" (p. 60). For example, the influential research-based curriculum, "Tools of the Mind", is grounded in Vygotskian theory of development where teachers scaffold children's learning in order to improve executive functions with the aim of improving academic learning (Blair, Protzko, & Ursache, 2011). Drawing on Vygotsky (1978), both Diamond et al. (2007) and Bodrova and Leong (2007; 2008) argue that the executive functions associated with self-regulation develop as children engage in interpersonal actions using external aids to facilitate attention and memory, self-regulatory private speech, and dramatic play. External aids can help skills become automatic. For example, symbols of ears and lips help children remember when it is their turn to listen or their turn to read. Teachers can model the use of private speech and encourage children's use of private speech. In order for children to develop self-regulation skills

they need to have many opportunities to experience and practice them with adults and more capable peers.

Diamond et al. (2007) in their landmark study on self-regulation, divided Pre-Kindergarten children from public schools between two programs, Tools of the Mind and "Literacy in a Balanced Way". Tools of the Mind includes techniques for scaffolding, training, and challenging executive functions by interweaving them in all class activities. Literacy in a Balanced Way is a literacy program that includes a combination of reading, writing and listening activities in the context of thematic units. Children in both groups were given a series of tests at five years of age. Diamond et al. (2007) found that markedly better executive functions performance was found in at risk children after one or two years of the Tools of the Mind classroom, showing that executive functions can be improved in young children. The children were attentive and focused on their work in these classrooms and the behaviour problems observed in the Literacy in a Balanced Way classrooms were absent. Diamond et al. (2007) conclude that play challenges children to exercise their executive functions and should be a component of all early childhood programs.

Bodrova and Leong (2008) identify four strategies that Kindergarten teachers can use to promote the development of children's self-regulation skills. First, they believe that teachers should teach self-regulation to all children, not just the ones that appear to have problems. Second, teachers should create opportunities for children to follow, make and apply rules in new situations to move from co-regulation to self-regulation. Third, teachers should provide children with visual and tangible reminders when learning to self-regulate to support their memory and attention. The fourth strategy that teachers should use is to let children be involved in play and games where they set, negotiate and follow the rules. Self-regulation is the underlying skill that makes learning possible so instruction in self-regulation needs the same, if not more, attention

than academic subjects. Significantly, Forgas, Baumeister, and Tice (2009) report that there is little evidence that children suffer from being overly capable of self-regulating their attention and behaviour.

Rimm-Kaufman and Wanless (2012) report that Kindergarten classrooms vary widely in how they support and challenge children's self-regulatory abilities. They believe that self-regulatory skills create opportunities for positive engagement, although stimulating environments need to exist so that these opportunities translate into academic and social learning. Young children are exposed to culturally specific values and expectations, social interactions, and a variety of experiences that contribute to the emergence of their self-regulatory and academic skills. Rimm-Kaufman and Wanless (2012), explain that when Kindergarten children enter school they display self-regulatory behaviours in reaction to the new environment that reflect their disposition and early learning experiences. This new context provides children with the opportunity to practice their self-regulatory abilities and in turn the context socializes children in ways that enhance or diminish their self-regulatory abilities. Effective teachers support the development of self-regulation by organizing their classrooms in a way that proactively guides children's behaviour, using instructional strategies that are interesting and engaging as well as cultivating emotionally supportive relationships. Teachers use different strategies to down regulate and direct the attention of children who are misbehaving and being loud, and up-regulate and connect to children who are withdrawn and not getting involved. Teacher language is also a strategy that supports children's self-regulatory skills and engagement. When teachers verbally model problem-solving situations, children use these verbal dialogues in their own private speech when attempting to regulate themselves.

Florez (2011) explains that teachers use a variety of strategies to scaffold children's development of self-regulation such as using hints or cues and modelling optimal self-regulation.

For example, they use simple directions, gestures, and touch to provide children with cues about how to regulate their emotions, attention and behaviour. Teachers demonstrate appropriate behaviour by modeling important language and social skills. Teachers monitor and gradually withdraw their support, intervening only when necessary, as children learn to regulate their thoughts, feelings, and behaviour.

Mastrangelo (2012) also believes that teachers play a pivotal role in the acquisition of self-regulated learning strategies that help students become competent and resilient learners, despite the challenges they face and the stressors they encounter. She emphasizes that, "students may be able to acquire the strategies, but it is the teacher who plays a key role in facilitating and scaffolding experiences that allow for every child to reach an optimal level of self-regulation" (p. 9). Shanker (2013a) points out that teachers themselves need to reach an optimal state of self-regulation in order to model effectively what "calmly focused and alert" looks like for their students. Once individual teachers can identify what they themselves require to achieve equilibrium, those teachers can successfully co-regulate with others and teach children how to self-regulate.

Shanker's (2016) *Self-Reg* five-step method provides guidance for teachers to enhance the development of children's self-regulation skills. It includes: recognizing when a child is overstressed; identifying the child's stressors; reducing the child's stressors; helping the child be aware of when she needs to reduce the stressors; and helping the child develop self-regulation strategies. Shanker (2016) explains that teachers need to learn how to read a child's signs and understand the meaning of the child's behaviour. He claims that once teachers recognize that a child's difficult behaviors are caused by too much stress, she starts to see the child in a new light and reframes her perception of the child's behaviours. When teachers recognize the difference between stress behaviour and misbehavior, they are more likely to pause and think about what is

causing the stress rather than reacting automatically and adding to the child's stress. Instead of adding to the child's stress, the teacher can help the children to calm and recover. Shanker (2016) explains that misbehavior assumes that a child has willingly chosen to act in a particular way, that she could have chosen to act a different way, and that she was aware that she should have acted differently. Stress behaviour, on the other hand, is physiologically based and the child has neither deliberately chosen her actions nor is she aware of what she is doing. She is behaving poorly because her nervous system has sensed danger and is in fight, flight or freeze mode (Porges, 2011). When a teacher is dismissive of a child's fears, it increases the child's anxiety as the child now feels ashamed because of the teacher's response (Shanker, 2013a). When teachers understand the difference between misbehavior and stress behaviour in children, it affects how they understand their own self-regulation.

Shanker (2013a) identifies many strategies that teachers can use to adapt their classroom environments to enhance children's self-regulation. These strategies include: reducing visual and auditory stimuli to avoid sensory overload; providing fidget toys and disc chairs for children with attention or sensory-integration issues; introducing yoga, tai chi, breathing exercises or meditation; having a predictable schedule so children can anticipate transitions; planning specific activities and transitions that help children self-regulate; playing games that enhance children's ability to pay attention; providing children with collaborative learning experiences; and helping children identify their own arousal state. Children are more likely to be optimally self-regulated when teachers give children choice and ownership over their own learning so they have a sense of control and are fully engaged with their learning (Shanker, 2013a). When children's sensitivities are not accommodated, they must work extra hard just to pay attention and they are likely to fall behind academically (Shanker, 2012d). In terms of Shanker's (2016) *Self-Reg* five-step method, once a teacher has identified and reduced a child's stressors, she needs to help the

child learn how to recognize when he is overstressed and how to reduce those stressors. Teachers should empower their students to be self-aware, manage their own stress levels, and use self-regulation strategies so they can meet everyday challenges that cause stress.

Self-Regulation and *The Kindergarten Program*

Self-regulation is an important theme in education policy in Ontario, especially in *The Kindergarten Program* framework (Ontario Ministry of Education, 2016). In this framework, belonging and contributing, on the one hand, and self-regulation and well-being, on the other hand, are two foundations or broad areas of learning that occur during children's play and inquiry (Ontario Ministry of Education, 2016). Belonging and contributing focuses on relationships that are key to children's personal, social and emotional development. Strong connections are important for healthy development (see Clinton, 2013). Authentic relationships help children develop a positive sense of self as well as a sense of belonging and contributing. Teaching teams nurture emotional development by creating warm and responsive environments for children. Children develop the ability to get along with their peers and be empathetic. They learn to understand their own emotions and express them in respectful ways, manage their impulses, and adapt their responses. Teaching teams support social development by modeling how to manage conflict, and affirming positive choices. They need to be aware of individual differences including incoming sensory stimulation and cultural differences in expression of emotion. As children develop a sense of belonging and contributing they begin to learn about their role as a responsible citizen inside and outside the classroom community as well as the world around them (Ontario Ministry of Education, 2016).

Self-regulation and well-being focuses on children's ability to manage their emotions, attention and behaviour (Ontario Ministry of Education, 2016). This allows children to develop habits of mind like persistence and curiosity and emotional well-being that are essential for

learning. When interacting with others, children develop a sense of awareness and a stronger sense of self, monitor and adapt their own behaviour and emotions, and become aware of and learn to accommodate others' feelings and thinking. Teaching teams need to support children as they learn to self-regulate and step back to make room for children to consolidate their learning. The key to supporting children's emerging self-regulation skills is to provide children with choice in the learning environment (Ontario Ministry of Education, 2016). Children learn to choose space and materials that best fit their needs in terms of providing stimulation or a calming effect. Teaching teams should create learning environments that are healthy, caring, safe, inclusive, and accepting, and in this way, support the development of self-regulation as well as children's mental health, resilience and overall well-being (Ontario Ministry of Education, 2016).

Self-Regulation Research in Ontario's Kindergartens

In recent years, self-regulation in Full-Day Kindergartens, which were launched in Ontario beginning in 2010, has also been the focus of research. For example, in the report, *A Meta-Perspective on the Evaluation of Full-Day Kindergarten during the First Two Years of Implementation* (Ontario Ministry of Education, 2013*)*, evidence from case study informants suggests that play-based Full-Day Kindergarten programs are more responsive to the children's needs and support the development of self-regulation than half-day Kindergartens. Longitudinal findings link Full-Day Kindergarten outcomes empirically to optimal self-regulation. The findings indicate favourable outcomes for Full-Day Kindergarten students across the domains associated with Shanker's (2013a) five domain model for self-regulation described above. This suggests that Full-Day Kindergarten classroom environments are having a positive impact on the domains associated with self-regulation (Ontario Ministry of Education, 2013). Vanderlee, a principal evaluator of the research team, stated that Full-Day Kindergarten children, "typically

adapt quicker to routines, engage in tasks for longer periods of time, and have much more exposure to experiences that support self-regulation" (Vanderlee, 2013, p. 1). These children were found to be better prepared for grade one and to have stronger social skills.

Pelletier (2012a; 2012b; 2014a) carried out a three-year longitudinal study of Full-Day Kindergarten in Ontario. In her final report, Pelletier (2014a) presents key findings on self-regulation, drawing heavily on Shanker's work. The research measures used in her study were a self-regulation task in combination with direct observation by the research team. All Full-Day Kindergarten children and the half-day Kindergarten control group participated in a self-regulation and inhibitory control activity called The Head-Toes-Shoulders-Knees Task. The researchers found that the Full-Day Kindergarten children scored higher than the half-day Kindergarten control group on the task. This suggests that children in Full-Day Kindergarten were much more able to inhibit responses, focus their attention, and regulate their behaviour. Direct observations were carried out with Full-Day Kindergarten children using the Child Observation Framework (COF), which is a research instrument that examines classroom contexts and self-regulation. Observations such a teacher asking a child to pay attention were coded as positive or negative instances of self-regulation. Results indicated that Full-Day Kindergarten children were more engaged and responded successfully to opportunities for self-regulation significantly more often during free play and small group time. Children demonstrated lower self-regulation in whole group and transition contexts.

Pelletier (2014a) found that play and small group time were the classroom contexts that were most likely to promote self-regulation and engagement (see also Hawes, Gibson, Mir & Pelletier, 2012; Timmons, Pelletier & Corter, 2016). Pelletier (2014b) added further that class observations showed that the children were more self-regulated and engaged during play as compared to sitting in a whole group, suggesting that children need play opportunities where

they feel engaged and can regulate their behaviour. Hawes et al. (2012) claim that the research findings indicate that play drives children's learning and development in Full-Day Kindergarten. When children are playing, they are highly engaged and demonstrate self-regulation. Timmons, Pelletier, and Corter (2016) note, however, that there is a need for additional empirical research on self-regulation in Ontario's Full-Day Kindergartens. My empirical research meets this need by exploring the connection between self-regulation and emergent curriculum inquiries.

Chapter Three: Emergent Curriculum

The term "emergent curriculum", claims Copple (1994), was coined by Jones in 1970 to describe a particular type of curriculum planning or teaching practice that many educators are pursuing in their classrooms, including the teaching teams that are the focus of my doctoral research. Copple (1994) explains that, "*Emergent* emphasizes that planning needs to emerge from the daily life of the children and adults in the program, particularly from the children's own interests…Yet, as the word *curriculum* conveys, there is also teacher planning" (p. viii). Wien (2008) observes that when, "the course of this curriculum is not known at the outset. It is emergent" (p. 5). Its path is determined by the connections the children and teachers make as they bring their ideas and theories to the topic under investigation and co-construct the course to follow. Emergent curriculum focuses on the process of learning, where teachers can build on children's interests as they construct genuine knowledge and practice empathy and respect for their peers through inquiries (Jones, 2012).

The focus for my research is on what I call emergent curriculum inquiries, which are sustained investigations built around the children's interests. I distinguish four core components of emergent curriculum: inquiry design, design of the environment, documentation, and conversation. These four components reflect an adaptation of the distinction made by Forman and Fyfe (1998, 2012) and Fraser (2012) in their discussion of design, documentation, and discourse. It is important to note that other researchers have emphasized different components of emergent curriculum (Wien, 2008). My four core components are interwoven throughout the process as an inquiry unfolds. Each component affects the others: documentation informs conversation, conversation informs documentation, and design provides the structure for the inquiry to grow (Fraser, 2012). Forman and Fyfe (2012) add further that design represents a prediction or a plan, whereas documentation records the performance during a learning

experience. In other words, design instructs and documentation explains. Each component is reciprocal where design can be used to improve documentation, documentation can be revisited to improve conversation, and conversation can be documented to improve the next design phase. Design and documentation also focus, maintain, and improve conversation during emergent curriculum inquiries. The presentation of the findings from my doctoral research in Chapters Six to Nine is organized around these four core components of emergent curriculum inquiries.

In this chapter, I provide a review of selected literature on emergent curriculum as it pertains to my research, emphasizing specific points directly relevant to the discussion in later chapters. I have structured this chapter to correspond to the presentation of the research findings, drawing on the four core components of emergent curriculum. The first section introduces some key assumptions about emergent curriculum as a teaching practice. The second and third sections explain the design components of emergent curriculum, which include both inquiry design and the design of the environment. The fourth section explores the documentation component of emergent curriculum. The final section focuses on the conversation component of emergent curriculum.

Some Underlying Assumptions about Emergent Curriculum

The Reggio Emilia approach to education has had a profound influence on the practice of emergent curriculum in North America as well as my own understanding of it. Emergent curriculum begins, explains Fraser (2006), when teachers observe, listen and record the children's ideas as they engage in classroom activities. They reflect on why the children are interested in a particular topic and discover what they already know about that topic. Forman and Fyfe (2012) elaborate by saying,

> Teachers seek to uncover the children's beliefs, assumptions, or theories about the way
>
> the physical or social world works. Their study goes beyond simply identifying the

children's interest. Their analysis reveals the reasons behind the children's interest—not

strictly what is familiar but what paradox or curiosity drives their interest…Children are

encouraged to talk about what they know before they begin their projects. (p. 248)

After the teachers decide that the topic will sustain the children's interest, they brainstorm and

record different possibilities about how the inquiry might evolve, the choices the children might

make, and where these will lead. The curriculum is co-constructed with the children as the

inquiry unfolds and new ideas emerge, which means the direction of the inquiry can change at

any time, keeping it fresh and exciting for the children and teachers (Fraser, 2012). Forman and

Fyfe (2012) describe this type of curriculum as, 'child-originated and teacher-framed' (p. 248).

Emergent curriculum is a creative collaboration between children and teachers (Wien,

2006). Jones (2012) explains that curriculum can emerge from both the children's and teachers'

interests, encounters with materials, or unexpected events. It is co-constructed by the children,

the teachers, and the environment itself. In order to develop this curriculum in depth, teachers

must listen to children's questions and come up with ways to extend them, document the

experience, and reciprocate with more questions to further the children's interests. Teachers who

practice emergent curriculum, observes Wien (2006), build many layers into their program to

expand the children's thinking. These layers include: focused conversations to find out what

children know and think; rich resources that enable children to use different modes of

expression; activities that are thoughtfully prepared; expansive timeframes; collaborative

sharing; and revisiting and studying documentation. In essence, emergent curriculum is about

making connections and building relationships through a variety of activities and experiences

(Wien, 2008).

Stacey (2009) provides a useful list of underlying assumptions for emergent curriculum.

First, it is a child-initiated curriculum, framed by the teacher, that allows for collaborations and

gives everyone a voice. When teachers observe children and notice details about their play, they begin to uncover the children's thinking, intentions and understandings. The children's interests are validated and respected as they co-construct the direction of the curriculum with the teacher. Second, emergent curriculum is responsive to children because it builds on their interests. Over time, teachers become adept at distinguishing which interests can turn into long term investigations. Third, the teacher is a facilitator who takes her observations and provides children with opportunities to dig deeper and construct further knowledge. The teacher scaffolds the children's learning by bringing her knowledge and expertise to the situation as she thinks about how to further their interest, knowledge and engagement in the topic. Fourth, it is flexible, as curriculum planning is constantly developing and plans made by teachers may have to be let go in order to address what children are really interested in. Finally, emergent curriculum enables children's and teacher's thinking to be made visible through documentation. When children and teachers revisit documentation, it allows them to reflect upon the work, make sense of it, and plan future directions. It also helps teachers find answers to their own questions about what children are thinking and doing and how they learn.

Inquiry Design

Inquiry design includes building the curriculum, engaging in reciprocal actions, taking ownership over the direction of the inquiry, and encouraging collaboration and inclusivity. The inquiry design phase begins when the teachers decide on a topic that will sustain the children's interests (see Fraser, 2012). After the teachers have identified possible directions the inquiry might follow, they also list ideas for how to provoke the children to think more deeply about the topic being investigated. Jacobs (2008) explains that, "A provocation can be an idea, an event, or an object that captures the children's imagination and desire to learn more" (p. 82). When teachers provide provocations, children engage in new ways of learning and build on their

thinking. Fraser (2012) emphasizes that children are intimately involved in the design phase of the inquiry. Design "refers to any activity in which children make records of their plans or intended solutions" (Forman & Fyfe, 1998, p. 241). They are encouraged to discuss and represent their ideas throughout the inquiry so that teachers can reflect on their understanding of the topic. Children share these representations with others and, as the inquiry unfolds, their representations become more detailed and elaborate and are included in the documentation (Fraser, 2012).

Stacey (2009) claims that emergent curriculum, "places extremely high value on play as a generator for curriculum" (p. 49). The Ontario Ministry of Education (2016) adds that children's choices in play are the best starting points for inquiries. Inquiry is a, "'pervasive approach' or 'stance', a habit of mind that permeates all thinking and learning" (p. 18). Having an "inquiry stance" is, in my view, an essential feature of emergent curriculum inquiries. Children are naturally curious as they move through the world in an inquiry stance, exploring, manipulating, building, creating, wondering and asking questions. Play in particular is an opportunity for children to develop their ideas and theories.

The teaching team also adopts an inquiry stance, as they express their own thinking and wondering about the children's learning. Fraser (2012) explains that during emergent curriculum teachers use an inquiry stance when they observe and reflect on children's interests, listen to children's theories and ideas, watch how the children are engaging with the classroom materials, interact and think about what concepts the children are exploring, document the children's learning, and respond to the children in thoughtful ways through reciprocal actions. Reciprocal actions occur when teachers ask children questions to provoke further thought, provide provocations that scaffold the children's learning, adapt the classroom environment to

accommodate these interests, and take the children on outings to enhance their understanding (Stacey, 2009).

Jones and Nimmo (1994) emphasize that although children's ideas are an important source of the curriculum, teachers need to have a vision for how the inquiry will unfold. It is not possible for teachers to pursue all of the children's interests initiated during play. Some ideas are fleeting and, although exciting at the time, not sustainable. Jones and Nimmo (1994) explain that, "An emergent curriculum is a continuous revision process, an honest response to what is actually happening. Good teachers plan and let go. If you're paying attention to children, an accurate lesson plan can be written only after the fact" (p. 12). Teachers need to determine the potential of any interest for in-depth learning and the possibility of pursuing it through inquiry long-term (Fraser, 2012; Stacey, 2009). Jones and Nimmo (1994) add that, "Emergent curriculum [inquiry]…requires of its practitioners *trust in the power of play*—trust in spontaneous choice making among many possibilities" (p. 1).

Wien and Stacey (2014) observe that an important aspect of emergent curriculum is that it allows for expansive time frames with few transitions. During emergent curriculum inquiries, when the clock does not dictate when activities change, it sends a message to children that their activity is important and allows them to sustain attention. When we slow down time, explain Wien and Stacey (2014), we become more alert to the children's activity and thinking. It provides teachers with time to watch carefully and support children's play. Wien (2008) emphasizes that, "Unhurried time is ecologically sound in that it respects children's own pace in activity, giving them sufficient time and space to experience satisfaction and permit an organic close to activities" (p. 147). It also gives children an opportunity to repeat activities in order to think through their ideas and theories as inquiries require sustained attention, persistence, endurance, hope and positive energy. Expansive time frames enable a child to take a break when

tired before taking up the task again. Such teachers refrain from changing topics, abruptly transitioning to other learning experiences, or creating competing demands for the children's interest.

Design of the Environment

The design of the environment component of emergent curriculum includes organizing the classroom and its materials, adapting and extending beyond the classroom, developing daily routines, using expansive time frames, and building authentic relationships. Fraser (2012) notes that provocations might be "plans for arranging equipment and materials in the classroom to encourage children to see relationships and develop deeper understanding of a subject" (p. 185). Children are intimately involved in the design of the environment as they often work collaboratively with the teaching team to create the physical space. They become more engaged in their learning when they help to plan and design the classroom environment. When children help to organize the materials, and find places to store them for easy access they can make independent choices as they play and interact in the classroom environment (Ontario Ministry of Education, 2016).

Classroom environments are an essential part of the learning process and, as Taguchi (2010) explains, provide for an "intra-active ecological encounter". Taguchi (2010) emphasizes "the performative agency of the materials in the intra-actions of the learning event" (p. 65). Her point is that the learning process includes an encounter with "things, matter, artefacts, materials, furnished environments and architecture" that have agency, which shape and even determine some actions and responses (p. 65). The classroom environment has performative agency that is crucial to our meaning making. Jones and Nimmo (1994) explain "Curriculum is what happens in an educational environment—not what is rationally planned to happen, but what actually takes place" (p. 12). Teachers create aesthetically pleasing classroom environments with rich,

accessible, open-ended materials and tools. This kind of environment calls children to action, where teachers observe their interests and the curriculum can begin to grow. Stacey (2009) reminds us that teachers need to think about how their physical environment supports the children's interest in a particular investigation. When teachers provide materials in response to children's ideas, the children might use them in ways that were not envisioned, which provides direction for teachers to think about how to reciprocate the children's interests in the future. I provide a more detailed description of the four Kindergarten classroom environments that were the sites for my research in Chapter Five.

Callaghan (2013) offers us an expanded notion of the concept of environment, which is particularly relevant to my research. She explains that,

> In educational discourse, the word "environment" usually refers to the physical environment, inside and outside…we can expand this perception to include the context in general, including the relationships among the people and between them and the materials, the rules, the schedule. These contexts should be co-constructed by the adults and children. (p. 11)

The Ontario Ministry of Education (2016) agrees that the learning environment, "comprises not only the physical space and materials but also the social environment, the way in which time, space, and materials are used, and the ways in which elements such as sound and lighting influences the senses" (p. 11). My discussion of the design of the environment in Chapter Seven reflects this expanded definition of environment.

In Reggio Emilia, the environment is described as a "third teacher". It is part of the teacher's role to create an environment that supports the children's learning (Edwards, 2012). Halls and Wien (2013) explain that when we speak of the environment as a third teacher it means, "the context has been so carefully prepared, organized, and structured that it scaffolds

children's engagement, ongoing interest, and multiple interactions. It builds complexity of thinking by its very complex structure so that it is possible for children to make multiple connections in multiple directions" (p. 5). Malaguzzi provides an explanation for why the environment is so significant:

> We value space because of its power to organize and promote pleasant relationships among people of different ages, create a handsome environment, provide changes, promote choices and activity, and its potential for sparking all kinds of social, affective, and cognitive learning. All of this contributes to a sense of well-being and security in children. We also think as it has been said that the space has to be a sort of aquarium that mirrors the ideas, values, attitudes, and cultures of the people who live within it.
> (Gandini, 2012b, p. 339)

Reggio-inspired classroom environments are, for these reasons, not one-size-fits-all spaces but rather ones that children and teachers can make their own (Tarr, 2014).

When designing a classroom space, Curtis and Carter (2003) argue that teachers need to think carefully about what they believe about children, adults and learning. Teachers should, in their view, develop spaces and provide materials that communicate respect for children and the teaching and learning process. The environment needs to be set up by the teacher in a way that allows for children's decision-making and ownership of their activities, and an opportunity to assume responsibility for their actions (Edwards, 2012). Fraser (2012) explains that it is the teacher's role to establish a positive social environment in the classroom. A sense of belonging is at the core of every Kindergarten classroom and without it young children will simply not thrive. Social relationships that are developed in the classroom, "are the fabric into which everything else is woven" (Fraser, 2012, p. 12). Children have a strong desire to have relationships, note Curtis and Carter (2003), and be a member of a group. When planning a space, teachers should

consider creating connections to others and a sense of community. A cozy and comfortable environment brings out a strong sense of connection and belonging among the teachers and children. Wien, Comeau, Keating, and Bigelow (2014) explain that when an environment is beautiful, caring, and sensitively organized, it helps children feel like they belong, are safe and have the capacity to be responsible and productive. If an area is set up well, children are respectful of themselves, others and the materials. The children will create and act purposefully with enthusiasm and this allows their ideas to flourish.

Teachers also need to keep the space flexible and provide open-ended materials (Curtis & Carter, 2003; Gandini, 2012b). The space needs to be flexible so that things can be moved around and rearranged for specific purposes. There should be many ways for the children and the adults to use the space and materials. Wien (2008) explains that space and materials can be organized and designed in ways that invite learning without teacher intervention, which promotes the children's autonomy. The materials should allow children to pursue their interests, represent what is on their minds, build relationships with others, and develop a love of learning (Curtis and Carter, 2003). When teachers provide open-ended materials that have multiple purposes, this sparks the children's imagination and allows them to continually rearrange and combine materials as they explore the environment. Curtis and Carter (2003) note that children are fascinated with the physical world and how it works so it is important to add engaging attractions and discoveries to the environment. Materials that provoke a sense of mystery and wonder ignite children's curiosity about how things work and what can be learned from exploring them.

Natural materials in the environment are important because they engage children's senses. Zini (2012) notes, "We develop our senses and cognitive abilities through interaction with our environment…Children are a laboratory for the senses with each sense activating other

senses" (quoted in Gandini, 2012b, p. 319). Young children learn about their world through sensorial explorations. Meaningful sensorial experiences can help children make connections that lead to cognitive discoveries. Materials should create a multisensory setting with a variety of textures, chromatic colours, and lights. It is important, however, to avoid overstimulation so it is best to provide a moderate tone with sensorial possibilities. Sensory-related features from engaging textures to aromas and aspects of the natural world like tree stumps, pinecones and rocks can also fill a classroom with a sense of wonder (Curtis & Carter, 2003). Opportunities to provoke wonder, curiosity and intellectual engagement make the environment rich.

Authentic relationships are an important part of the design of the environment. Clinton (2013) argues that "we all learn by observing others and we seek connection and relationship" (p. 2). Since children co-construct knowledge during emergent curriculum inquiries, the quality of their relationships with others is critical to the learning process. Relationships are key to the concept of collaboration in Reggio Emilia. Malaguzzi had a vision of an "education based on relationships" (Edwards, 2002, p. 6). He believed, "there is no possibility of existing without relationship. Relationship is a necessity of life" (Malaguzzi, quoted in Fraser, 2006, p. 72). Relationships for Malaguzzi reinforce each child's sense of identity through the recognition of others, so that a child would feel enough of a sense of belonging and self-confidence to want to participate in school activities (cited in Gandini, 2012a). Wien, Jacobs, and Brown (2015) argue that learning always exists within relationality. A relation is a connection that an active agent deliberately chooses to pursue; it is an act of intention. Relationship refers to the reciprocal aspect of relations where there is an on-going interconnection between two entities. Each entity can respond, adapt, or be changed by the interaction. Reciprocity or 'mutual exchange' is a sharing of power that flows in two directions (Wien, 2008). Wien, Jacobs, and Brown (2015) explain that relationality is an umbrella term for all possible relations and it encompasses both

social relationships as well as the broader relations an individual constructs in terms of materials and places. All of these relations can be found in the design of the environment component of emergent curriculum.

Documentation

The third component of emergent curriculum for discussion is documentation. The documentation phase begins once the teachers have decided on the different forms the documentation will take such as written observations, transcription of audio-tapes, and photographs (see Fraser 2012). Documentation makes visible the process the children and teachers followed as they co-constructed the curriculum throughout the inquiry. It is a record of the learning experiences that take place in the classroom and shows the connection between these events. Fraser (2012) states,

> Documentation is like a system of gears that sets the curriculum in motion. Making visible the children's ideas, thinking, and experiences in some form of documentation provides the teachers with a means of revisiting them with children, discussing them with colleagues and parents, and making hypotheses and flexible plans for further action. The teachers and children can discuss the documentation together, reflect on the experiences, and perhaps get an idea of how to proceed further with the topic. (p. 144)

Forman and Fyfe (2012) add that documentation, "records the performance during a learning encounter as well as the documenter's interpretation of that performance…the intent of the documentation is to explain not merely to describe" (p. 250). When teachers document, it nurtures the development of reciprocal relationships and the co-construction of curriculum in the classroom. It also demonstrates that the children's work is valued and their ideas are respected. The documentation becomes 'pedagogical' when it is studied with colleagues, leading to a deeper analysis of the inquiry (Fraser, 2012).

Dahlberg, Moss and Pence (2013) describe pedagogical documentation as "a *process* and an important *content* in that process" (p. 156). Pedagogical documentation as content is material, or the work of the children, that is a record of what they are saying and doing, as well as how the teacher relates to the children and their work. The material can be generated in many ways and take different forms. The material makes the work of the children and teachers visible and is therefore an important part of the process of pedagogical documentation. The process involves using that material to reflect upon the children's work in a rigorous, methodical and democratic way. The teacher reflects on the work, either alone or with colleagues, children, and their parents. Wien, Guyevskey, and Berdoussis (2011) claim that,

> Pedagogical documentation is a research story, built upon a question or inquiry 'owned by' the teachers, children, or others, about the learning of children. It reflects a disposition of not presuming to know, and of asking how the learning occurs, rather than assuming–as in transmission models of learning–that learning occurred because teaching occurred. (p. 2)

For me, pedagogical documentation can be viewed as a research narrative about the children's and teacher's learning, shifts in their thinking, and their search for meaning (see Wien, Jacobs, & Brown, 2015). It is generated and made visible to others on posters or panels, or in diaries, books, binders and portfolios and studied by inviting collaborative discussion and interpretation as well as thinking about possibilities for next steps.

Documentation, explains Rinaldi (2001, 2006), makes the nature of the learning paths and processes, and strategies used by the children visible. It enables analysis, revisiting, and assessment during the experience to take place. Documentation is built on trusting relationships where students feel comfortable sharing their thoughts. As the children reflect on the documentation, they can see the meaning that the teacher has taken from their work, that their

work is valued, and that what they say and do is important (Rinaldi, 2006; Vecchi, 2001). When children revisit documentation, it enables them to think about the nature of their own learning process as they co-construct knowledge. Forman and Fyfe (1998, 2012) believe that when teachers generate documentation and revisit it with the children, it changes the image of the role of the teacher from teaching children to studying and learning with children. During emergent curriculum inquiries, theories need to be shared and listened to by others. Differences need to be expressed and negotiated and nurtured through the comparison of ideas so that theories are modified and enriched. Documentation is one of the fundamental strategies that teachers use to carry out this kind of listening (Rinaldi, 2006).

Wien (2008) observes that pedagogical documentation slows down our thinking processes so we can consider topics with care. It lifts thinking out of our lived experiences at school and makes it visible to others. When documentation is revisited, children see that teachers value their thinking and it leads to new thoughts, connections, and possibilities for future activities. Teachers use documentation as a vehicle for sharing multiple perspectives. Pedagogical documentation offers those who document and those who read the documentation an opportunity for reflection and further learning. Wien, Guyevskey, and Berdoussis (2011) explain that,

> Two important levels of thought are made evident in strong pedagogical documentation. The teacher presents data in ways that show others what children have been thinking, feeling, or valuing. At the same time, the teacher selects material and composes a display that expresses her hypotheses about the children's experiences and ideas. (p. 12)

It is important to remember that when teachers select and compose documentation, it is a subjective judgement, and they take responsibility for their choices by sharing the documentation with others.

When children revisit, reflect and interpret the documentation it supports their memory; they make comparisons among themselves, and discuss differences of opinions (Rinaldi, 2006; Vecchi, 2001). Children learn about themselves by listening to other people's perspectives. Halls and Wien (2013) have noted that documentation holds children's theories in place so that when they revisit them they can consider their logic and discuss it with others. Through these kinds of discussions, we can see how children shift their thinking as they begin to absorb and consider other children's theories as well. Revisiting documentation allows children, according to Halls and Wien (2013), to, "reflect on, clarify, and elaborate both their own and others' thoughts and theories" (p. 9). New levels of understanding emerge, which lead to some children testing out more theories and altering their own as they incorporate other people's ideas.

Stacey (2015) shares how pedagogical documentation has the power to sustain and inspire children and teachers:

Documentation at its best is a process that spirals upward to higher forms of listening, thinking, and learning for all the people involved. It begins with the children, then moves to the teachers as we respond to the children's work with interest, questions and careful observation. It moves back again to the children, as teachers explore with them, looking for meaning and co-constructing knowledge through further conversations or invitations to action. Then the teachers engage in more thinking, as we try to construct visible traces of the work. Then the process moves outward to families or colleagues, as we share the children's and teachers' thinking and actions. (p. 95)

This collaborative process is complex, not simple, as it often continues by moving back to the teachers and children once again. In Chapter Four, I explain how pedagogical documentation is the conceptual framework for my doctoral research.

Conversation

The final component of emergent curriculum is conversation. Conversation involves interactions that go beyond teachers listening to children during discussions to reflecting on and analyzing what is heard and said. Teachers engage in conversations during emergent curriculum inquiries to co-construct theories with children about topics in which they are all interested. Fraser (2012) explains that teachers should, "pay careful attention to the language they hear and speak, to ask questions to uncover the meaning behind the words, and to try to figure out the reasons for the child's comments" (p. 186). Forman and Fyfe (2012) add that during inquiries, there is a "deep desire to understand each other's words" (p. 249). Conversation involves "a more reflective study of what is being said, a struggle to understand, in which speakers constructively confront each other, experience conflict, and seek footing in a constant shift of perspectives" (p. 249). It is important for teachers to take the time to really hear what children are saying and try to see it from their perspective. When children have not developed enough vocabulary to express their ideas clearly, it is important for the teacher to know them well so she can infer what a child is trying to say and help fill in the missing words. Children need many opportunities to engage in authentic conversations that have purpose and are of interest to them. When teachers revisit conversations, they use transcriptions of audio-taped recordings to remind the children of their earlier thoughts and ideas and this helps extend their understanding of the topic and come up with new or related ideas (Fraser, 2012).

Wells (2011) claims that for young children conversations occur in daily interactions between the child and caregiver. During ongoing activity, a child learns oral language by using it

to the best of her ability. Babies are innately predisposed to engage in meaningful interactions as well as discover the organizational patterns of the language they are born into. The ease and speed that babies acquire language depends on the number of interactions they have with the caregiver and how the caregiver responds and extends their conversational episodes. This helps the baby feel confident in her ability to contribute to collaborative meaning making. Babies become more knowledgeable about the topics discussed and the child acquires a larger vocabulary. By two and a half to three years of age, the child's curiosity leads to how and why questions about what is going on around her and, when answered, these questions extend the child's oral language and understanding about the world. The responses of the caregiver reflect the child's interests and explains the significance of what she sees and hears so the child can make sense of it. Caregivers respond in different ways so some children are not as prepared for how they are expected to use language at school. Biemiller (2013) notes that the size of a child's vocabulary by age 4 is determined by the total number of words spoken by parents and the number of different words. Vocabulary size increases with more adult clarification of words. By Kindergarten, states Wells (2011), all children can participate in conversations of shared importance unless they have an impairment.

Vygotsky believed that, "Children become capable of thinking as they talk. The child can think aloud…He argues that in some cases, our external speech helps us form ideas that may exist only vaguely…When children become capable of thinking as they talk, speech actually becomes a tool for understanding, clarifying, and focusing what is in their minds" (Bodova & Leong, 2007, p. 68). Malaguzzi connects talking and relationships with his observation that,

> From birth, children are in continuous relationships. They have this need, this desire, to
>
> master interaction: to be a protagonist one time, to be listener another time…For children,
>
> dialogue opens this game of playing different parts. Children have the great fortune to

know how to pull thoughts and meanings from one another's voices. (Kaufman, 1998, p.

287)

When children engage in conversations, it helps them to understand their own thoughts as well as

the ideas of others.

Dickinson, Darrow, Ngo, and D'Souza (2011) argue that a major force driving cognitive

development in the classroom is the quality of the conversations between children and teachers,

and children being active in their own investigations. Like parents at home, of central importance

are teachers' questions and comments, information they share verbally, and how they respond to

children's ideas and questions. Wien (2008) claims that when teachers model listening with care,

it helps establish collaborative contexts where conversations are focused as the group theorizes

about a particular topic. She elaborates by saying, "Frequently, we do not know what we think

until we create a gap or space in which to examine our thoughts. When we create this gap with

others and try out our thoughts, we can see thought develop" (p. 153). Teachers relinquish

control of the movement of thought and open themselves up to what children have to say as they

support children in focusing their thinking. Pacini-Ketchabaw et al. (2015) note that the teacher's

questions are not,

intended to seek "truth", nor are they attempts to categorize what children know as right

or wrong. Instead, they are grounded in what the children are saying and doing at that

moment; they show a respect for children's fantasies and a curiosity about how children

construct theories. They use these moments to create curriculum. (p. 21)

As children invent their own theories about a topic it motivates them to seek out answers where

they learn to distinguish between their interpretation of reality and reality itself (Wien, 2008).

During conversations, teachers scaffold the children's learning. Recall that Bruner (1983)

defines scaffolding as setting up situations, "to make the child's entry easy and successful and

then gradually pulling back and handing the role to the child as he becomes skilled enough to manage it" (p. 60). Vygotsky (1978) distinguishes between what a child is capable of doing independently and his or her sphere of imitation. By imitation Vygotsky (1998) means what a child "can be taught or what he can do with direction or cooperation or with the help of leading questions" (p. 202). What the child can do independently reveals his or her mature capabilities and functions whereas the sphere of imitation identifies his or her maturing processes. Vygotsky (1998) explains that "the area of immature, but maturing processes, make-up the child's zone of proximal development" (p. 202). The zone of proximal development is, "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers…what a child can do with assistance today she will be able to do by herself tomorrow" (Vygotsky, 1978, pp. 86-87). The foundation of the zone of proximal development is a relationship of learning between and among people (Wien, Jacobs, & Brown, 2015).

Teachers provide scaffolding during conversations within Vygotsky's zone of proximal development so that the child can perform at a higher level. When just the right amount of assistance is given, by guiding, coaching or prompting, a child can achieve more than he or she can do on their own. Bodrova and Leong (2007) explain, "With scaffolding, the task itself is not changed, but what the learner initially does is made easier with assistance. Gradually, the level of assistance decreases as the learner takes more responsibility for performance of the task" (p. 47). Wood, Bruner, and Ross (1976) found that the scaffolding process is most effective when: the teacher is first able to get the children interested in the task; the task is simplified and has manageable limits; the teacher keeps the children motivated, willing to take risks, and focused on the task; the teacher accentuates relevant features of the task; the teacher's assistance reduces the

children's potential for frustration; and, the teacher demonstrates solutions to tasks that children can already do fairly well.

The concept of exploratory talk is useful to understand conversation as a component of emergent curriculum. Bruner (1983) is helpful here in distinguishing between communicating in general and talking, which for him is a form of successful communication. Talking requires a child to "master the conventions for making his intentions clear [to others] by language" (p. 39). Forman and Fyfe (1998) argue that, "to truly understand the children's talking, we should treat it as…an intelligent pattern of thoughts that is worthy of study" (pp. 246-247). This causes teachers to, "look for theories, assumptions, false premises, misapplications, clever analogies, ambiguities, and differences in communicative intent, all of which are pieces to be negotiated into shared meaning by the group" (p. 247). Talk involves at least two people negotiating with a shared understanding of what they are talking about. It is also "transactional", meaning that they are exchanging their intentions (Bruner, 1983, p. 121).

Exploratory talk, explains Barnes (2008), "is hesitant and incomplete because it enables the speaker to try out ideas, to hear how they sound, to see what others make of them, to arrange information and ideas into different patterns…in exploratory talk the speaker is more concerned with sorting out his or her own thoughts" (p. 5). Mercer and Dawes (2008) add that exploratory talk requires the speaker to "think aloud" and take a risk so that others can comment on and challenge their ideas. The speaker must be brave so there has to be a sense of trust within the group. Listeners benefit from hearing a speaker's tentative thoughts and their feedback might require the speaker to elaborate their point of view, reword it for clarity, or change their mind. During genuine collaborative interactions, children can problem-solve as they share their ideas. Pierce and Gilles (2008) believe that exploratory talk is key to the constructive meaning making process where students build on to each other's ideas and create meaning together.

Critical exploration, like exploratory talk, places value on providing contexts where children are called upon to think and to share what they think (Duckworth, 2006). Teachers can provide children with opportunities to share wonderful ideas and let them feel good about it. The child explores the subject matter and the teacher explores the child's thinking. Critical exploration involves developing an inquiry where the questions are open-ended and appealing so the children will share their ideas and continue to think about them. Teachers need to listen attentively to what children say, without influencing what they say. The teacher responds with a question or resources to help the children take their own thoughts further (Duckworth, 2006).

Knowledge-building circles, like exploratory talk, are part of the inquiry process where children come together to ask questions, share their theories, and revisit and negotiate their ideas (Chiarotto, 2011). During these productive dialogues children gain a deeper understanding through exposure to different perspectives and the shared ideas of the class. Children's new or unresolved questions, theories and ideas serve as new entry points that continue the investigation. Teachers provide a variety of opportunities for children to reflect on their learning experiences and discuss possible solutions to their questions about an inquiry. As children engage in conversations, they sit in a circle to promote respect, attentive listening, and communication, and equality as everyone is a co-learner. This approach is an emergent process that can nurture the children's curiosity about the world that they live in (Chiarotto, 2011). Knowledge-building circles are part of a pedagogical framework that is often used for emergent curriculum inquiries that focus on the natural environment as can be seen in my discussion of Sharon and Mikayla's classroom in Chapter Nine.

Gallas (1995) has stressed that during conversations young children are able to talk constructively about matters that are important to them. She found that this was especially true when her children engaged in "science talks". One of the most important functions of an inquiry

is to generate opportunities for purposeful dialogue. Children co-construct ideas through dialogue and they have a sense of control over the process of their learning. During science talks, observes Gallas (1995), "the reward is the ability to watch and document the natural unfolding of dialogue among children, to see a class of children beginning to think in concert, and to witness the power and deep intelligence they have as individuals and as a group" (pp. 18-19). When teachers listen to their students' conversations without interrupting, they see that the process of collaboration has potential to teach them about what children are thinking. Jacobs (2008) adds that during this type of conversation, "Children become aware of their own ability to think, aware that they have their own opinions and theories, and understand that through dialogue they continue to build their own knowledge" (p. 82).

Chapter Four: Research Methodology

For my doctoral dissertation research, I worked within the qualitative research tradition of ethnography, informed by a constructivist worldview. In this paradigm, researchers construct the meaning of the phenomena of interest as well as the possible relationships that may exist among them (Teddlie & Tashakkori, 2009). Ethnography is a qualitative research method where the researcher becomes a participant observer. It involves, "the researcher participating, overtly or covertly, in people's daily lives for an extended period of time, watching what happens, listening to what is said, and/or asking questions through informal and formal interviews, collecting documents, and artefacts – in fact, gathering whatever data are available to throw light on the issues that are the emerging focus of inquiry" (Atkinson & Hammersley, 2007, p. 3). Ethnography is exploratory in nature, where data is collected in an unstructured form and may include descriptive field notes, drawings, photography, audio and video recordings, and document collection.

The research for this dissertation involved more specifically an ethnographic case study with multiple sites. A case study, explains Stake (2005), "is not a methodological choice but a choice of what is to be studied" (p. 443). As a form of research, case study focuses on an individual case and not on the methods the inquiry used. The epistemological question for any case study is what can be learned from the single case. It provides insight into an issue and enables the researcher to make context-specific generalizations. For the purposes of my doctoral research the case study was instrumental. Instrumental case studies, explains Stake (2005), look at the case in-depth but the case plays a supportive role to facilitate our understanding of something else. An ethnographic instrumental case study can involve an in-depth analysis of multiple sites. Many sites are researched at the same time to strengthen the study of the phenomenon of interest as well as the possible relationships that may exist between them. The

multiple sites for this research were four Kindergarten classrooms, each with a teacher who had expertise generating and studying pedagogical documentation, where I explored possible connections between self-regulation and emergent curriculum. This dissertation is a single case study because of the similarities among the sites.

Pedagogical Documentation as the Conceptual Framework

Kovach (2009) explains that if researchers are successful when applying a conceptual framework, they "illustrate 'the thinking' behind 'the doing'" (p. 39). Therefore, conceptual frameworks are used as a tool for researchers to indicate how their methods are aligned with "a particular way of knowing" (p. 43). The rationale for the researcher to explicitly represent her conceptual framework, explains Kovach (2009), is to provide,

> Insight into a researcher's beliefs about knowledge production, in general, and how those beliefs will impact the research project. The content and form of the conceptual framework itself assists in illustrating the researcher's standpoint, thus giving the reader insight into the interpretative lens that influences the research…Explicit conceptual frameworks allow an opportunity to be honest about our perspective as researchers, and to illustrate how this perspective impacts the methods chosen. (pp. 41-42)

I chose pedagogical documentation as a conceptual framework to guide how I gathered data that supported my research question, to address processes as yet unexplained in the research literature, and make an original contribution to knowledge.

As I discussed in Chapter Three, pedagogical documentation is a tool used by teacher researchers during emergent curriculum inquiries. As a conceptual framework for my research, pedagogical documentation conjoins social constructivist theory–with origins in the history of psychology–and complexity theory, inspired by the schools of Reggio Emilia. Pedagogical documentation begins with a particular image of the child (Malaguzzi, 1994). Children are

viewed as strong and competent with the capacity to build relationships with things, people and the world around them. Malaguzzi (2016) explains,

> Their interactions with adults, cultures, environment, things, shadows, colours, spaces, times, sounds, smells and tastes, immediately situate them in a world of communication and exchange, from which they take and receive…The world passes through them as they pass through the world. (p. 374)

Children here are not viewed as "predetermined, fragile, needy, and incapable" (Rinaldi, 2012, p. 234). The child is regarded as an active subject who is a protagonist of his or her own learning. Even small children are able to build up their own theories and make their own interpretations. Young children have "the capacity for reciprocal listening and expectation" (Rinaldi, 2012, p. 234). They are capable of sharing their theories and listening to others. "Sharing theories is a response to uncertainty" (Rinaldi, 2012, p. 234). In pedagogical documentation, knowledge is socially co-constructed by capable children working and listening in close collaboration with their peers and the teachers, all sharing their theories.

A teacher generates documentation to study children's thinking and learning for professional growth (Rinaldi, 2006). Pedagogical documentation makes the nature of the learning paths and processes, and strategies used by the children visible. Seeing students' thoughts affects how teachers teach and changes the kind of questions that they ask. It enables analysis, revisiting, and assessment during the experience to take place. Wien, Guyevskey, and Berdoussis (2011) elaborate further by saying, "Documentation illuminates teacher theories about children's understanding: watching such theories change through study of documentation and further teacher research profoundly influences professional development" (p. 1). Pedagogical documentation has inspired many educators to conduct teacher research in their classroom with their students. Over the past twenty years, interest in the Reggio-inspired approach to education

has also led to some scholars, including myself, to work with pedagogical documentation as a framework for research (Pacini-Ketchabaw, 2010; Pacini-Ketchabaw et al., 2015; Wien, 2008, 2014). As Wien, Guyevskey, and Berdoussis (2011) argue, pedagogical documentation can be linked to the tradition of classroom ethnography that emerged in the 1970s. That tradition borrowed qualitative methods from anthropology and sociology including participant observation, interviews, field notes, and interpretive data analysis.

Pedagogical documentation is, however, often mistakenly seen as a mere tool for the observation of children (Taguchi, 2010). The purpose of traditional child observation, according to Dahlberg, Moss and Pence (2013), is to assess children's development in relation to predetermined categories prevalent in developmental psychology. These categories establish what a "normal" child should be doing at a particular age. The focus, argue Dahlberg, Moss and Pence (2013), is not learning processes but on categorizing children according to developmental levels and stages. Child observation assumes an "objective" external truth that can be accurately represented. Pedagogical documentation, in contrast, is about trying to understand the child, to see what is going on in the child's work, and what the child is capable of without any predetermined norms (Dahlberg et al., 2013).

The post-modernist perspective of Deleuze and Guattari has significantly influenced theoretical perspectives on how to understand pedagogical documentation in terms of both social constructivism and complexity theory (Dahlberg et al., 2013; Fleet, Patterson, & Robertson, 2006; Ollson, 2009; Pacini-Ketchabaw, 2010; Pacini-Ketchabaw et al., 2015; Taguchi, 2010). As Ollson (2009) points out, in early childhood education, the ideas of Deleuze and Guattari are used selectively and pragmatically to connect to pedagogical practices rather than being engaged more philosophically and comprehensively (p. 203). For Deleuze and Guattari, knowledge is not about knowing facts and solutions to problems, but a matter of thinking about the unknown (Boe

& Hognestad, 2010). Knowledge is about engaging in movement and experimentation, something always under construction, and uncertain (Ollson, 2009). Thinking can lead in any direction and has no beginning or end, always becoming (Pacini-Ketchabaw, 2010; Taguchi, 2010).

Dahlberg and Moss (2005) illustrate the pragmatic uses of the ideas of Deleuze and Guttari for pedagogical documentation. They argue that, in education, acquiring objective knowledge is commonly represented as a linear progression. Since Deleuze and Guttari believe linearity is a betrayal to what it means to think, they use the metaphor of the "rhizome" as a way of problematizing this prevailing view. A rhizome is a type of horizontal plant root that grows offshoots in all directions, up and down. In their view of knowledge, there is no hierarchy of thinking where one step is taken before moving onto the next. Learning begins with a provocation of an encounter with difference. "The rhizome of thought", explains Moss (2006), "shoots out in all directions, with no beginning or end, but always being in between" (p. 131). "Lines of flight" are an exploration in becoming, as we encounter something that does not fit with our understanding. In a rhizome, there is a multiplicity of interconnected ideas going off in different directions. Dalhberg and Moss (2005) note that Malaguzzi made a connection with Deleuzian ideas when he used the metaphor of knowledge as a "tangle of spaghetti", since this metaphor has much in common with the image of a rhizome.

Rhizomatic thought or the tangle of spaghetti offers the possibility of finding new ways of relating to the world and to otherness (Dahlberg & Moss, 2005). In an encounter with knowledge and learning, rhizomatic thought resists reducing complexity and difference to a linear way of thinking and knowing. In the ethics of an encounter, explain Dahlberg and Moss (2005), respecting the difference of the Other has implications for thought and knowledge where knowledge is considered to be the construction of new understandings. "For if we make the

Other into the Same, if everything is always predetermined, if learning and life are about

conformity to norms, if surprise and uncertainty are programmed out – then knowledge is

endlessly recycled in a process of transmitting prefabricated meaning and life stultifies in endless

repetition" (Dahlberg & Moss, 2005, p. 116). If we instead learn to listen and respect the Other,

we might be provoked by the encounter to abandon our preconceptions and to produce new ideas

and theories.

Olsson (2009) suggests that the rhizomatic way of thinking can help us to reconceptualize

curriculum-making as a continuous negotiation with knowledge in order to broaden the learning

experience. Rhizomatic thinking suggests an alternative to frameworks where the focus on child

participation in curriculum making should not be on meeting expectations but rather on whatever

is going on in a learning encounter (Olsson, 2009). The rhizome metaphor creates a space for

validating and framing knowledge creation in Kindergarten, one constructed with the children,

not for the children (Chan, 2010). In this space, children's ideas and theories are listened to and

considered, and their thinking is incorporated by educators into their planning. Chan (2010)

notes that rhizomatic thinking "connects multiple viewpoints in innovative and unanticipated

ways, creating spaces for creative dialogue that troubles traditional views of child participation in

early childhood curriculum development" (pp. 47-48).

Dahlberg, Moss and Pence (2013) describe pedagogical documentation "as a means for

the construction of…an ethics of an encounter" (p. 153). They explain that here an ethics of an

encounter "emanates from respect for each child and recognition of difference and multiplicity,

and which struggles to avoid making the Other into the same as oneself" (pp. 164-165). This

includes listening to what the Other is saying and sharing your own theories with the Other. Each

encounter is contextual and meaningful, a moment that only happens once and is unique. In other

words, an ethics of an encounter is a reaction against understanding ethics as conformity to

universal standards and the desire to grasp otherness and make it into the same (Moss, 2006).

Pedagogical documentation can be used as an important tool for the construction of an ethical

relationship with the Other and with the world (Dahlberg, 2012).

Taguchi (2010) provides an insightful understanding about the parallel between the

environment and pedagogical documentation. For her, encounters with the environment are part

of the learning process; the classroom environment has performative agency as I discussed in

Chapter Three. Pedagogical documentation, claims Taguchi (2010), is "an apparatus of

knowing", a way of thinking about knowledge (p. 64). "What Reggio Emilia has done better than

any other educational practice", comments Taguchi (2010), "is to document the most intimate

processes of learning among children in a challenging environment" (p. 66). Taguchi (2010)

argues that the learning made visible by pedagogical documentation is not just a listening

encounter with the other but also an "intra-active ecological encounter". These different

encounters both occur in a learning event. She says, "I would describe pedagogical

documentation as something that is alive and from which we can produce a multiplicity of

differentiated knowledge from a specific event" (p. 67).

Pedagogical documentation is the conceptual framework that connected the practical and

theoretical aspects of my research. The practical aspects involved how the data was generated

and analyzed, which I describe in the last two sections of the qualitative research method below.

By choosing to use pedagogical documentation as my conceptual framework, I am embracing

these theoretical concepts: the image of the child as rich in potential, curious, and with a desire to

communicate with others; the role of the teacher as creator of the environment, supporter of

children's learning, and a documenter and researcher; the significance of authentic relationships;

the view that knowledge is co-constructed; that thinking is non-linear, interconnected and shoots

out in all directions; that the learning process includes encounters with others, materials and the

environment; and that documentation can make the thinking of children and teachers visible so that it can be studied from multiple perspectives.

The conceptual framework of pedagogical documentation is the interpretative lens that I used to generate my research question, which asks: How do emergent curriculum inquiries support the children's ability to self-regulate in Kindergarten? This single research question emerged from my ongoing contextual analysis, which enabled me to conflate my initial research questions into one, streamline my assertions, and organize my research findings around the four core components of emergent curriculum. My initial research questions anchored and directed the research, were specific enough to ensure focused findings and at the same time were flexible, exploratory, and allowed for discovery in the course of the research. These questions informed my choice of research design, which encompasses both how I went about the inquiry and how the data was generated during the research. I chose an ethnographic case study with multiple sites because, in my view, it was the best way to address these questions when doing research in a classroom environment.

Qualitative Research Method

The detailed description of my research method in this chapter has five sections. The first section addresses how I negotiated entry into contexts. The second section describes the participants in the research including the teachers, Early Childhood Educators (ECEs), and students. The third section addresses research ethics processes from two perspectives, principles and protocols. The fourth section explains the data generating processes and my role as a participant observer. The final section describes the analyses processes I used, which include categorical and contextualizing strategies.

Negotiating Entry into Contexts

The context for my research was four Kindergarten classrooms in public and independent schools that were selected to provide insight into the phenomena of interest. The sampling for this research is purposive, as these four classrooms were chosen, "because they can provide particularly valuable information related to the research questions under examination" (Teddlie & Tashakkori, 2009, p. 25). These four classrooms were chosen specifically because of the expertise the teacher had in generating and studying pedagogical documentation during emergent curriculum inquiries.

Three of the Kindergarten classrooms had a teacher and an ECE and the other classroom had two teachers, who worked together as a team. The criteria for the selection of teachers was as follows:

1. The teacher has experience generating and studying pedagogical documentation.

2. Pedagogical documentation is ongoing in the classroom.

3. The teacher has been a Kindergarten teacher for at least three years.

4. The teams work well together.

Wien, Guyevskey and Berdoussis (2011) were helpful here when thinking about the expertise of the teacher as they offer five aspects of a teachers' progression towards more sophisticated pedagogical documentation. The teachers in this study had moved beyond: developing the habits of documenting; recounting classroom experiences and going public with their documentation; and developing a more sophisticated level of visual literacy skills. These experienced teachers understood that the purpose of pedagogical documentation is to make the children's learning visible to others for interpretation and to plan further learning experiences. Wien, Guyevskey and Berdoussis (2011) remind us that the strongest pedagogical documentation shows what the children are thinking and the teachers' hypotheses about the children's ideas and experiences.

The teachers in these classrooms showed their thinking about the children's ideas and theories in different ways. They also understood that the classroom environment supported their emergent curriculum inquiries.

To find teachers who had this kind of expertise generating and studying pedagogical documentation, I drew on my own personal connections with teachers who had been inspired by the theory and practices of Reggio Emilia. At the center of Reggio Emilia's approach to early childhood education is the practice of pedagogical documentation. Teachers knowledgeable about this approach understand how pedagogical documentation is used for research purposes. I had networked for over a decade with teachers who were Reggio-inspired, including teachers who had visited Reggio Emilia on study tours, who were part of the Ontario Reggio Association, who attended and presented at conferences and workshops, or shared the pedagogical documentation they had created in collaborative study sessions. It is from this pool of public and independent schoolteachers that I invited Lauren, Kathryn, Darlene and Sharon (their names are pseudonyms) to be part of this research study. I had originally thought that I would like to have five teachers participate in the research study so I visited another Kindergarten classroom for several weeks. In the end, I did not include this site because the teacher did not meet the selection criteria as pedagogical documentation was not on-going during the inquiry in her classroom.

When I negotiated entry into the schools and classrooms I wanted to be certain that everyone involved understood the purpose of my research, how I would go about it, and their part in it. Teddlie and Tashakkori (2009) remind us that the quality of the data "is highly dependent on how participants and others in your research context view you and the legitimacy of your project" (p. 202). With this in mind, I met with teachers, principals and ECEs to explain my research. I also talked with the participants about how their participation might enhance their

own understanding of self-regulation. This new knowledge could strengthen their own teaching practice, which would in turn be beneficial for the children. Reciprocity means that the research gives back to or benefits others in a meaningful way (Kovach, 2009).

I also explained to the participants what I intended to do with the research findings. After defending my doctoral dissertation, my intention is to publish my work in journal articles or as a book, as well as sharing research findings during workshops and conferences. I assured everyone that the identity of all the participants would be protected, that the personal information collected would be kept confidential, and that the data would be safely stored in the privacy of my office.

The Participants

The four Kindergarten teaching teams were Lauren and Vanessa, Kathryn and Victoria, Darlene and Kerri, and Sharon and Mikayla. Three of the teams teach in a large District School Board in the greater Toronto area. Kathryn and Victoria teach at a well-established independent school for girls also in the greater Toronto area. Lauren, Kathryn, Victoria, Darlene, Sharon and Mikayla are all Ontario Certified Teachers (OCTs). Vanessa, Kerri, and Mikayla are all Registered Early Childhood Educators (RECEs). Mikayla was the only participant to have both an OCT and an RECE. All the participants had several years experience working with Kindergarten children except for Victoria who was in her first-year teaching Junior Kindergarten. Lauren, Kathryn, Darlene, Sharon and Mikayla were all inspired by the work of the Reggio educators. Lauren, Kathryn, Darlene and Sharon had expertise generating and studying pedagogical documentation during emergent curriculum inquiries. They have had their work published as well as shared it in the community and at conferences. I describe the Kindergarten teaching teams in more detail in Chapter Five.

Lauren and Vanessa, Darlene and Kerri, and Sharon and Mikayla all taught boys and girls between four- and six-years of age in Junior and Senior Kindergarten. The first two Kindergarten

teaching teams taught at the same school. Lauren and Vanessa had thirty children, fifteen of them were from Visible Minority groups including eleven East Asians, three South Asians, and one of African Canadian descent. Darlene and Kerri had thirty-one children, eight of them from a Visible Minority background of East Asian descent. Sharon and Mikayla had twenty-eight children, all of them from Visible Minority backgrounds. Most were of South Asian or West Asian descent and English Language Learners. Kathryn and Victoria taught girls that were either four- or five-years of age in Junior Kindergarten. Seven of the fourteen girls were from Visible Minority backgrounds including four East Asians, two South Asians, and one of African Canadian descent.

Ethics Processes

Qualitative research by its very nature leads to moral and ethical issues because it is interpretative. The researcher accounts for social phenomenon with meaning making that is subjective and this implies a relational approach. Hitchcock and Hughes (1995) are helpful here in noting that, "The relationship between ethics and the conduct of qualitative school-based…inquiry is a complex one. Ethics refers to questions of values, that is, of beliefs, judgments and personal viewpoints" (pp. 43-44). This requires a greater sensitivity to the feelings of the participants because the information they share might be highly personal. Hitchcock and Hughes (1995) also note that when a research study includes collecting data involving children it adds another layer of complexity.

Researchers must be aware that using pedagogical documentation as a conceptual framework can potentially have its drawbacks, especially for children. We need to be alert and observant so that pedagogical documentation does not get swept up into strategies to predict and control children. Children can easily be made into objects for our understanding (Dahlberg, 2012). Although the experience of generating pedagogical documentation is shared, the power

nonetheless still lies with the researcher, who makes the ultimate decisions about how a child's ideas are interpreted, questioned and represented in the documentation (Cheeseman & Robertson, 2006). Researchers should be "mindful of the voice and thinking of children—their right to privacy and personal moments, their right to ownership of their thoughts and notions, their right to decide what is preserved and what is lost" (Cheeseman & Robertson, 2006, p. 193). Tarr (2011) reminds us that once children's photographs are published we have no control over the use of the material. However, if we take photos of children that are not identifiable, "we recognize the loss of expression and identity" (p. 14). These drawbacks were at the forefront of my mind when I was in the field observing children, photographing them, and collecting their work samples.

Ethics is considered here from two perspectives, principles and protocols. The following broad ethical principles are discussed: informed consent; privacy, confidentiality and anonymity; potential risk and trust; and evaluation. Protocols, which include ethical guidelines and requirements, are the processes that guide and set boundaries on the research.

Informed consent. Before the cycle of visits began at each Kindergarten site, I obtained informed consent from the teachers and ECEs. This form indicated that they agreed to participate in the study, and they understood the risks involved and their right to privacy. Consent to participate in the study was voluntary and the forms made certain that the details of the study had been carefully explained to the participants. The forms gave me permission to: visit the classroom as a participant observer; make observations and write field notes; take photographs, collect children's work samples; ask informal interview questions; and, audiotape conversations. It ensured that the teachers and ECEs agreed to work with me collaboratively to generate and study pedagogical documentation during the emergent curriculum inquiries. It also ensured that the teacher would share any documentation she collected during the inquiry with me. (The

Teacher Informed Consent Form is included in Appendix A. The Teacher and ECE Informed Consent Form is included in Appendix B.) After explaining the study to the principal, I asked the principal to sign a consent form that allowed me to conduct research in her school. (The Invitation to Principal to Participate in the Research Project consent form is included in Appendix C.) I also asked the parents to sign a consent form giving permission for their child to participate in the study. I asked for permission to record their child's words, collect samples of their work, and take their photograph and publish it. I let the parents know that some conversations would be audiotaped and transcribed so we could later recall exactly what their child said. (The Parent/Guardian Informed Consent Forms are included in Appendixes D and E.)

Tarr (2011) raises concerns about not obtaining informed consent from children to participate in scholarly research. She notes that the 1989 United Nations Convention on the Rights of the Child recognizes that all children have the right to express how they feel about matters that affect them. Although the parents gave consent for their children to participate in this research, I was aware of this ethical dilemma so I was careful to ensure that the children knew why I was visiting their classroom, that they could come and go as they pleased when working on the inquiry, and that I wouldn't take their photograph if they didn't want me to. However, the children were so used to being photographed for pedagogical documentation purposes that none of them seemed uncomfortable with me doing so. I also honoured parents' requests if they did not give me permission to take their child's photograph. I was careful to choose photographs that provided evidence for my research question but did not depict children in an unfavourable light.

Privacy, anonymity and confidentiality. There are two aspects related to the privacy issue: one is anonymity and the other is confidentiality. Anonymity protects the identity of the participants while confidentiality refers to keeping information obtained from a participant

private (Teddlie & Tashakkori, 2009). All the participants in the study were promised anonymity and confidentiality when I negotiated entry into their setting. Pseudonyms were used for the names of teachers, ECEs, and children in this doctoral dissertation. It was also important to maintain confidentiality between the participants and myself. Kovach (2009) explains that, "A critical ethical point is that one must be prudent and respectful about what one shares. This requires reflection on both the research topic and one's personal motivations" (p. 48). All information shared between the participants and myself was held in confidence.

Potential risk and trust. Potential risk and trust are also significant ethical issues when undertaking an ethnographic case study. Although the goal of a research study is to find credible answers to research questions, the findings are only acceptable when the researcher ensures the wellbeing of the participants and protects them from unnecessary risk (Fontana & Frey, 2000). Throughout the research, I tried to ensure that the participants did not experience any risk beyond what they would normally experience in their daily lives. As Miles and Huberman (1994) point out, private matters are made public when written text becomes part of the public domain. Participants may not fully understand this risk when they consent to be part of the study. Protecting their right to privacy by using pseudonyms for names helped to mitigate this risk factor.

Trust among the researcher, teachers, and ECEs in this study was essential because we were all intimately involved in the inquiry and the generation of data. Erickson (1986) points out that, "gaining a sense of the perspective of the informant [participant] is crucial to the success of the research…it is necessary to establish trust and to maintain it throughout the course of the study" (p. 142). In negotiating entry into the sites, I tried to establish conditions that were fair to the participants right from the outset. Since I realized that my role as a participant observer in the classroom could lead to the formation of close relationships with the teaching teams, I was as

straightforward and honest as possible about my expectations for their role in the research. During my visits, I was flexible and responsive to all their requests. I always treated the participants with respect and thanked them for their involvement on a regular basis to help maintain these strong relationships. Trust between me and the participants ensured that no problems arose during any of my classroom visits.

Evaluation. Evaluation is an ethical issue that is implicit in any research study. The teachers in this study were chosen because they have expertise in generating and studying pedagogical documentation during emergent curriculum inquiries. Erikson (1986) reminds us that, "the researcher's purposes are indeed evaluative, for to portray people's actions in narrative reports is to theorize about the organization of those actions, and evaluation is inherent in any theory" (p. 142). When evaluating others, it was important for me to be self-reflective in my journal about my own biases that stem from my own experiences as a classroom teacher as well as my expertise generating and studying pedagogical documentation.

For example, there were times when I had to remind myself that my role in the research study was that of a researcher and not a classroom teacher. At one site, when a teacher shared documentation of the inquiry with the children, she did so differently than I would have done. Afterwards, I felt disappointed because I thought it would not be useful data but upon further reflection I could see how the experience was still valuable for both the children and myself. At another site, when the teacher felt that the research should come to an end rather than going on for an extra week, I had to step back and remind myself that it was totally up to her and I needed to respect her decision. At a different site, one teacher initially had difficulty coming up with possibilities about how to move forward with the inquiry so she would not be ready to work on it when I arrived for a visit. I had to remind myself to slow down, be patient, and trust that she and the children would come up with ideas for next steps. Lastly, I did find it frustrating when one of

the ECEs chose not to participate in our pedagogical documentation study sessions when they took place after school. Although the research was important to me, I needed to accept the fact that ECEs are only paid for the time they spend with the children.

Ethical guidelines and requirements. Protocols are key to establishing accountability and responsibility. They are powerful tools for ensuring ethical conduct in research (Kovach, 2009). Aside from my ethical responsibilities to the individuals at the schools, this research study was subject to protocols originating from two institutions, York University and the Toronto District School Board. Once I received approval for my doctoral dissertation proposal from my supervisory committee, I sought approval for my research from York University's Human Participants Review Sub-committee (HPRC). Students undertaking research with human participants are required to complete mandatory ethics training on-line and submit their research proposal for ethics approval (Graduate Program in Education, 2011-2012). These responsibilities meant that the aims, objectives, risks, and methods of the research were explained as clearly as possible to the participants and that permission of all parties involved was obtained.

Once York University's Human Participants Review Sub-committee (HPRC) approved my research, I submitted an application to the Toronto District School Board (TDSB). The Toronto District School Board has guidelines for conducting research on school premises. Applications for conducting research were evaluated by the External Research Review Committee (ERRC). I was required to submit certification of a Criminal Records Background Check with the application. This process did not guarantee access to a school, as it was up to the school principal to allow me to conduct the research in her school. The Toronto District School Board required that I provide them with a report of the study when the research was finished. I was also required to provide feedback of the results to the participating schools (Toronto District School Board, 2013). The independent school in the study also required an ethics review. This

review was done by the Director of Curriculum and Faculty Development, who went through an Overview of the Research, an Ethics Approval Certificate from York, and the Informed Consent forms for the teachers and parents. The Director then asked for permission from the Head of the Junior School before approving my research study.

Data Generating Processes

During the data generating process, I chose to be a participant observer in the Kindergarten classrooms. Participant observation, according to Kirby and McKenna (1989), "involves the researcher being a participant during the data gathering process…[It] makes the assumption that it is possible to 'stand in the shoes of another', to share and understand the intimate lives of others" (p. 76). Participant observation is flexible and combines ways of gathering data with direct observation to give a full account of an individual's experiences. Direct observation and participation by the researcher provides meaning for the behaviours and attitudes shown by these individuals who are being researched in a natural setting. The researcher uses information that is meaningful and relevant and incorporates their own reflections as part of the data. Spradley (1980) states that the participant observer has two purposes when immersed in a social situation, "(1) to engage in activities appropriate to the situation and (2) to observe the activities, people, and physical aspects of the situation" (p. 54). Indeed, Atkinson and Hammersley (2007) believe that, "all social research takes the form of participant observation: it involves participating in the social world, in whatever role, and reflecting on the products of that participation" (p. 15).

As a participant observer, I was fully immersed in the Kindergarten classrooms as I focused on generating data to find evidence for my research questions. I was very comfortable working with the teachers and children at the Kindergarten sites because of my own Kindergarten teaching experience. While working on the inquiries with the teachers and children,

there were times when the teacher was momentarily pulled away to answer a phone call, assist a child, or respond to a request by the ECE. During these times, I would continue to observe the children as well as ask them questions or comment on their work to help keep them interested in what they were doing. Questions or comments that I made during these short time frames were not included in the data set. When we were not working on the inquiry, I naturally responded to the children's questions such as what I was typing on my iPad, requests for help like fixing a ponytail, or invitations to tell me about what they had drawn.

The classroom visits began as soon as all the relevant consent forms had been signed. I visited the classrooms, on average, once a week depending on the teacher's schedule. There were either six or seven visits that lasted three to four hours and took between one and two months to complete. The number of visits depended on the inquiry and when the data reached a saturation point. Sometimes I visited only one classroom and at other times there was an overlap where I would visit two classrooms each week. The duration of the data generation lasted six months. During the visits my role was that of a participant observer in the classroom during the data gathering process. I observed the teachers and children working together on the inquiry, took field notes, audiotaped conversations, took photographs and collected samples of the children's work. I also worked collaboratively with the teachers and ECEs at lunch or after school to generate and study pedagogical documentation. During these study sessions, I asked the teachers and ECEs informal interview questions, which were audiotaped. In between my visits the teachers documented the inquiry by taking photographs, videotaping, collecting work samples, writing anecdotal notes, and transcribing audiotaped conversations, which proved to be extremely helpful during the data analysis process. During my final visit, I asked the teachers to write a description of their classroom environment.

I visited Kathryn and Victoria's classroom seven times over a one-month period during the Winter of 2015. One of these visits was a pedagogical documentation study session/interview and not an observation of the class itself. For Darlene and Kerri, I visited their classroom six times over a six-week period during the Winter of 2015. I visited Lauren and Vanessa's classroom seven times over a two-month period during the Spring of 2015. For Sharon and Mikayla, I visited the classroom seven times over a two-month period during the Spring of 2015. One visit was only an interview as most of the children were absent that day. The following sources of data are discussed in detail—observations and field notes, photographs, children's work samples, pedagogical documentation study sessions, informal interviews, and audiotaped recordings.

Observations and field notes. For the first part of each classroom visit, I observed and participated in the inquiry with the teacher and children for approximately two hours. As I observed, I took field notes on an iPad with my research questions in mind. In other words, the research questions provided a framework for selecting what to record. Spradley (1980) is helpful here in explaining four different kinds of field notes that help make observational note taking more reliable. The first kind is the on-the-spot condensed account scribbled quickly but still capturing what has been said. The condensed account, explains Spradley (1980), "is a record of key phrases and major events" (p. 69). It includes single words, phrases and incomplete sentences. These were the field notes that I took while I was observing in the classroom. My research generated forty-nine single-spaced pages of condensed field notes.

The second kind of field note is the expanded account that was written out as soon as possible. The expanded account used three principles of language, "(1) documenting the language used for field note entry (2) making a verbatim record of what people say and (3) concrete language, a description of every detail in specifics" (p. 68). These were the field notes I

wrote up in the evening following the visit. The expanded account also includes transcribed audiotaped recordings of my observations which really helped to ensure that the field notes were accurate. These audiotaped recordings included teachers and children working together on the inquiry, follow-up discussions I had with the teachers about these experiences, children pursuing activities related to the inquiry on their own, and teachers and children sharing documentation with others. These audiotaped recordings were eleven hours, fifty-minutes and six seconds in length. I transcribed each the day after the visit. My research generated one hundred and ninety-two single-spaced expanded field notes.

The third kind of field notes, says Spradley (1980), is a reflective journal that records the researcher's personal reflections. The reflective journal contains, "a record of experiences, ideas, fears, mistakes, confusions, breakthroughs, and problems that arise during field work" (p. 71). Reflexivity means to critically reflect on the self as a researcher. Reflexivity, according to Atkinson and Hammersley (2007), "is a significant feature of social research" (p. 15). It refers to, "the researcher's own self-reflection in the meaning-making process" (Kovach, 2009, p. 32). Since the researcher's role in the research process is that of a participant observer, both the researcher and participants' ideas and theories are co-constructed and reflected in the meanings being made. Smith (1999) also notes that, "researchers have to have ways of thinking critically about their processes, their relationships and the quality and richness of their data and analysis" (p. 137). Keeping a reflective journal throughout the study strengthened the credibility of my research as discussed above. These field notes were also written up in the evening following the visit. My research generated thirty-two single-spaced pages of reflective field notes.

The fourth kind of field notes, according to Spradley (1980), is analytic memos. These are the researcher's initial ideas, insights and interpretations that emerge as she immerses herself in the data collection. I wrote these memos up more formally in the evening and generated six

single-spaced pages of analytic field notes. For example, when I first started my field work I had four research questions: (1) What conditions need to exist in a classroom environment for pedagogical documentation to occur? (2) Does pedagogical documentation support a child's ability to self-regulate? (3) Does pedagogical documentation contribute to literacy development? (4) What is the relationship between a child's ability to self-regulate and literacy development? Even while visiting the first site, in Kathryn's classroom, I started to wonder if I had worded the research questions correctly because I found the focus on pedagogical documentation too narrow. In terms of the second research question, was I really trying to find if pedagogical documentation supported the children's ability to self-regulate or was I trying to find if the classroom environment supported the children's ability to self-regulate? One of the components of emergent curriculum is the design of the environment so it is not surprising that I wanted to change the second research question at that point in time.

At the second site, in Darlene's classroom, I realized that the research questions were definitely not asking what I wanted them too. So, the second research question was changed to enable me to look for evidence of how the classroom environment supported the children's ability to self-regulate. Later, during my final contextualizing analysis, which is reported in Chapters Five to Nine, I realized that all my findings could be subsumed under one research question about emergent curriculum inquiries supporting the children's ability to self-regulate. In addition, I also wrote up endless analytic memos more informally on sticky notes during the data generating process as thoughts about the research occurred to me.

Photographs. While observing in the classroom, I took numerous photographs throughout the inquiry with my research questions in mind. These photographs included pictures of: the physical space and materials both inside and outside the classroom; teachers and children working together on the inquiry; children pursuing activities related to the inquiry on their own:

teachers documenting learning experiences; teachers and children sharing documentation with others; children playing at the centres and outside; teachers supporting the children's learning and conflict resolution; class routines; work samples; visits to the school office or the valley; children supporting other children who are dysregulated; and children using strategies to self-regulate. Photography worked well when documenting self-regulation as a child's body language helped us to see how the child felt, managed their emotions, and recovered from stressful situations. Photographs were an important part of the data collection when it came to demonstrating how pedagogical documentation makes self-regulation visible. My research generated one thousand, four hundred and seventy-eight photographs. The photographs taken at each site varied between two hundred and eighty to four hundred and seventy-seven. In addition, the teachers shared seven hundred and fifteen photographs with me. Many of these photographs were discussed during our pedagogical documentation study sessions. Although I did not take any video-recordings of the children, Darlene and Lauren documented their inquiries using this technology. They shared two hundred and thirty-one videos with me. I found this extremely helpful as it enabled me to see what happened with the inquiry in between my visits.

Children's work samples. While observing, I collected children's work samples related to the inquiries that were written, drawn, painted, and created as well as collaborative artistic pieces including posters, paintings, a collage, a mural, and a building project. The work samples were especially helpful when thinking about how well the children were self-regulating in the cognitive domain in terms of their focus, ability to reason, problem-solve, and plan and execute several steps in a row to accomplish a goal. My research generated two hundred and seven-one work samples. One hundred and sixty-six are hard copies and one hundred and five are digital. Many of the children's work samples were discussed during our pedagogical documentation study sessions. I decided not to include copies of the photographs and work samples in the

dissertation because this was not necessary to make the argument and would have made the dissertation too long. I will, however, include photographs and work samples in any relevant future publications.

Pedagogical documentation study sessions. For the second part of the visit, I worked collaboratively with the teacher(s) and ECE for approximately one hour at lunch or after school as we generated and studied pedagogical documentation. Rinaldi (2006) is helpful here in explaining that pedagogical documentation is a reflexive and cyclical process. Teachers develop provisional theories that give meaning to events that are continuously evolving over the course of many experiences. When discussing and interpreting the documentation with colleagues, teachers continue to make new hypotheses and predictions. This generates further learning and gives direction to future curriculum decision-making about what the children and teacher could do next. It is through dialogue that theories are modified and enriched. In other words, pedagogical documentation makes the nature of the learning paths and processes, and strategies used by the children, visible.

When the teachers, ECEs and I met to generate and study the pedagogical documentation our discussions always followed a similar pattern. We would talk about what had happened in the inquiry so far and how the inquiry had progressed since my last visit, discuss what the children had focused on that day, look at the documentation that had been generated that day, hypothesize about the connections the children were making and how their thinking was developing, and think about possible next steps and provocations that could be introduced to move the inquiry forward. These possibilities were always tentative as it would depend on where the children's thinking led the inquiry. The documentation that was generated during these study sessions provided insight into the children's and teachers' learning, shifts in their thinking, and their search for meaning.

These pedagogical documentation study sessions were audiotaped and transcribed the following day. This enabled me to think deeply about the data while the pedagogical documentation study session was still fresh in my mind. The transcription was useful in terms of thinking about my research questions and planning what I needed to focus on for the next visit. These audiotaped recordings were twenty-three hours, twenty-four minutes, and forty-seven seconds in length. The sessions were transcribed word for word with no edits for grammar errors or incomplete sentences. My research generated five hundred and twenty-four single-spaced pages of transcription.

Informal interviews. Informal interviews allowed me to embed questions naturally in on-going casual conversations when the teacher and children were working on the inquiry as well as during the pedagogical documentation study sessions. The data was richer because it was grounded in casual conversations. Spradley (1979) refers to informal interviews as "ethnographic interviews". He explains how ethnographers often gather their data through participant observation and casual conversations. The interviewee might not even be aware they are being interviewed, but rather are having a casual conversation while responding to a few questions. It is important that the interviewee feels comfortable and free to talk with ease. However, the ethnographic interview does have a purpose and direction. The ethnographer gradually takes more control by directing the talk in the direction that leads to the specific knowledge the interviewee is able to share. For this research, the wording of the questions was decided on before the visit but the questions were just a starting point and they allowed for open-ended responses. I inserted the questions into casual conversations throughout the visit whenever appropriate. The questions were written down for quick reference so I could keep the conversation focused. I kept track of which questions I had asked at each setting to ensure that

none of the questions were missed. The Informal Interview Questions are included in Appendix F.

These informal interviews were a powerful way of generating data. Fontana and Frey (2000) remind us that interviews are not neutral tools for collecting data but active interactions between people that lead to negotiated, contextually-based results. Researchers are not invisible neutral identities; the nature of the social dynamic that occurs during the interview can shape the knowledge that is generated as it is co-constructed by the researcher and participant. The text is negotiated as the researcher and participant share a reciprocity of perspective. Informal interviews for this study were co-constructed with the teacher(s), ECE, and myself.

It is important to note that interview questions that led to discussions about self-regulation did increase the participants' understanding of arousal regulation. The teaching teams in this study were all in different places in terms of their understanding of self-regulation when I first started visiting their Kindergarten classrooms. Three of the teachers had read Shanker's book, *Calm, Alert and Learning* (2013a). Two of these teachers had even been part of a school-wide initiative on self-regulation. Two other teachers were waiting for Shanker's book to arrive at their school. Generally, all the participants had heard of Shanker's work on self-regulation so this led to many in-depth discussions about self-regulation. Our discussions also made the teachers more aware of their own self-regulation. For example, one teacher commented, "I lost it a few times. Oh God. I thought, oh God, this is going to be on tape. I better cool it, but I couldn't". Another teacher said, "I know. It's a miracle that I maintained my patience at that moment, let me just say". She later added, "It was like, you could probably sense my frustration and irritability…it is so funny…there were a lot of good ideas that came out of it…I was getting so frustrated with them because from that spill of the sparkles, they were all like so into it". An ECE noted,

I find even, like dealing with children…sometimes I see myself going up, you know. Like even today, I just saw myself getting a little bit like bossy. Okay, we're going to do this, so I could see myself…so then I say to myself, okay, I'm going to tone it down a little bit…It was not like a feeling of not being in control. It was like I enjoyed it but then I thought no, I've got to bring it down.

Her teaching partner commented, "I don't see that in you, though. Maybe you feel it but I don't see it on the outside". The ECE responded, "I could see it in myself". Here we can see how the participants are reflecting on their own understanding of self-regulation and how it affects their teaching.

After reviewing all the information that I had collected from these sources I would write up an agenda for the next visit, which included things I needed to do like get a class list, organize dates for future visits, and photocopy samples of the children's work. I would also write what I wanted to focus on that day like thinking about how pedagogical documentation makes self-regulation visible. I also included the informal interview questions I wanted to ask the teachers and ECEs. The teachers usually had one week between my visits to continue working on the inquiry and organize the data it was generating.

Analyses Processes

Choosing a research analysis for this study was based on my interpretation of several leading authorities on qualitative analysis (Erickson, 1986; Kirby & McKenna, 1989; Miles and Huberman, 1994; Teddlie & Tashakkori, 2009). This qualitative research study used inductive logic/reasoning where I started with the data that I had collected and then analyzed it to generate theory and build an argument. Kovach (2009) explains, "Analysis involves reducing a whole to the sum of its parts in order to explain a phenomenon. Research analysis within the majority of qualitative approaches requires the organizational grouping of data for the purpose of showing

patterns that build a theory" (p. 130). Erickson (1986) points out that all the materials the researcher collects in the field, as discussed above, are not data. Data must be constructed through a formal means of analysis. In other words, it is the researcher who interprets the information collected, chooses what data to include in the findings and how it will be written up.

Qualitative research methods were also the techniques that were used to analyze, interpret and present the data in narrative form. Once again, I chose specific research methods that aligned with my conceptual framework. Data management and data quality issues are reviewed first, followed by a discussion of my data analysis. The data analysis was done in two ways. The first strategy was categorical, where I drew on Miles and Huberman (1994) and Kirby and McKenna (1989) who both emphasize breaking down data into smaller chunks or bits. The second strategy was contextualizing, where I drew on Erickson's (1986) approach to think about the validity of assertions, which were broad claims I made based on my empirical research.

Data management and data quality issues. I managed my data collection for each site using an iPad, binder, and folders. The iPad contained all my condensed notes and photographs. Each binder had a class list with a summary of important information from the consent forms regarding photos, audiotaped recordings and samples of the children's work for quick reference as well as a calendar to keep track of when I visited the site. Agendas, expanded field notes, reflective journals, analytic memos and transcriptions of audiotaped recordings were dated and chronologically ordered. A folder was used to house all the informed consent forms for the teachers, ECEs, principals, and parents. A second folder was used for documentation like the children's work samples and photographs as well as the teacher's observations, transcriptions of conversations, and descriptions of events that were also dated and chronologically ordered.

Data quality issues were taken into account throughout the research. Trustworthiness is a qualitative concept that was first defined by Lincoln and Guba (1985), and means the extent to

which the researcher can persuade audiences that the research findings are worthy of attention.

Criteria for trustworthiness include credibility, dependability, transferability, and confirmability.

These four criteria collectively indicate the quality of the data. Credibility refers to whether the

researcher's written work is believable from the participants' perspective (Lincoln & Guba,

1985). Credibility techniques include a prolonged engagement of the researcher in the research

settings, persistent observations, triangulation of data and member checks. Case studies gain

credibility by triangulating the descriptions and interpretations of multiple data sources

continuously throughout the study (Stake, 2005). Member checks involve confirming the

researcher's representation of the phenomena of interest (Lincoln & Guba, 1985). Member

checks worked particularly well with this research study because the teacher(s), ECE, and myself

collaborated with one another in the meaning making process of interpreting the data. Lincoln

and Guba (1985) explain that dependability is the ability of the researcher to yield consistent

results. The organization of the findings in Chapters Five to Nine reveal consistencies among all

four sites.

The transferability of inferences from the research settings to other similar settings is also

key in determining the quality of the research (Lincoln & Guba, 1985). In order for other

researchers to make comparisons with other contexts, thick descriptions of the teachers, ECEs,

children, classroom environments and the inquiries are provided for all four Kindergarten sites.

Thin descriptions, according to Gertz (1973), are factual accounts without any interpretation.

Thick descriptions, in contrast, involve many details and facts, conceptual frameworks,

commentary, and allow for multiple meanings and interpretations. Confirmability is the extent to

which the research findings are confirmable. The results need to be grounded in data, inferences

need to be connected to the data, and researcher bias needs to be taken into account (Lincoln &

Guba, 1985). Keeping a reflective journal helped me to reflect on my biases and made my

thinking about methodological decisions visible. All four of these criteria were used to strengthen the trustworthiness of my research.

Categorical and contextualizing strategies. Teddlie and Tashakkori (2009) explain that the inductive analysis of qualitative data can be done using a variety of techniques including categorical and contextualizing (holistic) strategies. These strategies will result in emergent patterns, which are the dominant features or characteristics of the phenomena of interest and the possible relationships that may exist among them.

> Categorical strategies break down narrative data into smaller units and then rearrange those units to produce categories that facilitate a better understanding of the research questions. Contextualizing (holistic) strategies interpret narrative data in the context of a coherent whole "text" that includes interconnections among the narrative elements. (Teddlie & Tashakkori, 2009, p. 25)

I used both categorical and contextualizing strategies when analyzing the data.

For categorical strategies, I drew on Miles and Huberman (1994) and Kirby and McKenna (1989). Both emphasize breaking down data into smaller chunks or bits. Miles and Huberman (1994) approach qualitative analysis in terms of concurrent flows of activity that are a cyclical process. Data reduction involves narrowing down the information collected by coding it to identify themes, categories, and patterns. Coding is how you differentiate and combine the data you have collected to make meaning of it. A first-level of coding includes the themes and categories that organize the information collected. A second-level of coding identifies patterns that are explanatory and pull together a lot of material into more meaningful units of analysis.

Kirby and McKenna (1989) were helpful when thinking about how to organize the data for categorical strategies. They believe that data must be divided up into manageable portions. For first-level coding, information should be initially organized into files and then coded by themes or properties and categories. Themes or properties are the characteristics of the data,

categories are groups of data that have common properties. Second-level coding involves the researcher looking for patterns and cross-referencing what goes together. The continuous process of comparison and linking data helps researchers to better understand the themes or properties and categories as well as the patterns that emerge when comparing the data in the categories.

For contextualizing strategies, I drew on Erickson's (1986) approach to thinking about the validity of the assertions that are generated by searching through the data set. Assertions are broad claims based on empirical research. To test the evidentiary warrant for an assertion the researcher looks through the data set for confirming and disconfirming evidence. The researcher then colour codes instances to fit with different assertions. Next, the researcher identifies patterns or linkages that connect items of data across the widest number of sources. If discrepant cases outnumber those that fit, the assertion is not warranted by the data. Trying out assertions and checking through the data set carefully is key to generating theory. Disconfirming evidence in turn leads to other assertions that may be more accurate.

I used both categorical and contextualizing strategies because they were, in my view, the most promising for addressing my research questions within an ethnographic case study. Answering my research questions required data analysis that drew out patterns using categorical and contextualizing strategies. Throughout the research study, I looked for themes, categories and patterns as they emerged on an on-going basis. Qualitative data analysis, according to Teddlie and Tashakkori (2009), involves a back and forth process between data collection and data analysis right from the beginning of the study until the final write up. It is understood that the conclusions may not be limited to answering the research questions.

My analysis of the research data. For my initial categorical analysis, first-level coding began by looking through all the sources of information that I collected at each site which included observations and field notes, photographs, children's work samples, pedagogical

documentation study sessions, informal interviews, and audiotaped recordings. While coding I came up with a broad range of themes based on my research questions like conditions in the environment that enable pedagogical documentation. Within each theme several categories appeared. For example, categories for conditions in the environment that enable pedagogical documentation were: physical space and materials; expanded time frames and class routines; children's decision-making and ownership; authentic relationships; curriculum; assessment; the role of parents. Second-level coding began the week after my first visit to the classrooms, as there was enough material to start looking for patterns across the data set and cross-reference what went together. For example, within the category of authentic relationships I looked for patterns that showed relationships between and among children and teachers. This analysis was complete once I had looked through all the sources of information for each site, took out the data that was relevant to my research questions, and wrote up my research findings. Although contextualized coding for instances of broad-based assertions went on simultaneously as I identified patterns or linkages that connected items of data, decisions around assertions were not made until after the categorical analysis of my research findings was complete.

For my first contextualizing analysis, I looked through the data chapter for each site that I had written for my categorical analysis as well as going back to my original sources of information. I pulled out broad assertions that I could make based on my research questions. These assertions were tested, as noted above, with contextualizing strategies suggested by Erickson (1986). I tested the evidentiary warrant for my assertions by sifting through all the materials and coding them accordingly. Once instances of these assertions were coded, I identified patterns or linkages that connected items of data across the widest number of sources. This involved testing and retesting the assertions by looking through the data set. So, for example, when thinking about how the classroom environment supports self-regulation I devised

specific assertions based on classroom organization, daily routines, expansive time frames, and authentic relationships. This contextualizing analysis was complete once I had looked through all the sources of information to come up with broad assertions. The research findings were then written up around the assertions for each site.

For my final contextualizing analysis, the research findings from the first contextualizing analysis were restructured to make the central argument in response to one research question—How do emergent curriculum inquiries support the children's ability to self-regulate in Kindergarten? By conflating all the research questions from previous analyses into one question, I was able to streamline the assertions and organize all the research findings around the four components of emergent curriculum: inquiry design, design of the environment, documentation, and conversation. In addition, each assertion had data from all four sites which reduced repetition. This restructuring process led to stronger research findings and arguments connecting emergent curriculum inquiries to self-regulation in the final version of my dissertation.

Chapter Five: The Four Emergent Curriculum Inquiries

In this chapter, I describe the Kindergarten teaching teams, their classroom environments, documentation processes, and emergent curriculum inquiries to help the reader put the research findings in context. This description provides a starting point for getting to know the four sites from which I generated data for my analyses that I report on in Chapters Six to Nine.

The Kindergarten Teaching Teams and Their Inquiries

In the first section of the chapter, I introduce Lauren and Vanessa and describe how their Invisibility Inquiry unfolded over a two-month period in the spring of 2015. In the second section, I introduce Kathryn and Victoria and explain how their Office Inquiry progressed over a one-month period in the winter of 2015. In the third section, I introduce Darlene and Kerri and describe how their Running Club Inquiry evolved over a six-week period in the winter of 2015. In the final section, I introduce Sharon and Mikayla and explain how their Community Inquiry emerged over a two-month period in the spring of 2015.

The Invisibility Inquiry

The teaching team. Lauren and Vanessa teach in a large District School Board in the greater Toronto area. Lauren is an Ontario Certified Teacher (OCT) and Vanessa is a Registered Early Childhood Educator (RECE). Lauren has taught Kindergarten for eleven years. She is inspired by the work of the Reggio Emilia educators and her program is an interpretation of their principles and practices. Lauren has a lot of experience co-constructing emergent curriculum inquiries with children. She is highly productive when it comes to generating documentation in a variety of forms and her work has been published and shared widely in the community and at conferences. Vanessa had just begun to document the children's learning experiences.

Lauren described her role in the classroom as, "A provocateur and a support. I kind of hate using the word facilitator because it sounds like you're not engaged, but I guess as a co-

learner, maybe a wise co-learner" (LI1). Lauren focuses on how to ask children questions to get them to think more deeply about their theories and ideas. She said, "I really am conscious of that and that's something I'm always working on, like the questioning and the trying not to lead" (LI1). Lauren will ask a question, listen attentively to a child's answer, and then phrase the next question in light of the child's previous response. Her conversation aspires to be truly reciprocal. Vanessa thought it was her role to scaffold the children's learning and extend and expand on their play through open-ended questions. She added, "Just building relationships with the children so that they just feel happier about being here and learning, having that excitement…so they don't lose that desire to learn and have fun" (VI1).

Their classroom environment. When Lauren described her classroom at the end of the inquiry, she wrote,

> The materials I choose are open-ended enough to be simple or challenging. There are clearly defined learning centers and cozy seating and resting areas. There are lots of plants. Many of the items in the room have been created with the children, such as the alphabet, number line…[and] calm books. The children are usually focused and engaged…talking, sharing ideas, [and] solving problems. They know the routines and expectations but the materials…often suggest the course of their activity. (LR1)

I found Lauren and Vanessa's classroom warm, peaceful, and welcoming. It was not that large but the space was used efficiently and was very well organized.

What stood out to me was the care and attention that Lauren had put into establishing centres that had a calming, soothing effect on the children. For example, at the Light Table, she deliberately had the curtains closed beside the Light Table to make it a little bit darker so that when you turned the light on it felt more inviting. Lauren found that quieter children would share what they had made and talk about what they were doing; she explained "I think it's just that

intimacy of the light shining up in a bit of a darker area" (LI1). The Peace Centre had a similar effect with the sound of the flowing water fountain and small rakes to push the sand and rocks around. Vanessa said that the children also went there to look at the lava lamp and watch the shapes move up and down (VI1). The Nature Centre also had a feeling of tranquility as the children explored and created artistic representations with the natural materials.

The Calm Centre had a significant presence in the center of the classroom. Every child had a Calm Book with strategies they could use to help them calm down. The photographs on each page, as well as the repetitive nature of the text helped the children read their books independently. The centre also had stuffed animals, stress balls, fidget toys and "calm jars" that contained water and sparkles. The children often chose to go to the Calm Centre independently or Lauren would sometimes suggest that they visit this centre and choose a strategy from their Calm Book (LI1).

Lauren also provided opportunities for the children to develop empathy. In the Feelings Centre, the children explored their own feelings and learned to read other people's feelings. The children looked in the mirrors at their facial expressions to get an idea of what different feelings look like, signed in to show how they were feeling when they arrived at school, and created feelings books to share with their friends (LI1).

Their documentation process. Lauren makes documenting the children's learning a priority in her classroom every day. She wrote, "The materials, learning experiences and provocations are carefully chosen and crafted by me so the children are engaged, and there will be something to document and also that they will be too engaged to distract [from] the documentation process" (LR1). Lauren documents the children's learning experiences using her iPad and iPhone to take photographs and videos of the children. She later transcribes what the children have said. Lauren doesn't take anecdotal notes because she feels she misses too much

(LI2). Lauren matches the dialogue and photos and prints the documentation up, usually within a week or two. She finds if she doesn't keep on top of it, it just becomes overwhelming (LI5).

Lauren keeps all the documentation she has generated and studied in binders and on the walls both inside and outside the classroom. For some inquiries, she produces more polished pieces of documentation on panels and puts them on display. Lauren also has a documentation book for each child. She documents many learning experiences and includes the photographs, questions she asks, the children's responses and some information to provide context (LI1/I2). These documentation books span two years and are a record of the children's learning experiences and what they were thinking at the time.

Lauren believes that the whole point of pedagogical documentation is that it is public. She said, "It's something that you share with the children, with the families, with other colleagues" (LI5). Lauren shares her documentation with other Kindergarten teams at her school to hear their perspectives and think about possibilities for next steps. Similar, to the Harvard Project Zero Protocol (Project Zero et. al., 2003), first the teachers look at the documentation and have a chance to say what they see, what they wonder, and what they think. Then Lauren briefly responds to their perspectives and explains what she was trying to show in the documentation. The other teachers then offer their ideas about how to move forward with the inquiry.

Lauren also brings the children's work to a monthly documentation study session in the community. When colleagues look at the documentation they go through a similar protocol to what happens at her school. Lauren finds this exercise incredibly helpful. She explained that she uses pedagogical documentation as a form of assessment for herself, like professional development, to inform her own teaching. Lauren claimed, "I think that's when it's at its most valuable. That's the whole purpose of it, right" (LI2)? Lauren attends the pedagogical documentation study sessions and participates in studying documentation with the other

Kindergarten teams at her school because she believes that when teachers reflect on how children's thinking changes over time, it transforms their own thinking. She finds that listening to other people's perspectives on her documentation enlightens her own understanding of the work.

Their inquiry. The Invisibility Inquiry started one morning when Steven drew a picture of his mother and said that she was invisible. When Lauren asked Steven how he could show that his mother was invisible, he said that he had to roll the picture up. Deepa was also thinking about invisibility when she was at the Light Table trying to make a jewel invisible because she didn't want anyone to see it. She thought you could make things invisible by covering them up. Lauren then provided an art experience, as a provocation, that challenged the children to draw something or someone that was invisible. Based on these experiences and stories that Lauren read, a group of children started to explain their initial theories and ideas about what invisibility meant.

Lauren conducted two experiments with the children. One experiment involved placing a small glass inside a large glass and then pouring oil into the small glass and letting it overflow until it filled the large glass. Lauren wanted to know if the children thought the small glass was invisible and if so was it still there. The children thought that because they couldn't see the small glass it was no longer there. In the second experiment the children were given a variety of materials and asked to see if they could make a gemstone invisible. After using the materials to hide the gemstone, the children explained that when a gemstone is the same colour as the cloth it blends in and is invisible.

Having explored invisibility through sight and touch, the children were next provided with an opportunity to think about sound by banging on a variety of pots and pans with drumsticks. Later, looking at the photographs of the experience, Lauren asked the children what they could see and what they couldn't see. By showing the children the video of the experience,

they realized that what was missing in the photographs was movement and sound. Lauren asked the children to represent sound on the photographs with markers. The children then shared how different markings represented different sounds.

Lauren revisited the documentation on the Invisibility Inquiry with the whole class because she wanted the children who had not worked on the inquiry to have a chance to share their thinking. While Lauren shared the documentation, several children spontaneously joined in the retell and she encouraged them to share any new ideas. Lauren then invited a small group of children to draw their theory or idea about invisibility. In their drawings, the children had shown that when two things are the same colour they blend in and become invisible and that black makes things even more invisible.

Lauren then shared three provocations with the class using the worm jar, Rory's watch, and the snack box. Some children thought the worms were hidden in the dirt, the watch was real and had electricity, and the snack-box sticks could be heard and felt but not seen. When the children were asked what else they might be thinking, the idea of water being invisible surfaced. Lauren set up a water experiment to explore the children's ideas. The children were thinking about questions like: How do you know which jar has water in it? What happens to water when it spills on the table? Where did the water drawings go? What happens when you pour water from the small jar into the vase? Why does the water bend when you blow it?

Lauren showed the children photographs of the water experiment and asked them to explain what was happening. They talked about how water contains air, it is see through, it changes depending on the angle, it disappears, and it bends when you blow on it. After viewing a video of Samantha talking about invisibility, the children thought about whether invisibility is white or see through. Rory said invisibility is something you cannot see even if you can still feel it. Three children shared how they had used white paint to draw on white canvas and this led to a

discussion about whether the pictures looked invisible. This sparked new thinking about whether invisible beings can see people who are not invisible and what happens when they are both invisible. The children were invited to draw their invisible selves with silver markers on mirrors as they thought about the relationship between invisibility and colour.

The Office Inquiry

The teaching team. Kathryn and Victoria teach at a well-established independent school for girls in the greater Toronto area. They are both qualified Ontario Certified Teachers (OCTs). Kathryn has worked with Kindergarten children for seven years and is very thoughtful when it comes to engaging in emergent curriculum inquiries. She has published her Reggio-inspired pedagogical documentation and frequently shares it with other educators in the community. Although Victoria has many years of teaching experience, this was her first-year teaching Kindergarten and her first time learning about Reggio-inspired pedagogical documentation.

Victoria saw her role in the classroom as a facilitator. Kathryn felt that the children were the initiators and the teachers were learners alongside the children and not the bearers of knowledge (K&VI1). Kathryn wrote, "When a question is posed to a teacher, you can often overhear us replying back with a question: What do you think" (KR1)? Kathryn and Victoria also thought that it was their role to be active listeners, to nurture the children's interests and provide provocations to keep the interests going so that "they don't fizzle out" (K&VI1).

Their classroom environment. Kathryn and Victoria's classroom space was aesthetically pleasing and warm with lots of natural colours, transparency and light. The classroom featured Inquiry Centres where the girls could go to have some quiet time. For example, the Book Nook was a cozy space in the corner of the classroom with a material arch that was decorated with colourful triangle shapes. Victoria explained that, "We encourage them [the girls] to take time out when they need it—not just on our direction—but they'll go and get a

blanket and just hide under it for a while" (VI1). Kathryn said, "Yeah, the Book Nook really is a space where self-regulation is really built into their day" (KI1). Similarly, at the Light Centre there was an intimate warm feeling to it. The girls would manipulate the materials in creative ways on the light table. Then they would sort the materials into glass containers that they had labelled with names of colours on them. It was also peaceful at the Discovery Centre, where the girls explored natural materials using magnifying glasses and recorded their observations using clipboards, paper and pencils. Victoria commented that some children found it especially comforting to go and sit quietly in the Discovery Centre.

One of the most significant features of this classroom environment was that there were endless writing materials and tools located throughout the room, which fueled the children's passion for writing. The adaptation of the Drama Centre into an office allowed the girls to play imaginatively in their roles as office workers as they created nametags, wrote letters, and explored how the typewriter worked. The girls would often use resources (such as the alphabet on the wall, name cards, and word banks) from the nearby Graphic Communication Centre to support their writing. Kathryn said, "It is everywhere…this year they are voracious writers" (KI7). Victoria added, "Well, magically, somehow… they just want to write. They just want to record everything, don't they? They just gravitate towards writing" (VI3).

Their documentation process. Kathryn explained how she saw the process of pedagogical documentation in her classroom. She said,

I see inquiry as active listening on the part of the teacher and really listening to the questions and the wonders and the theories of children and allowing that to guide where the content of the program goes. And then, pedagogical documentation, being that vehicle for highlighting and valuing and making visible the thinking and the theories and all of the inquiry that takes place. (KI6)

Both Kathryn and Victoria collected and organized the data daily. They took many photographs and they used a laptop computer to record what the children were saying. Kathryn and Victoria felt that they collected a lot of data and that it was a challenge because there were always so many possibilities about what to nurture and explore further. Kathryn explained that, "I have to trust that the environment is supporting them [the children] and I don't need to like document or keep data on everything" (KI1). Victoria commented, "Kathryn is more of a purist with the documentation than I am. She has a very definite idea about documentation. I'm still getting my head around who is this for" (VI5). Despite this, Victoria came up with a key idea about how to document the Office Inquiry. She said, "Why don't we document in book form? Like in a big book?" (VI4).

Documentation was organized in the classroom in several ways. Each child's portfolio contained documentation of her learning and included descriptions of her experiences, photographs, work samples, as well as direct quotes of questions, theories and ideas. At each of the Inquiry Centres there was a clipboard with documentation of the experiences that the children had shared together at that centre. There were also documentation panels that were displayed on the classroom walls. Kathryn explained that these panels were more reflective of those "epic things" that happen, like the alphabet or rainbow projects (KI1).

Kathryn met with her colleagues to look at documentation, especially when preparing for special events. They discussed different documentation pieces such as the alphabet. The alphabet documentation begins in JK where the children work on the twenty-six letters of the alphabet. Then the alphabet documentation moves with the girls to SK and digraphs such as '*th*' are added. Kathryn and some of her colleagues shared the documentation with other early years educators by inviting them to come to their school for coffee and conversation. It was an opportunity to

share some of the exciting inquiries that had emerged in their classrooms and engage in meaningful dialogue with other educators in the community (KI1).

Their inquiry. The Office Inquiry began spontaneously one morning while the children were at the Inquiry Centres. Victoria explained that it had all started in the Construction area. The girls had moved several chairs to the middle of the room and collected other materials like their I Wonder books and pencils. Some of the girls were writing in their books, others were pretending to sleep, and Rachel was the Security Guard. The space was quite contained and when the girls were asked what they were doing they responded that they were 'working'. The next day the girls recreated the office and continued with their play.

Kathryn and Victoria presented the girls with the provocation of visiting the Junior School office. While at the office the girls explored all the rooms, asked the office staff questions, and sketched and wrote words in their I Wonder books of all the things they had seen. When they returned to the classroom, the girls co-constructed a list of the items they found in the office that included a computer, desk, pencils, paper, books, and decorations. Kathryn and Victoria collected the items on the list, as well as other items, and put them in a pile on the floor of the Drama Centre so that the girls could recreate their office themselves. Several girls participated in transforming the Drama Centre into an office space. While exploring the office the girls became interested in creating nametags for all their peers, typing on the typewriter, and using the envelopes and blank paper to write letters to their families.

One morning, Liza and Vicky made an appointment with Ms. Harland in the office so that the JKs could revisit that afternoon. When the girls went to the Junior School office they were looking to see if there was anything else they could add to their classroom office. Upon returning to the classroom the girls shared what they had found and Kathryn recorded their ideas on the whiteboard. The girls made several items including a clock, a sand and sparkle tray, some

candies, and paintings and added them to the office. The girls also became very interested in

creating a security TV. An impromptu outing was organized and Victoria took several children

outside to photograph images of the outside doors. Once the photographs were printed the girls

constructed a security TV for their office.

The girls' continued interest in security led them to investigate how the school entrance is

monitored in the Junior School office. The whole class went outside and pretended to visit the

school. They announced their arrival through the intercom and Ms. Harland buzzed them in.

Then Kathryn, Victoria and the girls met with the Head of Security for the school and he

answered all the questions they had about security. The girls learned that if you work at the

school you can use a swipe card to enter the school, so they went outside and came in a different

door using a swipe card. When they returned to the classroom they made their own swipe cards

and a scanner for their office. The girls used the mirror as a swinging door to indicate the swipe

card giving access to the classroom office.

Kathryn, Victoria and the girls discussed what it means when we say we are working.

The girls came up with their own ideas and theories about the different roles of the office staff.

To build onto the girls' understanding of offices across different contexts, the parents were sent

an e-mail that included a list of questions the girls wanted to ask their parents about what they do

in their office. Some of the parents sent in photographs and responses to the girls' questions and

these were added to the Office Inquiry documentation book that was later shared with the whole

class.

The Running Club Inquiry

The teaching team. Darlene and Kerri teach in a large District School Board in the

greater Toronto area. Darlene is an Ontario Certified Teacher (OCT) and Kerri is a Registered

Early Childhood Educator (RECE). Darlene has taught Kindergarten for fourteen years. She is

well known in the community for her expertise in generating and studying pedagogical documentation based on the emergent curriculum inquiries she co-constructs with the children in her classroom. Her work has been widely shared, published, and shown at a number of conferences. Kerri has been teaching Kindergarten children for seven years and has lots of other experience working with young children in child care. She brings to the team her knowledge of early childhood development. She was learning about the process of pedagogical documentation and had started to document some of the children's learning experiences on her own.

When I asked Darlene how she saw her role in the classroom she responded, "I think we're all open to learn together and I think that every day I learn something from these guys" (DI1). Kerri was also interested in learning as much as she could from the children and working on building relationships with them by getting to know them and helping them feel safe. She thought it was important to focus on social and emotional well-being so that the children would learn to be well adjusted (KI1).

Their classroom environment. What was noticeable about Darlene and Kerri's classroom environment was that there were many inquiries all happening at the same time where the children explored provocations and shared their ideas and theories with others. During my visits, their classroom went through a number of transitions as Darlene thought through how to best use the physical space and materials. For example, Darlene explained why she added a Calm Centre to the classroom. She said,

> We wanted to have that centre where the children could go to and do quiet activities, be
>
> calm, kind of self-regulate if they needed to…It was actually part of a team decision that
>
> we were going to do this as a Kindergarten team to make sure we had a centre like that.
>
> (DI1)

Kerri said, "They go there. They know. They kind of just know instinctively that that's the quiet area" (KI1). Darlene found that the children were going to the Calm Centre to stare at the lava lamp, make up imaginary stories about the shapes as they changed in the water, and record their thinking on paper.

The Calm Centre was later changed to the Science Centre/Light Table area because Darlene was finding that a lot of the materials she had added to the Calm Centre also fit in well with science. There were books about how the body works, a large skeleton puzzle, a figure that could be taken apart in pieces to look inside the body and the running box. This space allowed the children to think about the connection between running and how it makes the body feel (DI6). Similarly, in the Math Centre the children explored a provocation with little bears and sleds made out of metal lids and strings. They were trying to problem-solve how thirty-one children could share three toboggans and make sure that they all had turns (DI6).

Their documentation process. Darlene and Kerri took turns collecting and organizing the data, although Kerri felt that Darlene did the majority of the work. Darlene used an iPad to take photographs and videos. She would record what the children were saying on paper and then later enter it into her desktop computer. Darlene said that once she and Kerri had an idea, they would pursue it and usually there were several things being documented at the same time. She said that some of the documentation on the walls, like the Running Club, was still ongoing and that she would later decide "whether to go more formal" with it. She explained,

> Usually something about it twigs me that I think this is really important for teachers to
> know, for parents to see. And if that's the case, then I would go into more formal
> documentation with it as well. Definitely, I'll put a wall up outside in the hall for the
> parents to see. I think that would be really good. (DI6)

Darlene and Kerri both felt that sometimes you just have to "throw" the documentation pieces together and put the pieces up because, if not, the time passes and then something else interesting happens.

Darlene and Kerri got together sometimes at lunch with the other Kindergarten teams and principal to study documentation. Darlene shared the Running Club documentation using a modified version of the Harvard Project Zero Protocol. As part of the protocol Darlene stayed quiet until after the other teachers shared what they saw, what they wondered, and what they thought. Darlene then described how the inquiry started, summarized the children's different running ideas, and explained that the children were working on combining their ideas (DO6). She then opened it up to her colleagues to share their thinking about possible next steps in terms of the direction the inquiry might take. The session concluded with some final thoughts about why the children enjoyed running, how their theories had changed over time, and how they were consolidating their knowledge (O6). Darlene and Kerri found it helpful to hear other interpretations of the documentation and what might be possible in terms of how to move forward. Darlene also sometimes attended monthly documentation study sessions in the community with like-minded colleagues to hear their perspectives and discuss possible next steps.

Their inquiry. The Running Club Inquiry began one day when a group of children approached Darlene at lunchtime and asked if they could run in the hall. Darlene was busy at that moment and said, "Who wants to run in the hall…How can you let me know that" (DI2/I6)? To her relief, Gabriel suggested that they make a list of all the children who wanted to run. When the children returned with the list Darlene asked, "Well how is this going to work? Do you have a plan" (DI2)? The children met and came back with a plan where they would take turns running with a partner. When they tried to implement their plan, it quickly became disorganized. Darlene

told them that they needed to have another meeting and come back with a better strategy. The new strategy involved having teams. Connor emphasized how they needed to start in a circle and remind each other of the rules before they ran.

After the children ran in the hall, they talked about how running made their body feel. Darlene invited the children to draw a picture of what their body was feeling inside before and after they ran and she recorded their ideas on the back of their drawing. Then the children started to talk about their different running ideas so Darlene also invited them to draw their idea to help clarify what they were thinking. She shared the pictures and photographs of what had happened so far in the inquiry with the children in the Running Club. Surprisingly, Michael said that he thought they should connect each person's running idea and make it into one big idea. Darlene explained that this new focus, "Led us to places we were not expecting and took us away from our original interest…this is what happens when children take the lead" (DR1)! The children then shared their pictures and theories about their running ideas with the rest of the class to see if they could help them think about "the big idea".

During a discussion, the children talked about all the materials they needed to show their running idea. Then Darlene provided a provocation: a box with a happy face on the outside and inside a stopwatch, tape, and materials to make tickets. Over the next few weeks the children took turns sharing their running idea which led to new thinking. For example, after Zara's run, the children talked about who was the fastest runner. They thought through how the children with the lowest times recorded were the fastest runners. This later turned into an opportunity for the class to sign a chart about who they thought the fastest runner(s) were. The children continued to build onto or adapt their original idea as they became influenced by previous demonstrations. Interestingly, when the children were in the hall demonstrating their running idea, the stethoscope appeared again and again as the children listened to each other's heartbeat.

After each child shared their idea, Darlene asked him or her to draw a picture of how the run actually went.

Michael was then invited to look at the documentation with Darlene and he began to articulate how he thought all the little running ideas could be made into one big idea. After he shared his thoughts with the rest of the Running Club, Darlene put a large piece of mural paper on the table and explained to the children that the goal was to draw the big idea. The children began to negotiate how to draw it. When it was finished, Michael suggested that the next step was to hang the mural in the hall. He explained, "Yeah then we can remember where we are and then go from there" (O6). Michael was looking forward to trying his running idea in the hallway.

The Community Inquiry

The teaching team. Sharon and Mikayla teach in a large District School Board in the greater Toronto area. Sharon is an Ontario Certified Teacher (OCT) and Mikayla is both an Ontario Certified Teacher (OCT) and a Registered Early Childhood Educator (RECE). Sharon has taught Kindergarten for six years. Mikayla has taught Kindergarten for two years and prior to that she worked in child care for four years. She brings to the team her knowledge and background in early childhood development. Sharon and Mikayla are both Reggio-inspired and knowledgeable about pedagogical documentation. Sharon shares the documentation of her emergent curriculum inquiries with her colleagues at school and with other educators in the community.

When thinking about her role, Sharon talked about the importance of establishing meaningful relationships with the children right from the beginning of the school year. She said, "Our September is all about getting to know you, each individual you, each child in the classroom because that's where we build that relationship and trust with them. It has to happen" (SI2). Sharon takes the time to really get to know the children on an emotional level first before

she focuses on what they can and cannot do. Mikayla believes that it is her role to find "the right balance" when it comes to children's freedom. She explained by saying, "We want to set limits in terms of keeping the room functioning and not overly chaotic and not overly loud so that the interactions can happen effectively. But…neither of us are like no-no-no, very strict kind of educators" (MI2). Mikayla also thought, that you need the right balance when it comes to children learning through play. She said a balance, "Between interacting with the children and guiding their play and taking a step back and just facilitating it, observing it, and letting it go forward without us" (MI2).

Their classroom environment. What was significant about this classroom environment was the time and energy Sharon put in to building strong relationships with the children and their families. Sharon made every effort to learn about the children's first languages and cultures in order to establish a sense of trust with a vulnerable community. It helped her understand exactly what her learners needed when it came to designing hands-on experiences in her environment.

Sharon and Mikayla's classroom was new and had a natural, organic, Reggio-inspired look to it. Sharon was talented at adapting her centres and setting up provocations to further the children's thinking about the inquiry. For example, in the Small Block Centre the materials were set-up to encourage the children's interest in building the city center. At the Light Table, Sharon organized the materials to create a tree with blossoms, grass and water to inspire the children to think about how to recreate what they saw when they visited the valley nearby the school. Similarly, the Valley Centre was set up with two different valley scenes on placemats and the River Centre had a river scene with blue felt and fish lying on the rocks.

Yet other spaces were created to instill a feeling of tranquility. The Discovery Centre was built up over the course of the year and contained a lot of natural materials that enabled the

children to have hands-on tactile exploratory experiences. Sharon said, "That space often is used by one child…they want a quiet time. They want to be by themselves [so] they go there" (SI1). Similarly, Mikayla explained that the Chill Out Sensory Zone had been adapted slowly over time for one particular child but other children still visited that space (MI5). It had a trolley with many items on it such as weighted toys, fidget toys, toys that made different sounds, a disc and books. On the walls, there were taped ziplock bags with plastic beads, pieces of textured fabric, and long colourful strips of plastic. This quiet spot was a place to rest on the beanbag and explore the materials.

Their documentation process. Sharon's expertise in generating and studying pedagogical documentation was quite evident. She and Mikayla both collected the documentation and then Sharon organized it into inquiry binders or posted it on the wall. They used the classroom camera to take photographs of the learning experiences. During knowledge-building circles, Sharon and Mikayla recorded what the children said on a laptop computer. At other times, they made anecdotal notes on paper. When documenting a specific child, Sharon and Mikayla had a sheet that had the child's name and a box beside it so they could record their observations.

Sharon shared her pedagogical documentation with colleagues at school during monthly meetings using a protocol that asked what do you see, what do you wonder, and what do you think. After Sharon's colleagues had an opportunity to share their interpretation, she explained what her intentions were behind the documentation. Similarly, inquiry group sessions occurred regularly when the Project Lead of Natural Curiosity spent a morning working with one of the Kindergarten teachers. So, for example, when the Project Lead worked with Sharon, the rest of the teachers were invited to attend a meeting at lunchtime to hear about the inquiry and talk about the inquiry process in general.

Sharon also shared her documentation with the wider community when doing professional development workshops as an Institute Facilitator for the organization, Learning For A Sustainable Future. These workshops are based on inquiries for responsible citizenship and sustainability and are structured around the needs of the participants and where they are in terms of their understanding of the inquiry process. Sharon facilitates these two-day institutes three times a year across Canada.

Their inquiry. The Community Inquiry began with a larger focus on the City of Toronto. The initial spark was a tiny picture that Omja drew of the CN Tower. After Omja shared the picture with his classmates, they had a discussion about the CN Tower and shared their personal experiences. Then Sharon and the children looked at books about cities and talked about the differences between a country, a city, and a community. The children used classroom materials to create the CN Tower and the city center, and went for a community walk to sketch the cityscape in their inquiry books. One day, Dea asked, "Why do people make cities"? and this led to a knowledge-building circle discussion. Then the children worked collaboratively in small groups to draw large posters of the City of Toronto. This led to further discussions and recordings of what the children knew about the city. Sharon summarized all the children's ideas on chart paper so the children could revisit their learning.

The children then turned their focus towards the community where they live. They sketched the apartment buildings that surrounded the school and wrote about them. While looking at the sketches, Sharon commented, "That's when we started to realize it wasn't so much the bigger picture of Toronto, that it was they could see the CN Tower from their apartments, and therefore the apartment actually is the core part for them" (SI5). Sharon showed the children photographs she had taken of the apartment buildings. The children were very excited and many of them pointed to the pictures and said, "That's where I live". Sharon had the children identify

which building was theirs and other places where family and friends lived. Esita drew a bird's

eye view of her building that included the details of her apartment layout. After sharing her

drawing, the children were curious to see what Sharon's apartment looked like, so she drew it for

them. The children then drew their own apartments and showed what features were important to

them.

Sharon and the children then went on a community walk to the valley nearby the school

to see the river. During a knowledge-building circle, the children shared their ideas about water

including where water comes from. The children then drew pictures and wrote about their visit to

the Valley. Sharon shared a photograph of the valley with a small group of children. During the

conversation, Mahdi said, "Nature is a friend of the community". Sharon later followed up this

idea. She wrote, "What is a friend?" on chart paper. The children brainstormed ideas while

Sharon recorded them. One idea was that nature is a "friend" because it helps us. The children

then shared their ideas through pictures and words. Sharon felt that when she showed the

children the photograph it was a turning point for them. They started to think about community

in a different way. The children now saw nature as being a part of the community whereas when

the inquiry had started they only saw the city and the buildings (SI5).

When the children were at learning centres, they built the CN Tower out of blocks and

other building materials. This turned into a collaborative building project that grew bigger and

bigger and included the city, community and valley. A few children documented the experience

by drawing and labeling the structures. Sharon then created a mind map with the children to

consolidate all their knowledge about the community. This map helped the children to come up

with ideas for the collaborative community collage art piece they were creating with Mikayla.

The children all worked together to draw miniature versions of things that you find in the

community like houses, apartment buildings, shops, trees, flowers, people, animals, cars and a school bus and then the pieces were assembled to create a collage on black paper.

The children began to focus more on the valley rather than the community itself. While in the valley the children did observational drawings, explored nature and played in the sunshine. The children documented these experiences in their inquiry books. The children also shared their experiences in knowledge-building circles. They talked about what they liked about the valley and this helped to generate some initial ideas for the collaborative water colour paintings of the valley. The children worked together sharing ideas and negotiating whom should draw what and where. The children described what was in their paintings as Sharon documented what they said. The paintings represented a consolidation of the children's learning about the valley.

Chapter Six: The Inquiry Design Component of Emergent Curriculum

In this chapter, I report my findings on the inquiry design of the four emergent curriculum inquiries. Inquiry design includes building the curriculum, engaging in reciprocal actions, taking ownership over the direction of the inquiry, promoting positive emotions such as excitement and curiosity, and encouraging collaboration and inclusivity. The design component begins when teachers, based on their observations and children's conversations, decide on an investigation that will sustain the children's interests. The teachers identify possible directions the inquiry might follow and provocations to encourage the children to think more deeply about the topic. Children are intimately involved in the design component and have opportunities to discuss and represent their ideas throughout the inquiry. They make their ideas and theories about the inquiry visible by using a variety of materials to represent their thinking.

I have organized the presentation of the research findings around five assertions that characterize broadly the shared inquiry design of the four emergent curriculum inquiries. These findings will then be used to illustrate how this design component of emergent curriculum supports the children's ability to self-regulate in the Kindergarten classroom.

Inquiry Design Assertions

The teaching teams build the curriculum through inquiries based on the children's interests.

Lauren and Vanessa. In Lauren's classroom, the curriculum emerges around the children's interests. Lauren observes the children and finds opportunities to extend their learning by asking them thought-provoking questions. She documents the learning experience by taking photographs and videos and later transcribes the text. Then Lauren shares the documentation with the children in small or large groups. Next, she introduces new provocations to further the children's interest in the inquiry. Lauren explained,

I find the curriculum is so broad…I kind of see it everywhere. I see it in every single thing…and the documentation does actually help to uncover a lot of that, I find. I'll be going back through something [documentation] and oh my gosh that was really measurement, so when I go back to speak with that child again or bring something over to their attention, I'm going to make sure it's around that and we can maybe expand that a little bit further. (LI1)

Lauren believes it is important to keep things as open-ended as possible so the children can discover things for themselves. In essence, the children are uncovering the curriculum based on their interests (LI1).

Lauren explained that the initial idea for the Invisibility Inquiry had come from Steven, who had drawn a picture of his mother and said, "My mom is invisible". When Lauren asked Steven how he could show that his mother was invisible, he said that he had to roll the picture up and then you couldn't see her anymore. Lauren said, "Yeah, and that just sort of sparked the whole thing" (LI2). Then a few days later Deepa was playing at the Light Table and said, "I am going to make this jewel invisible…because I don't want anyone to see it". Deepa made the jewel "invisible" by putting a black ribbon on top of it. She thought it was invisible because you could not see it. Lauren said, "That's what made me think oh, invisibility…I might have something here" (LI2)!

Kathryn and Victoria. Kathryn and Victoria both feel that the curriculum should be uncovered naturally through child-initiated activities (K&VI1). For example, Victoria explained how the children initially became interested in the Office Inquiry. She said,

Well it started actually in the Construction area. All of a sudden, there was not a chair in the room…They [the children] were all in the middle of the room. They had made it sort of box like and they were all in there with their notepads working away, and I thought,

what are they doing? 'We are at the office – we are working at the office'. So that was it.

One of them was the security guard…and then they've got all sorts of things. Their phone

was going and all sorts. Anyway, so then they did it two days in a row. (VI1)

The girls' initial interest in the office led to a month-long investigation into what items belong in

an office and what it means to be "working" there.

Darlene and Kerri. Darlene believes that the curriculum in her program is built around

the children's interests. She commented,

I feel like, especially in this school…we can do things the way, how we view them. I

think we are educated enough to know what's good for the children and I think we have a

pretty good grasp on being able to do things the way that we believe in doing them. (DI1)

Darlene emphasized the importance of listening to children and how this gives direction to the

curriculum in the classroom. She said, "I'm here more to set-up learning rather than to dictate

how learning will occur. So, I like to listen…for all the possibilities that may happen, and

something that may twig me to maybe extend and keep going" (DI1).

Darlene realized that running in the hall was important to the children so instead of

shutting it down she opened the door and let the Running Club Inquiry flourish because of the

children's enthusiasm. When the children initially approached Darlene to ask about running in

the hall, she could have put the children off by telling them she was busy. Instead she responded

by saying, "Who wants to run in the hall…How can you let me know that" (DI2/I6)? Gabriel

suggested that they make a list of all the children who wanted to run. Again, when the children

returned with the list, instead of shutting it down, Darlene asked, "Well how is this going to

work? Do you have a plan" (DI2)?

Sharon and Mikayla. Sharon and Mikayla both believe that the curriculum should be

emergent and based on the children's interests. Sharon said, "We talk about it in the way of,

instead of, covering the curriculum you are uncovering the curriculum" (SI2). This was evident right from the beginning of the inquiry when Omja shared a picture he drew of the CN Tower. This sparked a lively discussion as the children shared their personal experiences about the CN Tower and the city. After looking at books and having further discussions about cities, Sharon added building materials to the Small Block Centre to encourage the children's interest in building the CN Tower and the City of Toronto. During a Community Walk, the children noticed the cityscape and made connections to what they were discussing and building at school. This led to another walk where the children sketched the cityscape in their Inquiry books.

The teaching teams engage in reciprocal actions to propel the inquiry further.

      Lauren and Vanessa. Lauren responded to the children's interests by engaging in reciprocal actions. For example, she invited some children to the Art Table to see if they could make invisible drawings like Steven, she asked them to draw something or someone that is invisible. She gave them a variety of materials like white and coloured paper, chalk, clear wax crayons, and paint. Steven tried to make this drawing invisible by covering it up with his hands. Samantha didn't think it was invisible because she could still see part of it. Then Lauren asked the children if she covered up the picture with her hands would it be invisible. Steven said, "No, because I can still see something". Rory explained, "It is invisible because you put something on top". Raina thought, "If you put your hand on top it is still going to be there". Samantha added, "You can't just put your hands on top because people can peek under your hands. If you put paint on top of it, then it really is invisible because you can't peek under paint" (LI2). While the children worked on their drawings, they continued to think about what invisibility meant. Graham thought if you hide your hands in your sleeves or your head in your shirt that makes them invisible. Anna used green chalk on green paper and thought that no one else could see her drawing. Samantha concluded, "It [invisibility] means when you can't see something" (LI2).

Lauren, on another day, provided a group of children with materials that included gemstones, a bottle cap, a clear container, black felt and green material. She then asked them if they could make the gemstones invisible like Deepa had made her jewel "invisible" at the Light Table. Julian said, "I am closing it all up [in the felt] so you can't see it…You could see the jewels under the glass. You can't see when they are under the bottle cap". Deepa explained, "I am putting it under the felt so you can't see it…I put them into the glass container then I put the cap on top then I covered it with the black felt then I folded the green felt on top of it". Samantha thought, "To make it the most invisible I put one glass underneath and then I put one glass on top. I put the gem in the glass and green cloth on the bottom and the black cloth on the top…I can't see it. I can just feel it…I can hear it". Daryl added, "If I had the same color cloth as this gem [blue] then I would put it on the cloth and nobody would see it anymore…you can't see it because it is blending into something". Later, Jian wanted to draw a picture and when he was finished he immediately covered it with black felt. He removed the cloth and then coloured over his picture with a black crayon. He said, "This is invisible…I coloured black on top, that makes it really invisible". When Lauren asked Samantha, what invisibility means, this time she said, "It means that there is something there but you can't see it. Like Santa is invisible" (LI2).

Another example of reciprocal action occurred when Lauren followed-up the children's thinking about how some colours make things more invisible. She gave the children little silver mirrors and silver metallic markers. They made funny faces and sounds like hiccups. Lauren thought aloud about how it might be tricky for the children to draw something invisible or invisibility on the mirror when they could see their own reflection.

Zara: Yeah, you could copy yourself…

Lauren: Zara just gave me such a great idea. What if you actually drew your own self…made yourself invisible?

Rory: …I got it. So, you look at yourself on the mirror and you draw [yourself]…

Lauren: Draw your invisible selves…you are going to draw what you see in the mirror...

Rory: It's invisible. I can't see it (O7).

Lauren reciprocated once again by responding to Zara's suggestion that they draw their "invisible selves" (LI7).

Kathryn and Victoria. Kathryn and Victoria engaged in reciprocal actions to propel the inquiry forward. For example, after Kathryn and Victoria had observed the children's interest in 'working' at the office for two days, they decided to take the girls to visit the Junior School office. While at the office, the girls sketched and wrote in their I Wonder books about all the things they could see. When they returned to the classroom, Kathryn, Victoria and the girls co-constructed a list of the items they found in the office (KI2). Kathryn and Victoria gathered the materials from the list and put them in a huge pile in the middle of the Drama Centre, leaving it to the girls to organize the space. Victoria said, "I think, give them the chance to own it totally" (VI1). Kathryn added, "And if they are owning where the materials all go too, I think that will make it all the more powerful for them" (KI1). It was up to each child to decide for herself whether she wanted to be part of creating the office. While at "the office" the girls enjoyed creating nametags, using the typewriter and writing letters.

Another example of reciprocal action occurred when Kathryn and Victoria decided that the girls would benefit from a second visit to the Junior School office. When the girls returned to the classroom Kathryn recorded their ideas on the whiteboard. Kristina wanted to make the clock so Victoria helped her find a paper plate. Victoria also put a real clock on the table to help Kristina visualize what a clock looked like. Then Kristina cut out the hands and made the numbers. Similarly, Sally and Alia tried to make pretend candy. Victoria went off to find a candy

and then showed the girls the inside. This helped the girls think about how to cut pieces of plasticine to make the center (O4).

The teachers also reciprocated when the girls were interested in sharing their ideas and theories about what it means when we say that someone is 'working'. To build onto the girls' understanding of what working means across different contexts, Victoria recorded the questions that the girls wanted to ask their parents about what they do at their office. She then sent an email to the parents with the list of questions. Some of the parents responded by sending in photographs and responses to the girls' questions. The other girls shared what their parents did during a class discussion.

Darlene and Kerri. Darlene engaged in reciprocal actions throughout the inquiry. For example, after the children showed interest in running in the hall, Darlene took the children out in the hall to run. When they returned to the classroom the children talked about how running made their body feel. Darlene then invited the children to draw a picture of what their body was feeling inside before and after they ran and she recorded their ideas on the back of their picture (O1). Similarly, when the children were all talking about how they had different running ideas, Darlene had them draw their ideas. She said, "So I thought writing it down and drawing it, what they envisioned would help me see into their theory a little bit better. Which they did and it really did help a lot" (DI3). It also helped the children to understand their own idea better and as Darlene pointed out, "It changes their thinking, too" (DI3).

One day, after the children shared their running ideas with their peers, Darlene reciprocated by putting together a provocation that was a special box with the materials the children had asked for. She said,

I have a surprise. Come and sit down. So, remember all the things you talked about that

you needed for running? So, I put together a running box. This was the best box I could

find because a lot of you feel happy when you run. (DO3)

Darlene then invited Michael to open the box and take out what was inside. After looking at all

the materials, Gabriel took the stopwatch and he was the first child to demonstrate his running

idea.

Another day, the Running Club came into the Cubby to find that Darlene had written the

children's running times on oval shapes and laid them on the table. These running times had

been generated the day before when Zara was trying her running idea and Connor was recording

the number of seconds each runner took. After the children read the numbers, they offered their

theories about who was the fastest, why, and what it meant in terms of winners and losers (O5).

Sharon and Mikayla. Sharon and Mikayla also engaged in reciprocal actions to further

the children's interest in the inquiry. For example, after a Community Walk looking at some of

the apartment buildings, Sharon said, "They were really excited to talk about it, their buildings,

but it didn't launch them forward…it didn't provoke any questions" (SI5). She realized that she

needed to have photographs of all the apartment buildings so she followed up by taking the

children for a Community Walk around the entire horseshoe loop of apartment buildings where

they lived (SO3/I3). While on the walk, the children told Sharon when they saw their building or

their friends or their cousins and she took photographs. Sharon asked the children to remember

their building number. At the end of the day, Sharon shared the photographs of their walk with

the children and had them identify their building. She wrote their names on sticky notes and

attached them to the photos. Sharon also recorded other connections the children were making

like where their friends or cousins lived, a name of a teacher who also lived in the same building

and a previous student who had moved away (SI4). Sharon then put up all the documentation on the whiteboard so the children could see their building and the buildings of their friends.

On a different occasion, when the children were outside on the school grounds they observed the water in the puddles and how the water was moving in the drain. In class, Mikayla and Sharon reciprocated the children's interest in water through further discussion and with water experiments like observing different materials in water to think about absorbency. Sharon commented, "I kept this going because I knew we would be going to the valley and seeing the river" (SI5). Later on, after a community walk to the valley, Sharon and the children had a knowledge-building circle about what had happened at the river. The children shared lots of ideas about why we need water, where water comes from, and how it moves (O4).

Sharon also followed up Mahdi's idea that 'nature is a friend of the community' during a whole-class knowledge-building circle. Sharon said,

> I was trying to think about where to go next. There hasn't been a driving question and I think today was a reminder to me of you can't go forward until you hear from the children where they want to go. (SI5)

She wrote Mahdi's statement on the whiteboard and then showed the children the same photograph of the valley that she had shared with Mahdi's small group. She first asked the children, 'What is a community'? Sharon observed, "What was interesting was the parts that came out first were nature this time rather than the buildings…and finally Adhita added buildings" (SI5). Then the children talked a bit more about Mahdi's original statement but it still seemed quite abstract. Sharon followed up once again by writing, 'What is a friend?' on chart paper. The children brainstormed ideas about what a friend is and she recorded them on the chart. One idea, for instance, was that nature helps us and shares with us. Then in small groups

the children shared their ideas about how nature is a friend and they drew and wrote about it (O5).

The teaching teams provide opportunities for the children to take ownership over the direction of the inquiry.

 Lauren and Vanessa. Lauren seized opportunities for the children to take ownership over the direction of the Invisibility Inquiry. For example, one day Lauren opened-up the discussion to see what else the children were thinking about invisibility.

  Lauren: Rory, do you want to say something else about invisibility?

  Rory: If you don't shake the water bottle and there is water in there but you might think there isn't.

  Lauren: Oh…because you can't see inside your water bottle. Is, that right? Hmm interesting…

  Daryl: People sometimes don't see their water, cause, it is see through…

  Lauren: That's a very interesting idea that Daryl just brought up. Sometimes people don't see the water in their water bottle because the water is see through. Does that make water invisible, Daryl?

  Daryl: Yes.

  Lauren: Yes, you think so or very hard to see?...

  Rory: If water is inside your water bottle…actually water is invisible.

  Lauren: Water is invisible?

  Rory: Cause the water it could be the same colour inside your cup (O5).

After Rory and Daryl explained their thoughts about water and invisibility, Lauren and the children created a water experiment that helped the group expand their thinking about whether water is invisible.

During the water experiment, Rory came up with the idea of pouring the water from the small jar into the vase and this led to a lot of excitement and new ideas. As Lauren and the children took turns pouring water into the vase, everyone anticipated that the water would overflow.

Lauren: So, what would happen if I poured this in?

Samantha: It would go higher.

Daryl: So, we know water's in there.

Lauren: Okay let's try it…Watch if I shake the vase, what happens?

Samantha: The water shakes.

Rory: So, you can see it inside…I can see like kind of a pool underneath. It looks still like a pool…

Samantha: Yeah it looks like the…round thing on the bottom. On the top, it looks like a swimming pool.

Raina: It's the sun coming from here, that's why it looks like a pool…

Lauren: Okay are we ready for this?

Group: Yeah…do all of it…

Lauren: Don't touch the table, let it go really still and watch it…carefully…What do you see right now?

Daryl: …I'm seeing air in it every time, I see some air inside it…the air is very small…

Rory: You can't see the pool anymore (05).

To everyone's delight, the water did flow over the top of the vase.

Once the water overflowed the children spontaneously decided to cover the entire table with water. Then they bent over and started to blow the water. This action led to a whole new set of ideas related to how blowing with our mouth can move the water on the table.

Rory: What if you blow it?

Lauren: Try blowing it. What happens if you blow it?

Samantha: The water goes fast…It also makes this little pool thingy…

Daryl: If you blow the water bends. Look the water is bending (O5).

It was the children's ideas and excitement that propelled the water exploration. Lauren remarked that the water experiment is "interesting because it is coming from them. I like that a lot" (LO5).

Kathryn and Victoria. The girls' ongoing interest in security enabled them to take ownership over the direction of the Office Inquiry. In the Construction Centre, for example, Rachel took on the role of the Security Guard. Then, after a visit to the Junior School office, Nikki said, "I know what we need for our office. We need a TV to check if some people are coming or not" (KI3). The girls decided that they wanted to make a security TV for their classroom office. Victoria responded by taking several children outside to photograph images of the school doors. Kathryn commented, "Victoria was like, come on, everybody come along…Victoria is so good with stuff like that" (KI4). Once the photographs were printed the girls constructed the security TV.

The girls then wanted to know how the school entrance was monitored by the Junior School office. Kathryn and Victoria decided to take all the girls outside and they pretended to visit the school. First, they announced their arrival through the intercom and were buzzed in. Then they went back outside and entered the building through a different door using Victoria's swipe card. When the girls returned to the classroom they made their own swipe cards and a scanner. The girls decided to use the mirror as a swinging door to indicate the swipe card giving them access to the classroom office (VI4).

Although the teachers provided opportunities for the children to take ownership of the direction of the inquiry, there were some limitations due to time constraints. For instance,

Kathryn was concerned that soon she would be leaving work and going on maternity leave. She didn't want to stop the inquiry but she wanted to have some kind of closure, to be able to wrap it up in some way. Kathryn didn't think, however, that the girls had been directed too much or pushed too quickly. They had had lots of opportunities to "explore the office and initiate their own path for how they want to engage in the office" (KI6).

Darlene and Kerri. The children took ownership over the direction of the Running Club Inquiry from the outset. As Darlene put it, "We don't own what's going on here at all. They own this whole entire project. They designed it. They led it. They are doing it themselves and so it's their responsibility. And I think they feel that" (DI2). For example, one morning the Running Club was invited into the Cubby to look at all the documentation that had been generated so far. There were photographs of children running in the hall, a list of children's names, and Cole's drawing of the planning circle. There were also work samples showing how the children felt before and after they ran as well as their different running ideas. Darlene sat back and waited to hear what the children had to say about all the work they had done. Michael's thinking completely surprised everyone and led the inquiry in a new direction.

Darlene: I want to hear what you have to say about the work you've done…

Michael: Maybe if we could connect all our ideas and make a huge big one it would all work.

Darlene: A huge big what?

Michael: Idea.

Darlene: How can we do that? How can we connect all our ideas?

Michael: We could take a little bit of our ideas and then…make a big idea out of those little pieces of ideas.

Darlene: Okay so give me an example of that. A little idea…

Michael: So, my idea was…run with this one person. Connor what was your idea?

Connor: …We gather up in a big circle for plans.

Michael: Okay…so for example if me and Connor were the only ones here we would make a big circle and run with one person at a time...(O2).

The inquiry became focused on sharing everyone's thinking to create one big running idea.

Darlene reflected on Michael's leadership that day and said, "He did an incredible, articulate, beautiful job …He just ran the whole show. We just sat back and watched…It was amazing" (DI2). He was really in control of the situation. Kerri said, "I've seen him do that. He's able to collaborate with the children and bring them together. It's amazing how he can do that" (KI2). We discussed how Michael was clearly the leader when it came to articulating ideas and how Gabriel was the leader when it came to running in the hall. Darlene explained,

But if you knew them really well, you would see that Michael is the articulate speaker in the classroom and he wows his group all the time. So that's his strength…and Gabriel knows that that is Michael's strength. When they are in the hall, though, and they start doing something physical, Michael knows that's Gabriel's forte. (DI2)

Kerri commented, "So it's good that they know that, you know, each other's strengths and they can be leaders in their own right and that they are recognizing their own strengths" (KI2).

Darlene later wrote about how the leadership roles in her classroom really stood out to her during the Running Club Inquiry. She said,

Quiet individuals began to take risks and take on leadership roles. They would discuss, argue and work together with little support from the adults. The role was shared dependent on each other's strengths. Even the children began to recognize where their peers lead best and would encourage them. They developed trust within the group, which allowed us to stand back as teachers and let things happen. (DR1)

When children were given opportunities to take ownership over the direction of the inquiry, it enabled them to take on leadership roles.

Sharon and Mikayla. Sharon provided the children with many opportunities to take ownership over the direction of the Community Inquiry. For example, one day some children started to draw pictures of the City of Toronto completely on their own initiative. When Sharon and Mikayla offered the children large poster paper several groups started to work on creating the city posters collaboratively. Through these illustrations, the children were able to share what they knew about City of Toronto and then they were ready to move on and focus more closely on the local community (SI5).

On a different day, after Esita drew a bird's eye view of her building that included the details of her apartment layout, the family car, and aspects of nature like the sun and flowers, the children asked Sharon what her apartment looked like and could she draw it. Sharon drew her apartment layout and the contents and she labeled them. The children worked for a long period of time drawing their own apartments, adding and layering details as they thought about their living spaces. They drew features of their apartment that were important to them. Some children drew themselves, their family and friends, their toys, furniture, computers and TVs. Others added apartment numbers on their doors, hallways and balconies. A few children also talked about what they could see or hear from their balconies (SI4).

Another time, after some children had just finished building the CN Tower, Sharon asked, "So that's the downtown. Where's our community" (SI5)? The children then started to build the community and they included the valley as well. After visiting the valley a number of times on walks, the children were starting to think about the valley as being part of the community. During the collaborative building project, it was almost like the children were taking everything they had talked about and learned since the beginning of the inquiry and were using

that knowledge to inform their thinking around how to build their structure (SI5). When later reflecting on this experience Sharon said, "It was like…we had reached the pinnacle moment of so much information…I feel like this was really one of the richest tasks and it was completely derived from them" (SI6). The children had transferred all that rich knowledge about the community into their creation.

The teaching teams pursue inquiries that promote children's positive emotions and focus their attention.

 Lauren and Vanessa. The Invisibility Inquiry promoted the children's positive emotions on many occasions. Positive emotions included but were not limited to inspiration, curiosity, excitement, enthusiasm, interest, confidence, pride, and happiness. One morning, after sharing the documentation with the children, Lauren invited a small group of them to draw their idea of invisibility. Cassie was inspired by the documentation and volunteered to draw a picture. Lauren said, "I have to say…that's the first thing Cassie's ever voluntarily participated in, in the classroom, the very first thing" (LI4). Cassie was curious about the inquiry and she wanted to be part of it.

 During the water experiment, many of the children were excited and curious as they anticipated that the water in the vase would get higher and higher and overflow. Daryl held the little jar carefully and concentrated on what he was doing. He was looking at the bubbles that were being created in the vase as he poured the water. Lauren said, "This means something to him. Like, he's so deliberate and focused and he's really trying to make sure that he's doing it in the exact way he wants it done" (LI7). Similarly, Steven was focused, with a plan, as he dipped his fingers in the water and drew his robot on the table. He drew a line and then dipped his fingers again and drew another line. Later, he discovered that his robot became invisible when he

poured water on top of it. Lauren commented that usually Steven likes to be on the move and for him to be so quiet and focused "really meant something" (LI6).

However, even when the inquiry generated positive emotions, some children still become distracted and disengaged. For example, Henry who generally found it difficult to maintain and shift his attention, initially joined the water experiment but struggled to stay on task even when he was interested and curious. He shared his ideas and theories about invisibility with his peers and one-to-one with adults but found it hard to remain focused and take turns during group activities when the other children were sharing their thinking. He went off to a centre to play and later rejoined the group briefly once he heard how excited the children were (O5).

Kathryn and Victoria. Positive emotions were readily evident during the Office Inquiry. For example, once the girls had gathered the materials they needed and created a space in the Construction Centre, they focused their attention on role-playing office workers. There was only one entrance and it was pretty small. Victoria explained, "I don't think they wanted us in there. Well, every time I went over there to talk to them, they'd say 'we're busy, we're working'…it was definitely like 'could you leave us alone', please" (VI3). Later the girls were very enthusiastic about setting up their own classroom office in the Drama Centre. They thought very carefully about where they should put all the materials that Kathryn and Victoria had gathered for them. Once the office was set up the girls spent a lot of time role-playing by creating nametags, typing and rolling paper through the typewriter, and writing letters. The girls were also very curious about how the security system worked and enjoyed making a security camera and swipe cards to further their office play.

Liza was especially interested in visiting the Junior School office the second time. Kathryn said that Liza was very excited as she walked down the hall smiling and skipping along. When she and Vicky stepped inside the office to see Ms. Harland, Liza asked, "Can we have an

appointment for this afternoon?" (I3). Kathryn explained that Ms. Harland printed out a confirmation for them so it made it official. After setting up the appointment, the confirmation slip disappeared. In the afternoon, however, when the girls visited the office, Liza pulled out the confirmation when Ms. Winters asked for it and said, "Here, it is" (I3). Kathryn and Victoria were so surprised. Liza had been enthusiastic about the Office Inquiry right from the very beginning so she had, on her own, taken complete responsibility for the confirmation slip and kept it in a safe place because she knew it was important.

Darlene and Kerri. The Running Club Inquiry promoted positive emotions in the children and focused their attention. One morning, the Running Club was so inspired by the inquiry they disappeared into the Cubby Area and had a meeting. When the children came out they were very excited, Darlene asked, "Where have you been" (DI2)? The response was, "We were meeting! We were in the meeting room". Gabriel explained that during the meeting they made some teams, "So all this side are on a team and me and Rose and Evan and Connor and Zara are on a team…So Michael are you the captain of your team"? Michael responded, "Yeah". Gabriel said, "Okay, I'm the captain of my team. So, Michael you get to make your team okay. And you get to make the name for your team. And I get to make the name for my team". Darlene asked, "And is that okay that Gabriel is making all these decisions or does anyone have a different idea" (DO2)? Gabriel said, "I have been sort of the leader of the whole running group…Who agrees with me raise your hand"? Almost all the children raised their hands.

Evan, who really looked up to Gabriel as a role model and was the youngest child in the Running Club, took risks and gained so much confidence because the other children were accepting of his thoughts and ideas. When it was his turn to share his running idea he was just jumping with excitement because he was so proud that it was his turn to share. Positive feedback from his peers encouraged Evan to stay focused on the inquiry and take more risks (DO6/I6). As

the inquiry progressed, his voice became much louder, his body language showed confidence and he became a big part of the group because the other children accepted him as an equal.

A similar point about positive emotions was made about Connor. Kerri explained, "Connor gets very excited…you can see he's getting excited…and then he really focuses when he is interested. He has a lot of different interests" (KI1). Kerri noted that when Connor focuses he produces amazing pictures like the one he drew of himself of how he felt before and after he ran. Darlene added, "He was quite quiet in that corner over there and not speaking very much. But yeah, that [the picture] is amazing" (DI1). Connor could concentrate and produce beautiful work because he was so interested and absorbed in the inquiry.

Sharon and Mikayla. Visits to the valley during the Community Inquiry fuelled positive emotions in the children. For example, one morning, Mahdi shared his idea about the butterflies in the valley. Sharon said, "So when you went to the valley…what did nature share with you on that day (SO5)? Mahdi responded, "Butterflies". Sharon asked, "How did that make you feel when nature shared butterflies" (SO5) and Mahdi replied, "Happy". Mahdi's response was not unusual as the children all seemed to enjoy their time in the valley.

Another time, while walking to the valley, Sharon pointed out interesting things in the environment for the children to look at and think about. The children listened attentively while she talked about different trees, flowers, birds, buildings, bridges, and the GO train (O6). Sharon said, "I feel that they don't have the vocabulary…you have to open it up and point things out to them because…they don't have enough time and experience out there" (SI7). As the children looked over the bridge to see the river, they were very excited and recalled how when they were there the last time they walked along the river, listened to different sounds, and watched the water bubble when it was moving (SI6).

While in the Valley, the children were very curious and many of them chose to use the nature cups and magnifying glasses to go on a nature hunt. Others laughed and played in the sunshine with their friends, while others chose to use the clipboards and paper to do observational drawings of the trees (O6). For instance, Amina focused for a long time and kept rotating her observational drawing of the tree as she attempted to draw it from different angles. Sharon said, "I love to see this because I want them to feel more, like for sketching…trying it out and experimenting and not wanting it to be perfect, and not meaning it to be perfect" (SI6).

The teaching teams engage in inquiries that encourage collaboration and inclusivity.

Lauren and Vanessa. The Invisibility Inquiry encouraged collaboration and inclusivity among the children. Collaboration and inclusivity refer to children working together where everyone feels like they belong and that their ideas are valued. For instance, while working together during the water experiment, the children shared their ideas about what they might do next with the water. They took turns and were very respectful towards one another after they decided to pour the water from the small jar into the vase. They wanted to make sure that their peers all had a turn. Similarly, when the children decided to pour the water on the table they took turns dipping their fingers into the jars to get their fingers wet. The children worked together to smear the water around and cover the entire surface of the table (O5). Lauren believed the children worked so well together and were inclusive with one another, "because they are totally engaged in the actual inquiry itself. The material is interesting to them, fascinating really, to them" (LI6).

On another occasion, when the children were drawing their invisible selves on the mirrors, Lauren realized that having a small mirror was a novelty for the children and that they first needed to play with looking at themselves in the mirror. While the children explored their different facial expressions, they shared their discoveries with one another while still respecting

each other's space. They didn't bother anybody else or interrupt anyone else's experience. While drawing, the children shared the metallic markers to ensure that everyone had an opportunity to complete their work because there were not quite enough markers. As they created their "invisible selves" they talked with one another about what they were drawing (LI7).

Kathryn and Victoria. When Kathryn shared the Office Inquiry book with the girls, they all sat together on the carpet and listened attentively to each other as they took turns sharing their thoughts and ideas. For example, the girls took turns as they shared their thinking about why the school doors were locked and when they talked about what their Moms and Dads did at their office. The girls also read parts of the text aloud, counted the squares on the intercom, and role-played scenarios. For example, Rayana and Vivian role-played how to use their swipe cards to gain access to the classroom office by swinging the mirror open (O7). Everyone was collaborating and being inclusive with one another throughout the experience.

After Kathryn shared the book, she then explained to the girls that she was going to put out a pack of sticky notes and pencils with the book so they could add their new ideas and thinking. She encouraged the girls to put the sticky notes on the book wherever they wanted to and that later they could share their thinking with the class. Victoria added that it would be nice to look at the book with a friend and that they could have a chat about what they did (K&VO7). As the girls took turns looking at the book in the Drama Centre, they were very collaborative and inclusive with one another, sharing their ideas, recording them on sticky notes, and attaching them to the book.

The girls were also collaborative and inclusive with each other in a variety of other situations such as when they visited the Junior School office, set-up and played in the classroom office, and went outside to photograph the doors for the security TV. In each of these situations, the girls had to work together collaboratively to problem solve and achieve their goals. Only on

one occasion did I observe any concerns about collaboration and inclusivity. This occurred when Olive and Angie both wanted to put the paper in the typewriter's roller and turn it. Angie did not want to include Olive in her role-play.

Darlene and Kerri. The Running Club Inquiry was inclusive as it allowed for fluidity in its membership. Some children in the group were regulars and others weaved in and out. Some children only wanted to be in the hall to do the running, others wanted to be involved in the discussion and planning next steps. Darlene observed, "So that again, tells you about the differences between children and how they learn, how they learn best, what they know is best for themselves and what they can handle and what they can't handle" (DI2). The children could choose when they wanted to participate in different aspects of the inquiry.

One day, the Running Club worked collaboratively after Darlene put a large piece of mural paper on the table and explained to the children that the goal was to draw the big idea. Michael said they should start with a circle talk so the children could plan what exercises and run they were going to do. Darlene suggested drawing a line down the middle of the paper. As Darlene began to draw the line Adele realized right away that the paper represented the hall. Adele was excited to draw the tape to indicate the starting positions. The children negotiated where to put the tape. Connor decided where to draw the children in their planning circle. Michael decided where they should draw the children doing their exercises. Zara and Gabriel volunteered to draw children doing exercises and Gabriel also drew a picture of himself holding the stopwatch. Michael thought we should show "high fives" with a girl and boy so Connor drew a girl on one side and a boy on the other. The children took turns drawing themselves at the starting line. The children then negotiated where to write and how to spell the words STOP and GO. In the end, it was decided that one side of the hall was for competitive racing and the other side was for running and slapping high five in the middle (O6).

Darlene also included the rest of the class in the Running Club Inquiry. For example, the seven core members of the Running Club presented their drawings to the rest of the class and explained their thinking. This gave those children an opportunity to think more deeply about their running idea as they shared it with others. It also gave the other children in the class an opportunity to add their ideas and say how their body feels when they run (DI2). Darlene said, "I think the documentation, if we get it up in the classroom, I think it is going to invite other children to wonder and have questions as well" (DO2). Another time, Darlene shared a chart with the whole class that showed the Running Club members' racing times. Darlene asked, "Who thinks that Connor, Gabriel and Zara were the fastest runners" (DO6)? Some of the children's hands went up. She then had the children go up to the chart one at a time and sign their name in the column under the name(s) of the children they thought were the fastest runners. Darlene asked the children to share their thinking about why they chose the column they chose.

Sharon and Mikayla. During the Community Inquiry, the children were collaborative and inclusive when they drew the posters of the city. They were free to come and go as they planned and worked together on different posters. The children shared the materials and negotiated what and where to draw on the paper (SI5). Interestingly, after the city posters were finished a new boy joined the class and Bihar found a way to include him by explaining his poster to Ahlam in his home language. Bihar reached up and pointed to the poster as he was labelling the parts for him (SI6). By referring to the documentation, Bihar could revisit the experience with Ahlam so he knew what happened in the Community Inquiry before he arrived.

Similar inclusiveness occurred when the children collaborated on paintings of the Valley. First the children shared what they enjoyed about going to the Valley. Anima commented, "When I saw the river and it was so fast and sometimes on top it's slow but under the water is fast". Dea said, "I like the tree because it was growing really tall". Esita said, "Sliding down the

grass mountain". Raem added, "I like the frog my mom found" (SI7). Sharon explained how initially the children created smaller individual paintings of the Valley and then poster size collaborative paintings on watercolor paper. She said,

> We asked them initially to draw their Valley and we realized that…it really wasn't showing as much as we knew they understood about the Valley…It was too small for that because the Valley is so big. So, we realized that the children needed to collaborate together on a larger piece of paper and it would allow for that larger sense of the Valley. (SI7)

When creating the paintings, the children used permanent black markers to draw different features of the Valley in the morning and then in the afternoon they used watercolour paint to paint them. Children would add to the artwork, leave, then perhaps come back and work on a different picture of the Valley. This way the paintings belonged to everyone. The children shared their ideas about what they had seen in the Valley and negotiated who would draw what and where. Sharon asked the children to describe what was in their paintings and she documented what they said (SI7).

Another time, when what started as a CN Tower structure turned into a collaborative building project, the construction grew bigger and bigger to include the city, community and valley. Children joined in, left, and re-joined later, listening to each other's ideas while taking turns adding pieces, removing them or trying something new. Sharon documented the experience and recorded what the children said as they worked together. For example, Adhita said, "This is the beach. Everyone will sit here and watch all the fireworks". Then Amina said, "This is the Valley. Nature is helpful because he brings the sunshine" (SI5).

Inquiry Design and Self-Regulation

What do these five assertions about inquiry design tell us about self-regulation in Kindergarten? I argue here that considered together, the findings in these assertions illustrate that inquiry design supports the children's ability to self-regulate in Kindergarten.

The teaching teams build the curriculum through inquiries based on the children's interests.

Children learn how to self-regulate during play (Porges, 2015a; Shanker, 2010, 2013a; Vygotsky, 1978). Recall that each of the inquiries arose out of the children's choices in play. In the Invisibility Inquiry, there was Steven's drawing of his mother and Deepa's invisible jewel. In the Running Club Inquiry, the children wanted to run in the hall. In the Community Inquiry, Omja drew a picture of the CN Tower. I believe that inquiry is like play because it emerges from the children's interests, which helps children to stay focused, consider different perspectives, and figure out their own thinking, which are all important mental processes in the cognitive domain.

I also believe that inquiry is enjoyable and intrinsically rewarding, much like play (see Csikszentmihalyi, 1975). During play, children have a sense of control over the activity so they can concentrate and ignore distractions. They can self-regulate because they feel capable to meet the demands that the activity places on them. In the Office Inquiry, for example, the girls chose the materials and created a space for an office in the Construction Centre. Vygotsky (1978) explains that, "play creates a zone of proximal development of the child. In play a child always behaves beyond his average age, above his daily behavior; in play it is as though he were a head taller than himself" (p. 102). Children are, I believe, able to self-regulate during inquiries based on their interests for the same reasons that they can self-regulate during play.

The teaching teams engage in reciprocal actions to propel the inquiry further.

Recollect that the teachers engaged in reciprocal actions by responding in thoughtful ways to the children's interests. In Lauren's class the children were invited to make invisible

drawings and use materials to make gemstones disappear. In Kathryn's class the children visited the school office and then had an opportunity to create their own office space in the Drama Centre with the materials they requested. In Darlene's class the children drew their running ideas and then used the materials in the special box to demonstrate their running ideas. In Sharon's class the children went on a community walk to see if they could find their apartment buildings and worked on an experiment using different materials to see if they were absorbent.

Reciprocal actions occur in what Vygotsky (1978) calls the children's zone of proximal development. The zone of proximal development is, "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86). When teachers engage thoughtfully in reciprocal actions that propel the inquiry forward, they must find the balance between providing learning experiences that are beyond the children's level and too challenging, and providing learning experiences that are challenging but not overwhelming. If the experiences are too challenging, the children can become frustrated and distracted from their learning. Reciprocal actions that are challenging, but not overwhelming, support the children's ability to self-regulate because they allow the children to keep their focus.

The zone of proximal development was evident in Lauren's classroom at the beginning of the water experiment. I found that when the children were being challenged and it was not clear in what direction the water experiment was heading, the children were more fidgety and distracted even though they were interested and curious. Although Lauren could have stopped, she explained,

But then if you wait sometimes, it's just in that waiting, waiting to let something develop. You have to kind of let everything percolate a little bit and it's almost until the kids…sort

of start to click and say oh, I better do something here. How can I make this a little more

exciting? It kind of puts the onus back on them a little bit…I better get thinking here. I

better get acting and doing something. (LI5)

However, the children were not overwhelmed and once the ideas started to flow they were totally

focused on the experience.

The teaching teams provide opportunities for the children to take ownership over the direction of the inquiry.

Remember that the children's thinking shaped the design of the inquiries. When activities

such as play are self-initiated and authentic, children are highly motivated to generate new ideas

and strategies to sustain them (Brooker, 2011; Copple & Bredekamp, 2009; Howard, 2010;

Shanker, 2013a; Whitebread, 2010). I believe that the same is true about inquiries. Shanker

(2013a) states that activities, "can be delivered in ways that enhance self-regulation—by

providing a choice of engaging activities and a degree of student ownership of their learning. The

more students are engaged in an activity, and have a sense of control over their learning, the

more likely they are to achieve a state of optimal self-regulation" (p. 19). For instance, Rory and

Daryl's thoughts about water and invisibility led to the water experiments and Rachel's role as

the security guard led to making a security TV, swipe cards and a scanner.

It is easier for children to maintain their focus when they are highly engaged in their

learning (Shanker, 2013a). Howard (2010) explains, "The fact that the boundaries in play are set,

regulated and modified by children themselves, means that play promotes and protects self-

esteem and maintains children's attention" (p. 154). Michael's thought about connecting all the

little ideas to make one big running idea led to each child wanting to demonstrate their own

running idea. Esita's bird's eye view of her apartment fueled her peers' interest in drawing the

important features of their own apartment.

I believe that inquiry is also like play in that it is voluntary and the children are given a choice about whether they want to participate or not. When children have the choices that inquiry provides, they have an incentive to self-regulate to sustain the inquiry and keep it moving forward. The Ontario Ministry of Education (2016) agrees that a key to supporting children's emerging self-regulation skills is to offer them choice in their learning, which is what enables the children to take ownership of the inquiry.

The teaching teams pursue inquiries that promote children's positive emotions and focus their attention.

Shanker (2013a) states that positive emotions generate energy, which makes it possible for children to concentrate and pay attention. Positive emotions strengthen their ability to learn. Children communicate their emotions through affect signals such as tone of voice, gestures, and facial expressions. I believe that inquiry, like play is connected to self-regulation in the cognitive domain through positive emotions like elation, inspiration, pride and curiosity. These positive emotions were evident in each of the inquiries. In the Invisibility Inquiry, the children were elated as they anticipated that the water would overflow in the vase and drew images on the table. In the Office Inquiry, the girls were inspired to create their own office, role-play office workers, and visit the school office. In the Running Club Inquiry, the children were proud that they had met on their own to create teams, share their running ideas and draw how they felt when they ran. In the Community Inquiry, the children were curious in the Valley when they were walking, playing, drawing and going on nature hunts.

The positive emotions generated by these inquiries remind me of Wien's windhorse effect. Wien (2008) explains, "The term *windhorse*…refers to raising positive energy, the life force that whirls through us…the animation by emotion that occurs in emergent curriculum" (p. 15). During the four inquiries, rising positive energy drew in the children, teachers, and visitors

and also spun out into the community through the sharing of documentation. I felt this windhorse effect during the water experiment, the demonstration of running ideas, and visits to the office and Valley. The positive energy that arose out of the children's emotions also fueled further learning and fostered their ability to self-regulate.

An example of the windhorse effect also occurred when Lauren was working with the Invisibility group. She wanted the children to stay so she didn't lose their great ideas about sound and invisibility. She said,

> The way the kids were at the table, to me that was true self-regulation because they were starving…[and] they still were focused on what we were talking about…So that to me is like an even more impressive example [of self-regulation] because the conditions were not ideal…So for them to just all hold it together and keep contributing that was kind of amazing. (LI3)

It was like the children could sense that what they were doing was important. When Iliana thought of movement and Samantha thought of sound, everyone was quite euphoric about the breakthrough, which generated a lot of positive emotion and enthusiasm to think about how to make sound visible.

The teaching teams engage in inquiries that encourage collaboration and inclusivity.

Recall that during the inquiries, the children felt a sense of belonging as they worked together and shared their ideas. I believe that understanding social cues is important for collaborative and inclusive inquiries, just as it is for play (see Greenspan and Shanker, 2004). These inquiries demand perspective taking, as a child has to figure out what others have in mind (see Bruner, 1983). It encourages communication about what one wants and what others want. For example, in Sharon's classroom, the children worked together and negotiated while sharing the materials as they created the city posters, paintings of the valley, and built the city and

community. In Darlene's classroom, the children shared their theories and ideas and took turns when creating the mural of the big idea and when sharing the Running Club documentation. As with play (see Shanker, 2013a), being sensitive towards others encourages children to stay immersed in the inquiry. When working collaboratively and inclusively with others, children engage in behaviours that are positive and helpful, and promote social acceptance, friendship and empathy.

Belonging refers to a sense of connectedness with others, of being valued, forming relationships and making contributions as part of a group (Ontario Ministry of Education, 2014). In Lauren's classroom, the children contributed their ideas, shared materials, and took turns during the water experiment and when making their invisible selves on the mirrors. In Kathryn's classroom, the girls shared their thoughts, took turns and worked together to create their own office in the Drama Centre. Secure relationships that are positive, caring and respectful contribute to children's emotional well-being (Clinton, 2013). Children demonstrate a sense of belonging when they take action to assist others. The Ontario Ministry of Education (2016) notes that when teachers create a kind, caring, collaborative environment this helps to develop children's social and prosocial self-regulation. Learning environments that are healthy, caring, safe, inclusive, and accepting support the development of the five domains of self-regulation.

The collaborative and inclusive nature of these inquiries makes me think of the experiential state described in Csikszentmihalyi's flow theory. Csikszentmihalyi (1975) explains that, "There is a common experiential state which is present in various forms of play, and also under certain conditions in other activities which are not normally thought of as play" (p. 43). He refers to this experiential state as flow and describes it as a sensation that is present when we are totally involved in an activity. During inquiries, I believe an experiential state of flow develops for those working collaboratively and inclusively on an activity that requires working out

creative ideas. Like Vygotsky's zone of proximal development, flow is experienced when there is a match to our capabilities (Csikszentmihalyi, 1975). It is also in flow that positive emotions surge much like the windhorse effect (Wien, 2008). During the unified flowing from one moment to the next in an inquiry, children feel in control of their actions and able to ignore distractions, which are both important aspects of the flow experience (Csikszentmihalyi, 1975). When teachers engage in collaborative and inclusive inquiries in the experiential state of flow, this supports the children's ability to self-regulate.

Conclusion

In this chapter, I have shown that the inquiry design component of the four emergent curriculum inquiries included building the curriculum around the children's interests, engaging in reciprocal actions, taking ownership over the direction of the inquiry, promoting positive emotions such as excitement and curiosity, and encouraging collaboration and inclusivity. I used these findings to illustrate how this design component supports the children's ability to self-regulate in the Kindergarten classroom. I have argued that inquiries support the children's ability to self-regulate in the same way as play because they emerge from the children's interests, are enjoyable and intrinsically rewarding, and there is a sense of control over the activity. Children are able to concentrate and feel capable of meeting the demands that the inquiry places on them. Reciprocal actions that are challenging, but not overwhelming, support self-regulation because they enable the children to feel more confident and stay focused on the investigation. Emergent curriculum inquiries promote positive emotions like elation, inspiration, pride and curiosity that generate energy, which improves children's concentration and strengthens their ability to self-regulate in the cognitive domain. When working collaboratively and inclusively with others, children stay immersed in the inquiry as they are in a state of experiential flow and can ignore distractions.

Chapter Seven: The Design of the Environment for Emergent Curriculum

In this chapter, I report my findings on the design of the environment for the four emergent curriculum inquiries. This design component begins when teachers consider the role of the environment as they brainstorm possible directions the inquiry might follow and provocations to encourage the children to engage in the topic being investigated. Children are intimately involved in the design of the environment, which enables them to make connections and develop a deeper understanding of the inquiry. The expanded notion of environment in this design component includes organizing the classroom space and materials, keeping the environment uncluttered and neutral, adapting and extending beyond the classroom, developing daily routines, using expansive time frames, and building authentic relationships.

I have organized the presentation of research findings around six assertions that characterize broadly the shared design of the environment in the four emergent curriculum inquiries. As in Chapter Six, these findings will then be used to illustrate how this design component of emergent curriculum supports the children's ability to self-regulate in the Kindergarten classroom.

Design of the Environment Assertions

The teaching teams organize the physical space and materials to facilitate the children's interests and autonomy.

Lauren and Vanessa. Lauren put a lot of time and effort into setting up the physical space in her classroom so the children could be as autonomous as possible when exploring their interests. She began to organize the space by first reflecting on what happened the previous year and why she made specific changes. Then she thought about how to organize the classroom and divide it up so the children would know exactly where the centres are, how to find the materials, and how to put them back. Lauren said, "I think it's really important that children are as

independent as they possibly can be. So, I really try not to do anything for a child that they can do for themselves" (LI1).

Lauren also considered the purpose of each centre, what the centre would look like, and what materials should go there. She wanted the centres to function well so she constantly thinks about how to improve them. For example, Lauren and Vanessa changed the snack area because the table was too small and it was stressful for the children to wait until it was their turn to eat. Now they have a large table capable of seating up to ten children that they use for snack and special activities like food experiences (VI1).

When Lauren finished setting-up the centres, she introduced the materials slowly as the children are getting used to their new environment. At the Light Table, for example, she put out different coloured gemstones and then later added more variety by including different sizes. She also changes the materials by introducing watercolour paints or other design materials like ribbons. Lauren said,

> So, I'm kind of constantly looking at…how they could use the materials in an interesting
> way. And the trick is you need the materials to be open-ended enough, but also that lend
> themselves sort of naturally to the kind of learning experiences you want the children to
> have. (LI1)

Lauren constantly added new materials to the centres to further the children's interests.

Kathryn and Victoria. Kathryn explained that when she and Victoria set up Inquiry Centres they thought about the children's interests. She said,

> I think that because it's a space that reflects them [the children] and their interests and
> because they are engaged at their Inquiry Centres for the morning…we position ourselves
> in the classroom and are listening to their interests, observing their interests, and then we

create that space based on those interests. So, for example, the Drama Centre is becoming

an office. (KI1)

Kathryn later elaborated on this idea when she wrote,

The room is a reflection of their [the children] interests, wonders, thoughts, and ideas,

and the space is ever evolving. Children have opportunities to build on existing

knowledge, reflect on their thinking, and co-construct understanding collaboratively in an

environment that supports authentic and meaningful learning. The walls are filled with

artifacts of their learning, and thinking that has been made visible to them. Materials are

purposefully and intentionally placed in their space, reflecting both their interests and

where we think we can push their thinking. (KR1)

For Kathryn and Victoria, the classroom space was always changing to reflect the children's

interests so they carefully chose materials that supported authentic and meaningful learning.

Kathryn and Victoria kept the classroom materials at the centres in clear bins or open

baskets so the children could choose the materials independently. Kathryn said,

I think we were intentional with the amount of clear bins in the classroom as a part of the

environment because it allows them to kind of be empowered to self-select the materials

that they need rather than constantly coming and asking us for materials. So, there's a lot

of clear bins around the classroom which kind of supports them in getting what they need

and having that independence. (KI1)

The girls were resourceful and could usually find the materials they needed quite independently

and if not, they helped each other. For example, one day Susan wanted to write Victoria's last

name and three other girls took her around the classroom to show her the possibilities. They

didn't do it for her but they helped her to complete the task successfully. At the beginning of the

year Kathryn would have helped Susan but now the girls took the initiative to find the resources

on their own and model this behaviour for others (KI6). The girls were also free to move the classroom materials among the different Inquiry Centres. For instance, the Office Inquiry began in the Construction Centre as the children gathered and collected materials from all over the classroom including their I Wonder books, pencils and a large number of chairs (KI1)!

When Kathryn and Victoria introduced new materials into the environment such as putting sorting trays and buttons in the Hands On Thinking Centre and the girls decided to use other materials to measure, the teachers were fine with this. Kathryn explained, "They are not tied to the provocation. They don't have to do that" (KI1). In fact, Kathryn and Victoria will then nurture the new interest by adding other measurement materials. Similarly, when the Hands On Thinking Centre was set up for the children to make the number 10 with the 10 frames, some of the girls were rolling the large die and thinking about what the numeral was as it corresponded to the dots. The girls were free to explore the materials and pursue their own interests (KI1).

One piece of disconfirming evidence for this assertion was the use of The Studio space. It was a self-contained room full of beautiful art-related materials with a table in the middle for a small group of children. Its use was highly restricted. It functioned as a space for Kathryn and Victoria to take the girls to work on a specific activity. As Victoria explained, "Some of them would be a disaster in here left to their own devices" (VI1). Kathryn added, "It's more if they are creating something at Production and they know that there's something in here [the Studio] that would support what they are doing" (KI1). The girls would then collect what they needed and return to the Production Centre. So, although access was restricted, the girls were still able to use some of the materials that are kept in that space.

Darlene and Kerri. Darlene and Kerri wanted the classroom space organized so the children could be autonomous and pursue their interests. When I first began my observations, Darlene was in the process of changing the space in her classroom so I asked her what her

thinking was behind the changes she was making. She explained that she wanted to have more distinct centres and it was important to her to get the Math Centre and Calm Centre up and going. Darlene went on to explain that now the quiet centres like the Calm Centre and the Book Centre are at the front of the room, the Art Centre and the Writing Centre are in the middle of the room and the noisy centres like the Blocks, Sand and Water are at the back.

It was interesting that over the course of my visits Darlene and Kerri went on to switch their classroom around twice more. Teaching teams often go through these transitions as they try to make the physical space work for the children they have so they can function autonomously. Darlene later explained that she just didn't "feel like it was working". She moved the blocks back to the middle of the room because the children didn't have enough space to build and it was very loud. This also meant that she could move the large paint easel to the back of the room. Darlene said, "It gives you a better view to have it out of the way like that too. So, you can see better. It doesn't chop the class up as much…it feels kind of open" (DI6).

A few weeks later Darlene and Kerri made another big change. Darlene was finding that the Calm Centre was becoming more of a Science Centre so she thought why not use the whole corner for Math and Science. I asked Darlene if she felt she was losing anything by taking the Calm Centre out. She said, "No. Science is pretty calm and hands on and pretty tactile" (DI6). Darlene moved the Reading Centre over beside the Writing Centre and it was a lot cozier. This way the two centres could share the materials. Darlene commented, "This is it. This is the ultimate for me. And now I'm going to take pictures so I remember it because I feel that it's working really well now" (DI6). At the end of the project, Darlene explained how her environment was distinctive. She wrote,

I feel that our classroom environment is a work in progress. It moves and changes along with the children. As children grow, show interest in specific areas of the curriculum,

then we develop/change/adapt the environment accordingly. We have noisy areas where

children design, create and imagine and we have quiet areas where children listen, read

and discover. (DR1)

Once Darlene and Kerri had the room better organized, it also enabled the children to be more

autonomous. For example, when sharing the materials from the Book Centre and Writing Centre

the children no longer had to walk across the classroom because now the centres were side by

side. It also made it easier for the children to put the materials back in the right spot when they

were tidying up.

Sharon and Mikayla. Sharon and Mikayla thought carefully about how the centres and

materials were organized so that the children have as much autonomy as possible in the

classroom. Sharon said, "You have to change your environment to fit the needs of the kids that

are there" (SI3). She explained that at the beginning of the year her classroom looks like a

hospital room because the walls are bare and only a few materials are out. She wanted the space

to be very calm when the children arrive. She said, "If they came in and they were overwhelmed

by everything all over the walls it's like visual harassment" (SI3). The classroom environment

was built up with the children as the year progresses. Sharon wrote,

My classroom looks different from September to June. It changes based on the learning

needs of my students, and as I get to know their interests and personalities, the room

reflects them. In September, I start with a very neutral starting point (i.e., bare walls). The

learning areas are set up with materials that require little to no adult support to access or

engage with. In the first week, even the first day, I…put student drawings/work up right

away. This is for them to have ownership of the classroom…My ultimate goal, [is] to

invite the students into a classroom that is calm and caring…As the year progresses, the

classroom learning areas change to meet the student's areas of interest. (SR1)

Sharon's classroom was a reflection of the children currently living in that space.

Mikayla and Sharon placed a lot of emphasis on building the classroom environment collaboratively with the children so it truly reflected their needs and interests. Sharon said the children, "Contribute to the discussion about the design of the classroom. If something isn't working at the Drama Centre, if there is not enough space, I encourage the students to problem solve with me" (SR1). Sharon and Mikayla did not limit how many children can be in one learning area, although it was evident in some cases because of the number of chairs. It was fine for the children to move chairs from the snack table over to the Art Studio but in the Drama Centre this was not possible because there was not enough room. Sharon and Mikayla tried to leave these decisions to the children because they had their own understanding of space limitations (S&MI2). This same logic applies to the materials. Sharon said, "They'll know…we've never told them that you can't take something from there to there but they might make the decision that these materials are special and need to remain at this space" (SI2).

Mikayla explained the connection between the children's autonomy, the materials being accessible, and how this facilitates relationship building in the classroom. She said,

> A big, big deal for us is for the children to have ownership of their own space. So that, to me anyway, means the materials are accessible. They have a choice of materials. And while we do put out provocations and invitations to play, they also know that they have a great deal of freedom to use the materials in ways they want. And depending on the materials, I would say ninety percent of the time, they are able to take them to other centres and use them in other ways. So, because they have that freedom and that accessibility, they just can build on their own ideas. They are not limited in terms of what we, our vision for the materials are for the different learning areas. So, because of that…the imaginative play that we see just builds and builds and builds…And the

relationships, again, it also facilitates the relationship building because they are

not…focused on their limitations…So they have the freedom to focus on their ideas and

their interactions with each other. (MI2)

Sharon added that they also looked at the complexity of the learning areas and materials and how

they change and grow throughout the year. Sharon and Mikayla felt that the children respected

the materials and that they in turn could trust the children to take care of everything in the room

because they had such a strong sense of ownership over their environment (SI2/I3).

The teaching teams keep the classroom organized, uncluttered and neutral in colour.

Lauren and Vanessa. Lauren thought that the appearance of her classroom was

important:

My classroom looks, clean, organized and uncluttered. There is nothing in the room that

is not being used. Materials that are no longer used leave and new materials are brought

in as the children's thinking, understanding and interests evolve. There are no

commercial bulletin board products, no primary coloured 'junk'. I use as many natural

products as possible. (LR1)

Lauren's classroom was Reggio-inspired and felt tranquil. Over the years, she had removed all

commercial type visual materials from the wall because they were too visually jarring. The

colours on the wall were neutral; even the number line was made out of little cork squares.

Lauren deliberately left parts of the bulletin boards empty because this helped the children to

avoid becoming overloaded by sensory input, which would hinder their learning (LI1).

Lauren recalled a time when there was a district review and all the children's writing

samples had to be up on the wall. She said, "It changed the whole look of the room and it

changed the way the children responded in this space, I felt. They [the children] were a little bit

jittery because it was so busy and so frantic looking" (LI1). She found that the children were

distracted by the walls. Lauren added, "So I'm always trying to be conscious of not having too many things up on the wall, and anything that is there is actually used and needed" (LI1).

Kathryn and Victoria. Kathryn described the classroom environment as a natural, calming space for the children (KI2). The walls were painted white and only displayed documentation panels and things made collaboratively with the children like the alphabet and numbers one to ten. The furniture and cupboards were all made of natural birch wood and the materials were kept in clear bins and baskets. By using neutral colours the environment is not visually distracting. In addition, the glass windows and doors let in a lot of natural light at the children's eye level, which avoids having them feel overwhelmed by fluorescent lighting. Also, most of the floor was carpeted so this also helped with noise reduction.

The classroom was also well organized and uncluttered. Materials that the children were currently not using were in a storeroom between the JK and SK rooms. The materials in the classroom were easily accessible and the girls knew where they belong so tidy up time restored everything to the right place. Additional storage in the cupboards above the sink area ensured that things that were not needed were stored out of sight.

Darlene and Kerri. The classroom environment went through a number of changes during my time with Darlene and Kerri. As these changes occurred the room became tidier, more organized and less cluttered. These changes were time consuming as the classroom was quite large and spacious. At the end of the research project there were only small pockets of space that Darlene was continuing to work on, such as the area around her desk. All the materials that were not in use were kept in a large teacher's supply closet at the back of the classroom.

The colours were neutral and the walls were painted white. Two walls contained large white bulletin boards and a whiteboard that Darlene and Kerri used to display their documentation. All the documentation was on either a white or black background. The large

windows had white blinds and most furniture pieces were made of natural birch wood. At the front of the classroom there was a large beige carpet with a white couch where the children met to talk with Darlene about the day's activities and reflect on their learning.

Sharon and Mikayla. Sharon's classroom had a natural, authentic, Reggio-inspired appearance. The school was only a few years old and the way the space was designed made the classroom look organized and uncluttered. For example, there was a large spacious cubby area for the children to store all their belongings. One side of the cubby had a wall that was connected to the hallway and the other side had a long open shelf unit that acted as a natural divider between the cubby area and the rest of the classroom. This shelf was quite large and held a lot of materials including the art supplies. Also, one wall in the classroom had a teacher workspace that had a shelf to help keep teaching materials organized. It also had lots of cupboards for classroom materials that were currently not in use. In addition, every shelf and bin had been arranged so that it was accessible to the children and they knew where to return the materials at tidy up time. Everything in the classroom looked meticulous and it was clear that Sharon had put a lot of thought into how to keep the space organized and uncluttered.

The colours in the classroom were also neutral. The storage cupboards and furniture, except for the tables and chairs, were all made of birch wood. The walls were painted white and there were whiteboards and corkboards used for display. Even the blinds on the windows were white. The materials were kept in wicker or clear plastic bins. The environment overall, was visually appealing.

The teaching teams adapt the classroom environment and extend beyond it to enable the children to continue to think through their ideas and theories.

Lauren and Vanessa. Lauren thought about new ways she could change the classroom environment to further the children's thinking about the inquiry. For example, she decided to add

a large worm jar to the Nature Centre. One morning, Henry and Andrew were at the Nature Centre and they started to share their thinking about invisibility.

> Henry: They're invisible because the dirt is covering them.
>
> Andrew: Yeah.
>
> Lauren: Is it because the dirt's covering them?
>
> Andrew: Yeah and the dirt is brown and they're both brown...
>
> Lauren: The worms are brown and the dirt is brown. Ah (O4).

From this brief exchange, we can see the boys were thinking about how when we hide things they become invisible. Then Lauren asked the boys a question and this extended their thinking to how the dirt and worms blend together because they are both brown. The children started to talk about invisibility quite spontaneously because something was intentionally added to their environment to provoke such thinking.

Lauren also thought carefully about how to extend the inquiry outdoors. One morning, she carried out a variety of pots, pans and drumsticks and arranged them on a long bench. Lauren commented,

> I don't know if it's because of the way I had things laid out, because I did, sort of, have a pot and a drumstick beside each one. It's not like they took the pots and started clashing them together. They sort of knew exactly what I was hoping they would do. (LI7)

This provocation gave the children an opportunity to explore how sound is invisible. Tagwen was the first to approach the pots and pans and immediately start tapping in different ways to explore the sounds she could make. Then Tagwen encouraged other children to join and she shared her experience of tapping with them (O3). This outdoor provocation helped the children to continue to think through their ideas and theories about invisibility.

Kathryn and Victoria. Kathryn and Victoria adapted the Drama Centre so that the girls would have a space to continue thinking through their ideas and theories about what it means to be 'working' in an office. When the Drama Centre was changed to an office it originally had a table with a typewriter, lamp and two chairs. The girls would type on the typewriter, make nametags by writing the names of their friends on sticky notes, and write letters to their family. Next to the table there was a shelf that acted as a separate writing surface for the girls to write messages on paper and then roll them through the typewriter. On the shelf there was paper, envelopes, clipboards and pencils. Other materials from the Graphic Communication Centre also found their way to the office such as plastic letters, name cards, and books. A cozy chair sat next to the mirror. The mirror later had the security camera on one side and a scanner on the other. The children used their swipe cards and moved the mirror to gain access to the office. The girls later added other items to the office like a clock, a tray with sand and sparkles, candy and lollipops, and artwork for the walls. The office continued to evolve throughout the inquiry as the children came up with new ideas and theories.

Victoria and Kathryn also thought about how to extend the Office Inquiry outside the classroom. For example, they took the girls to the Junior School Office for a visit on two separate occasions. The first visit was spontaneous and it gave the girls a chance to look around the office, ask the office staff questions, and think about what to put in their own classroom office. The second visit to the Junior School office was planned and the children made an appointment. When the girls were in the office this time they thought about new things they could add to their classroom office. Both visits helped the girls to think more about what goes in an office and what it means to work there.

On a different occasion, Kathryn and Victoria wanted to build onto the girls' understanding of offices across different contexts, so the parents were invited to share what their

office looked like and answer the questions the girls wanted to know about their job. Some of the parents sent in photos and responses to the girls' questions and these were added to the Office documentation book and shared with the girls. This led to new insights and ideas about what offices look like and what people do at their office.

Darlene and Kerri. During the Running Club Inquiry, Darlene adapted her environment in numerous ways to further the children's thinking. For instance, the Running Club met in the "cubby" room that was shared between two classrooms. In the center of the cubby, four tables had been joined together to make one large table. This meeting place was significant for a variety of reasons. It helped the children in the Running Club focus when sharing their ideas and theories. It also helped other children in the classroom not be distracted while exploring at the centres. Having this space also symbolized for the children that there was important work going on here as they led the inquiry forward towards "the big idea".

Inside the classroom, there was a Science Centre with a table and chairs. Here Darlene was providing a space for the children to explore the connection between running and how it makes the body feel. On the wall behind the table was the documentation of the children's pictures and theories about how they feel before and after they run. On the table, there were books about how the body works, a large skeleton puzzle, a figure that could be taken apart in pieces to look inside the body, and "the running box" which contained materials like stopwatches, masking tape, paper and stickers.

Darlene also extended the inquiry outside the classroom into the hall. Normally this space was a place to put boots and backpacks. However, during the inquiry it became an extension of the classroom, a space that felt intimate as the children spent so much time there. Luckily the hallway was very wide and long so it was spacious and a perfect place for the children to try out

their running ideas. In the hall was a hexagonal table that the children used to record the children's names and running times.

Sharon and Mikayla. Sharon was always thinking about creative ways to change the classroom environment to provoke further thought about the inquiry and see if the children could consolidate their learning. For example, in the Small Block Centre, the materials were set-up to encourage the children's interest in building the city center. The materials included small blocks, Lego, cars, people, animals and furniture as well as felt, corks and gemstones. Documentation on the city was posted at the children's eye level and in a documentation binder. There were also books on the city and the CN Tower. This area in the classroom was always filled with children sharing their thinking as they built tall structures (O1).

When Sharon decided that she wanted to bring the valley into the classroom learning areas, she asked, "How can I use the materials in the classroom for you [the children] to re-enact and re-visit your understanding and ideas of an experience outside" (SI5)? Sharon decided to organize two new centres. The River Centre was set up at the Discovery Centre table with blue felt, glass fish, different sizes of rocks, wood pieces and small green and blue shapes. As a provocation, Sharon organized the materials to look like a river scene by using the blue felt and adding lots of details like having fish lying on the rocks. The Valley Centre was set up at the Playdough Centre with blue and green playdough, miniature plastic plants, wood stumps and branches, rocks and animals. There was also documentation on the wall behind the table with photographs of the valley (SI5/O5). Sharon later added two pieces of grey felt that looked like placemats, wooden people, green and blue square lids, and gemstones. As a provocation, she set up two different valley scenes on the grey felt (O7).

The Light Table was also later adapted and set up with new materials including small coloured stones, blue, green and brown transparent shapes, and square transparent blue and green

lids for the children to recreate the valley. Behind the Light Table there was documentation of the inquiry including the collaborative valley paintings and photographs of the valley. As a provocation, Sharon organized the materials to create a tree with blossoms, grass and water to get the children's ideas flowing (O7). Sharon was always using materials as provocations to extend the children's learning.

Sharon extended the inquiry beyond the classroom to the outdoors. During community walks the children found their own apartment buildings, sketched the cityscape and trees, played in the sunshine, and explored the river in the valley. Sharon also took the children out onto the school grounds on a few occasions. It was here that the children sketched the apartment buildings and first started to wonder about where water comes from. These excursions helped the children to think through their ideas and theories and make connections between the city, community and valley.

The teaching teams develop daily routines in the classroom that the children can navigate without assistance.

Lauren and Vanessa. Lauren made it a priority each year to think about the clarity of movement and the flow of the room so that the children can function on their own. Lauren explained,

> From the time the children walk into the building, [I think] what do I want them to do. What routines do I want them to follow…it's sort of from that that I set-up the room. I'm thinking okay, I want them to be able to do this or work in this way. I want them to be able to enter this [room] and put their things here and then know that they're going to go to their table or go to the carpet, whichever that happens to be. So that's kind of how I start. I don't look at the physical set-up of the room until I've sort of gotten the flow of the day in my mind and I think of the routines I want to start. (LI1)

Lauren put a great deal of thought into the children's daily routines even before she started to set-up her classroom space.

While observing the classroom, I could see that the children understood the class routines. In the morning when they entered the classroom, after outdoor play, they knew exactly what to do. After they hung up their belongings and put on their shoes, they went to their table and wrote their name on the sign-in sheet. Then they took out their folder of books and read quietly on their own or with a friend (O1). The music played to signal that reading time was over so the children put away their folders and went to sit quietly on the carpet. One child from each of the table groups would give Lauren their sign-in sheet for the attendance. During my first visit, Lauren read a book and connected it to how they had been talking about feelings in the classroom. Then she introduced new activities the children might like to explore (O1). Lauren explained that as the year progressed, her support and guidance around daily routines was less necessary (LI1). These daily routines helped the children navigate through the day themselves as they knew what to expect.

Kathryn and Victoria. In this classroom, the children understood the daily routines and could follow them without assistance. When the girls first entered the classroom, they hung up their belongings in the cubby and put on their shoes. After attendance was taken, the girls would have a quiet start with morning prayers or DEAR (Drop Everything and Read) time. Kathryn would then use the peaceful sound of the rain stick to signal the girls to come to the carpet. Here the children might share their news, look at some documentation or be introduced to a new provocation. Then the girls would choose an Inquiry Centre.

One afternoon, after going to a specialty teacher for Dance, the children went to Inquiry Centres. When it was time to tidy up, Kathryn gathered the girls on the carpet. While waiting for all the children to arrive, Kathryn kept the girls who were ready engaged by playing simple

games like counting backwards and deliberately making mistakes to see if the girls would notice. Once everyone arrived she asked, "Who would like to make the light table look fabulous" (KO1)? The girls then volunteered to clean different Inquiry Centres. As the girls worked together, Kathryn made comments like, "I'll count to 10. Construction really needs help" (KO1). Then other girls would go and help in order to get the job done more quickly. Kathryn said, "Thank you Nikki. Before you arrive [back] at the carpet you can bring a piece of learning with you" (KO1). Then several children were given an opportunity to share their learning. The girls felt confident because the daily routines were predictable and they could complete them on their own.

   Darlene and Kerri. Darlene and Kerri developed daily routines so the children could manage them without help from others. In the morning, after outdoor play in the Kindergarten playground, the children signed in by writing their first and last name and then sat down quietly with a book. When the books had been tidied, they went and sat on the carpet with Darlene or Kerri. Some of the children would then pursue current inquiries like the Running Club and other children would explore at the centres. At the end of the morning, Darlene would gather the children once again on the carpet to reflect on their activities. During one of my visits, Darlene looked at the large piece of white paper on the painting easel and said, "It made me feel like Spring when I saw your picture" (O4). She invited three girls to come up to the front of the carpet and explain what it was like to work together. Zara said, "Nina and Faith were painting and I asked if I could help". Faith explained, "We were trying to figure out what to paint and we decided on this". Nina added, "We had ideas to make flowers and Faith had the idea of a sun and Zara had the idea to make the splatters and the names". Zara said, "We made the rainstorm by splattering the paint" (O4). Darlene commented on how well the girls collaborated with one another and listened to each other's ideas.

On a different occasion, when the children came back from outdoor play in the afternoon they laid down on the carpet. Darlene commented, "It looks like Faith is asleep. Evan is asleep" (DO1). Darlene waited for it to be quiet and then put on a taped story. The children lay still, listening and relaxing and then they began to imitate the animal sounds in the story. Then Darlene talked to the children about how they had just been playing outside with the parachute. Rose said, "I like outside because I have more space to run around and you need that space". Caleb added, "You go outside and get fresh air". Darlene commented, "The sun felt good and we all had a little nap and now we are ready to learn" (DO1). Darlene read a story about how the body works and connected it to how our bodies feel when we can't go outside. These daily routines helped the children to navigate in the classroom because they knew what to expect and could predict what would happen next.

Sharon and Mikayla. Daily routines in this classroom were an important part of the Kindergarten program. In the morning when the children first arrived at school, they took their name card off the table, placed it in the pocket chart, and changed their Borrowed Books. They also signed their name on chart paper where Sharon either wrote a statement or had a question for them to answer. The children then chose a book to read on their own or with a friend. When reading time was over, the children gathered on the carpet. Sharon or Mikayla would take attendance by singing the children's names and the children responded back singing, "Here I am". Then everyone would sing songs and stand for O'Canada (O1). The Helper of the Day chose a question to answer from the question box. She clapped the syllables in her name and then chose a friend to take the attendance to the office. The other children would then decide what centre to go to (O1).

Sharon also explained the schedule using pictures displayed on the cupboard to ensure that English Language Learners Abduh, Shahmeer and Arpita understood what was happening at

school that day. Sharon and Mikayla also used lanyards around their necks that had pictures on them. When the children required reminders about what they needed to be doing, Sharon or Mikayla would point to a picture on their lanyard for sit, quiet, stop, or hand up. For example, Sharon pointed to the picture that means stop to remind Abduh that he needed to listen (O3). Sharon would also give Abduh verbal reminders to help know what to expect.

At the end of the morning, Sharon and the children sang lots of songs like Octopus' Garden, Yellow Submarine, Tiny Tim, Little Green Frog and You Are My Sunshine. Sharon used lots of intonation, expression and actions to bring the words to life. This helped the children learn new vocabulary, stay focused and on task. The children were enthusiastic participators and enjoyed this time with Sharon. As Sharon prepared to read a story she used verbal reminders such as, "One, two, eyes on you. One, two, three, eyes on me", to ensure that the children were settled and ready to listen before they headed off to lunch (SO3). Such daily routines helped the children feel more confident as all the children in the class were English Language Learners.

The teaching teams use expansive time frames in the classroom to enable the children to sustain their play and focus on the inquiry.

Lauren and Vanessa. In Lauren's classroom, the children enjoyed expansive time frames in the morning, when they explored the various learning centres and engaged in inquiries, during an uninterrupted block of up to two hours. This gave the children an opportunity to continue their play and think through their ideas and theories as they focused on the inquiry. Lauren explained, "Time is key and I try to have large blocks of time for an unhurried feel so the children can think deeply and use the materials in a meaningful way" (LR1).

During these expansive time frames, Lauren asked the children to commit to a learning centre during Stay Exploration. For example, she wrote Computer, Blocks, Light and Art on the whiteboard and invited the children to choose the centre they would like to go to. As the children

chose a centre, Lauren recorded their name on the whiteboard under the name of the centre. When a child suggested a centre that was not on the whiteboard Lauren added it. So, in the end Lauren might have added centres like Writing, Listening/Math, Playdough and Dollhouse (O1). She thought that not having too many centres listed on the board initially avoids the children feeling overwhelmed. Lauren said that this way of choosing centres helped her to control who was going where because if not, some children would choose the same centre every day (LI1).

Lauren elaborated further by saying, "They [the children] can still choose where they want to go, but they have to stay…at the centre until the Stay Exploration time is over" (LI1). Lauren and Vanessa had started using this strategy because they were finding that if not, the children would just move from one activity to the next without tidying up. They also wanted the children to persevere at their centre for longer periods of time. Lauren was amazed at how long the children could sustain their play. For example, Graham built a rocket and played with it for a while until he was tired of it. Because he was staying at that centre he then extended his play by using the blocks to build a space station to go with the rocket. Normally he would have just moved on to another centre (LI1). Having expansive time frames and an expectation that the child is commited to a centre encourages the children to persist and think more deeply about their play. Although Lauren set limits during Stay Exploration like monitoring who chooses what centre, and expected the children to stay at the centre they chose, the children were not restricted during the one-hour Free Exploration in the afternoon.

During Stay and Free Exploration there was enough time to allow for the completion of tasks including having the children tidy up independently. Lauren said, "One thing I've really learned, and I sometimes forget, is you need to provide them [the children] with enough time to do what you want them to do" (LI1). When it came to tidying up, some areas were messier then others, which took more time. Vanessa would go over to the children who were playing in the

blocks and get them to start tidying up a little bit earlier. Lauren said, "If I know I've given enough time, I can just remain calm and even if it's a bit chaotic, I know everything is getting done" (LI1).

Kathryn and Victoria. In this classroom, the teachers used expansive time frames in the morning and afternoon so the children could explore the various Inquiry Centres. In the morning, the girls had an uninterrupted block of time for one hour and forty minutes. Every second day, after recess, the girls could continue at their Inquiry Centre for an additional fifty minutes. In the afternoon, every second day, the girls had an uninterrupted block of time for one hour and forty minutes. This gave the girls plenty of opportunity to sustain their play and concentrate on the inquiry.

During these expansive time frames, the girls would choose which Inquiry Centre they wanted to go to. For example, one day Kathryn put out photographs of the Inquiry Centres that were open on the magnetic board. She waited to see which of the girls were ready to choose their Inquiry Centre. Alia chose to go to the Production Centre. Kathryn asked, "Alia what is your plan"? Alia explained that she was going to make sparkly sand. Angie chose the Production Centre. Kathryn asked, "Are you going to collaborate with Alia"? Angie replied, "Yes". Kristina chose the Production Centre so she could make a clock Vicky chose Drama so she could use the typewriter. (O4). After the girls chose their Inquiry Centres, Kathryn had them think about what they would do at the centre so they had a plan in mind when they arrived.

The girls placed their photo beside the Inquiry Centre they were going to on the magnetic board. When the children went to another centre they moved their photo to the new centre. When the girls forgot, Victoria asked, "What do you need to do when you change centres" (VO1)? The girls would then run over to the magnetic board and move their photos. Although there were expectations around moving their photo on the magnetic board, Kathryn and Victoria were quite

flexible when the children were involved in important purposeful work. For example, when the girls showed an interest in role-playing office workers, there were seven of them in Construction, even though that centre wasn't supposed to be open. Kathryn and Victoria realized this but they just let it go because as Kathryn said, "They were so into Office…it was like what's the point of squashing that" (KI1). Having expansive time frames enabled the girls to maintain their play and persevere for long periods of time.

Kathryn and Victoria often restricted access to some centres because there were only fourteen children in the class. This ensured that there were enough children to play at the centres that were open. It also helped to keep tidy up time from becoming too overwhelming for the children. Only on one occasion did I observe a centre being closed for a different reason. One morning, Victoria asked the girls if they were ready to move on to another centre because she was going to close the Book Nook. She explained by saying, "There is not good stuff going on in the Book Nook today" (O5).

Darlene and Kerri. In the morning during an expansive time frame, the children explored the various learning centres for purposeful play and pursued working on the inquiry, for an uninterrupted block of time of up to an hour and a half. Free exploration gave the children an opportunity to extend their play and persist when completing tasks. Darlene explained how the children go about choosing a centre to explore. She said,

> I hold their name card up and they choose what centre they want to go to every single
>
> day...We may encourage some kids, you know, if they are just doing the same thing every
>
> day, to try and get them to go somewhere else and try something new. (DI1)

When a centre was full, Darlene would say, "That is it for drama, drama is closed". This signaled to the children that they needed to choose an alternative place to play. During the afternoon,

Darlene and Kerri tried not to have too many centres open because there was less time and it was harder to get all the materials cleaned up.

Sharon and Mikayla. In the morning, the children enjoyed expansive time frames where they could sustain their play and engage in the inquiry for up to two hours. The children had both Choice Learning and Free Choice Learning. For Choice Learning, Sharon put up picture symbols of different centres on the whiteboard and the children selected a learning area where they were expected to stay twenty to twenty-five minutes. Sharon said that this helped her and Mikayla determine if there was enough complexity at that centre for sustained learning. Sharon added that,

> In that time, they [the children] are not interrupting each other because they are not moving around. We want to give them both. We want to give them freedom to move around and take materials from different learning areas and explore but we also want to give them that focused intentional time. (SI1)

Because the morning allowed for expansive time frames, the children also had Free Choice time where they could move around and explore a number of centres.

Mikayla shared what she thought about the connection between relationships and expansive time frames. She said, "I think too in terms of the relationship building, we really value long, uninterrupted blocks of play" (MI2). Mikayla commented that this year it had worked out that the blocks of time were longer and they had noticed how this had affected the children's relationships. Mikayla explained, "I mean they can go from being best friends to enemies, back to being best friends. You know, there's so much time for them to negotiate and navigate their social relationships in that time" (MI2). Sharon also pointed out that the move to Full-Day Kindergarten made that possible. Sharon added that with Full-Day Kindergarten,

I don't feel that pressure or the rush, and I don't think the children feel that pressure. You know that pressure that they initially have when you're like okay, where would you like to start your morning learning? They might go to what they think they want to go to, and they'll have that initial burst of oh, Play-dough, new Play-dough. And then they're like hmm, and it fizzles out, and they end up settling in a place that they might stay for forty-five minutes and that's where the real learning is going to start to happen. But you need to give them time for that. (SI2)

Expansive time frames allowed children time to settle so they could focus on their play for longer.

A specific example that shows the importance of expansive time frames occurred one morning during the Community Inquiry when Alma and Umairi were in the Small Block Centre creating an apartment building. The structure they built was very organized with a car park on the lower level, the family sleeping in their apartment and a garden on the balcony. As the play unfolded, Alma and Umairi were very gentle when adding or removing the materials. Sharon commented,

You can tell that they've certainly put a lot of effort and time and energy into this, and I think that's why you get the carefulness. They don't want to break it because they have worked very hard to create this together. (SI7)

While the children played, they were very cooperative, taking turns and negotiating their roles. Sharon noted, "She's [Alma] quite verbal and…he [Umairi] is not very verbal and doesn't have a lot to communicate, so they would have had to communicate a lot through their physical actions" (SI7). Sometimes, Alma had to work quite hard to figure out what Umairi was thinking so that the play could continue.

The teaching teams build authentic relationships in the classroom so the children feel

accepted and develop empathy for others.

   Lauren and Vanessa. Lauren developed authentic relationships with the children; she

was very caring and took the time to listen to their ideas and theories. The children respected

Lauren and even when they were busy at centres if she said quietly, "Everybody Listen", the

children would reply, "Right Now". Lauren would put her hands out to the side and the children

copied her. The room would go still in seconds. Lauren's tone of voice and body language had a

very calming effect on the children so her interactions with them were very positive (O1).

Vanessa observed that when Lauren called a child over to her table, "It's like intriguing, right.

Come with me, magical…it creates something special…with kids" (VI3). Lauren and Vanessa

realized that the children observed their relationship and so it was important to speak calmly with

one another and to show that they got along and were respectful towards each other. They felt

that the children internalized this and behaved the same way with their peers (L&VI1).

    Lauren believed that when it came to authentic relationships in the classroom, it was

very important for the children to feel like they were a part of the community. Documentation

played a key role, so she always had the children's pictures and names on the wall and their

documentation books ready so they could see traces of themselves in the environment. Lauren

explained,

> So that right away helps them…I think, to feel like they belong and they are already part
>
> of the classroom just even from the first time they enter. I think kind of letting them know
>
> that they are responsible for things in the classroom and the way things are run—it's not
>
> just Vanessa and [mine], this is their room. (LI1)

The children worked together as a community and shared responsibility so they felt like they had

some ownership over the environment. Lauren and Vanessa encouraged the children to take

responsibility by caring for their belongings and problem-solving ideas for themselves like what happens when someone wants to play at a centre and no one has tidied it up (L&VI1).

When building authentic relationships with their peers, the children learned how to use different strategies to resolve conflicts and be empathetic. For example, Jian was crying at the snack table because Henry grabbed his food and ate it. When Jian went to the Calm Centre, Kaitlyn and Cassie followed him. They were very caring and tried different strategies to help Jian recover. They talked with him quietly, gave him hugs, and offered him stuffed animals and squeeze toys to hold. When Jian started to calm down, Kaitlyn and Cassie went and sat on the carpet to listen to a story about invisibility. Jian remained at the Calm Centre for a few more minutes and then joined the girls on the carpet (O4). Lauren asked the children if they thought the people in the story would forgive the bear. Jian turned to Henry and said, "You know, it's a good thing I don't have to forgive you, because it was actually the invisible ghost that ate my chips. It wasn't you, Henry". Jian was laughing about it as he skipped away to get his lunch from his cubby (I4). The children had such strong relationships that they seemed to know how to help their peers when they became upset, they provided one another with just the right amount of support (O4/I4). Lauren commented that when a child was upset; she didn't go to the child right away to comfort him. Her absence opened up a space for the children to intervene. She explained, "So then that became more the norm of 'Let's go help our friends,' instead of, 'Oh, the teacher is taking care of it'" (LI4). Lauren or Vanessa would step in when conflicts escalated and help guide the children towards a peaceful resolution (L&VI1).

Kathryn and Victoria. Kathryn built authentic relationships with the girls in a variety of ways. For example, when the girls were working in the Studio, Kathryn asked Nikki what she could see in the prism and Nikki responded, "I can see a rainbow". Kathryn replied, "Great Nikki. Thanks for your great learning" (KO1). She also encouraged the children to persist and

focus on their work. During class meetings, Kathryn was very positive with the children and made comments such as, "You collaborated well together" (KO1). Victoria pointed out, "I think the relationship between the two teachers is important for the kids to see…They see us interacting positively all the time…We're relaxed with each other and respectful" (VI1). Kathryn and Victoria modeled how to speak and behave in a respectful way when they were talking to each other and with the children. The closeness of the relationships in the classroom were quite striking. Kathryn said, "Yeah, they love us. We love them. This group is truly wonderful" (KI1).

Kathryn explained that when it comes to fostering authentic relationships it was just like all other areas of the program; she and Victoria wanted the girls "to own it". They wanted the girls to own their learning and their thinking as well as the process of resolving conflicts with others (KI1). For example, when the girls were looking through the prisms and recording what they saw, there was lots of excitement in the children's voices as they found the colours in the prism that were the same colours as pencil crayons. Nikki said, "I need red". Anna responds, "I am sorry I am using the red right now and then I will give it to you". Angie said, "Who can give me a blue?" Nikki replied, "I can" (O1). When the girls worked together, there was a strong sense of community in which everyone felt like they belonged.

When building authentic relationships with their peers the girls learned how to be empathetic with one another. For example, Vicky and Sally were at the Light Table during tidy up time. Vicky put her nametag sticker over her mouth and said in a whispering voice, "I am putting this on my mouth because I want to be quiet" (O2). Sally seemed to understand that Vicky needed quiet time so she spoke to her softly and used hand gestures to help convey what she wanted to say. When she realized that Vicky was not picking up and had zoned out she said, "You have to put these in there". Vicky responded by putting the pink cubes with the rest. Sally and Vicky quietly tidied up the Light Table together (O2). Kathryn and Victoria explained that

Vicky often complains of high noise levels in the environment so she has learned how to use different strategies to calm herself down. Sally is sensitive to Vicky's needs and shows empathy towards her (K&VI2).

  Darlene and Kerri. Darlene thought that it was important to build authentic relationships with the children so that they felt accepted and part of the community. She said,

> They're not going to take risks and talk about their feelings and talk about their thoughts at all if they don't feel safe with the person they're with. And I believe that relationships are the most important thing when it comes to being with kids. They need to feel safe. They need to trust you. You need to care for them to take risks in their thought process, for sure. (DI1)

For example, Darlene recalled how Lola used to get scared very easily. She said, "Lola would get very, very upset. She'd have to sit with us. She would cry" (DI2). Over time, Lola learned to just take Darlene or Kerri's hand and stay close to them or at other times she would just make eye contact with Darlene and Darlene would nod her head to let Lola know that everything was okay. Darlene explained that, "Just from getting that reassurance, it's helping her to self-regulate and get back down to a calm state…she's learning much better how to handle it and how to deal with things (DI2).

  Darlene and Kerri promoted positive social interactions among the children and the closeness of the children's relationships was quite evident. For example, after a run when Adele was listening to Connor's heartbeat, Adele held the end of the stethoscope up to Connor's chest as she gently rested the other hand on his shoulder. Connor stood very still and quiet as he looked at Adele intently (O5). Darlene said,

> He's trusting her. Like he's got that trust in his eyes. It's like what do you hear?…And she looks so caring. Her eyes are right at him…He's ready for her to say something to

him. Her hands on his shoulder there…She's very gentle. She's portraying that in her

gestures. (DI6)

Adele and Connor seemed to be able to communicate without words. Connor knew he had to be

quiet so that Adele could concentrate and listen to his heartbeat.

When thinking about how the children were developing empathy for their peers, Darlene

said, "The fact that they [the children] are seeing outside of themselves, in that little world, that

they are reaching out and seeing what's out there and supporting each other is lovely" (DI2). One

day, Darlene and the children had a rich discussion about empathy after Gabriel became very

competitive when running in the hall. Darlene wondered why racing made Gabriel so excited.

Gabriel: …Because I just race because I really want to win.

Darlene: And what does winning make your body feel like?

Gabriel: …happy.

Darlene: Happy. Zara…what do you have to say about Gabriel feeling so happy when he

wins against children that don't win?

Zara: Sad…Because I don't win…

Gabriel: But it's not, well it's not actually a real race where you get medals and stuff.

Michael: Well it is not about winning, it is about having fun.

Whole group: Yeah.

Darlene: But Gabriel seems to have lots of fun when he wins.

Michael: Well what if you lost Gabriel, would you still have fun?

Adele: …I need to tell you something. Whenever my Mom goes for a race she just says

it's just for fun…

Michael: I like losing races…and not winning…I think it makes me feel too sad when

like, when I win and other people don't, so I always like…

Gabriel: Try to lose.

Michael: Yeah…

Rose: I have something to say…If I lost I would still be proud of myself…Because usually

I lose but I am still proud of myself…for running (O6).

Although, Gabriel sometimes found it hard to be empathetic, the rest of the children in the Running Club were so empathetic towards one another that they would sacrifice winning a race in order to avoid hurting their friend's feelings.

Sharon and Mikayla. In Sharon's classroom, there was a strong sense of community and authentic relationships. Sharon said that one of the ways that she and Mikayla promoted authentic relationships was through their knowledge-building circles where the children shared their questions, wonderings, ideas and theories about the inquiry they were working on. There was an established protocol, where the children were required to listen attentively when other people were speaking and take turns (SI2). Sometimes Sharon reviewed the protocol expectations, "In our KBC we listen to the ideas of our friends, we can build onto our friend's ideas, [and] we can bring new ideas to the KBC. But the most important thing…is that we are listening to our friends" (SO4). Knowledge-building circles provided opportunities for the children to feel accepted and part of a community.

Sharon and Mikayla found that they had to do a lot of modelling when it came to helping the children resolve issues with their peers. Sharon said,

We dramatize it quite often. We'll be together and I'll…be holding a marker and I'll

pretend I'm drawing with my marker and Mikayla…will say I want the marker and she

will try and grab it. And then we'll literally role play these challenges so that the children

who aren't speaking English yet…might not understand our words but by the physicality

of how we are doing it, they still can get it as well and understand it. (SI2)

Sharon and Mikayla often role-played issues that came up in class in front of the whole group. They re-enacted challenges that had already been resolved with the small group of children who were initially involved. It reaffirmed for those children that they knew what to do and they could share their ideas with the whole group (SI3).

The children were learning to be empathetic and think about other people's feelings so that everyone felt like they were part of the community. Sharon said, "I'm trying to get them to understand…to recognize the feelings of another and understand why that person feels that way" (S12). For instance, the children were asked to share their thinking about their visit to the Valley. At the end of the discussion, Adhita wanted to share the picture she had sketched of the tree she was sitting on.

>Adhita: When we went down to the valley…I looked how the bark looked like and I said how it would look and I looked behind and I looked around and then I got down but it was not safe to climb around the tree because it bends around…Then I went back on the tree and sat on the top of the tree. Then I was sitting, then Ehsan sat with me and he was showing me all the buildings and…No one is clapping for me.

>Sharon: We don't clap for anyone in our KBC.

>Adhita: Well I do it at home.

>Sharon: At home, you can do that but in KBC we don't clap actually because we are learning from each other. And we listen and we learn from each other…We say thank you by saying thank you for sharing your ideas (O6).

After sharing lots of information about her picture, Adhita was upset that her friends didn't clap. Sharon tried to alleviate her stress by explaining that knowledge-building circles provided an opportunity for the children to share their knowledge and learn from each other. Amina was also

concerned about Adhita's feelings so she distracted her and helped her calm down by asking Adhita about her picture.

The Design of the Environment and Self-Regulation

What do these six assertions about the design of the environment tell us about self-regulation in Kindergarten? I argue here that considered together, the findings in these assertions illustrate that the design of the environment supports the children's ability to self-regulate in Kindergarten.

The teaching teams organize the physical space and materials to facilitate the children's interests and autonomy.

As I argued in Chapter Six, inquiries based on children's interests that arise out of their choices in play support their ability to self-regulate because the children are able to stay focused, consider other perspectives, and figure out their own thinking, which are all important mental processes in the cognitive domain (Shanker, 2010). Classroom environments that facilitate children's interests and autonomy likewise support their ability to self-regulate. Remember that the classroom environments evolved to reflect the children's interests. In Lauren's classroom, for example, she organized the space so the children knew where the centres were and how to find the materials and return them. She introduced the materials slowly and changed them frequently as she considered how the children could use the materials in interesting ways. Darlene's classroom environment was a work in progress that moved and changed along with the children's interests. The materials were located so that the children could get and return them as independently as possible.

Shanker's (2016) *Self-Reg* method helps teachers enhance the development of children's self-regulation skills and this includes helping them be aware of when they need to reduce their stress and helping them develop self-regulation strategies. All the teaching teams in this research

study had worked with the children in their class to help them understand when they needed to alleviate their stress and what strategies they could use to achieve this. I found that their classrooms afforded possibilities like choice of centres and materials that could help the children self-regulate. Sharon's classroom was built collaboratively with the children over time to reflect their changing interests. The materials were accessible and the children had the freedom to use them creatively. Kathryn's classroom space was always evolving as the teachers listened and observed the children's interests and set up the environment around them. The girls were empowered to self-select the materials and had the freedom to decide how to use them in their play.

This link between classroom environments and self-regulation is reinforced by the discussion in Chapter Five, where I described how the teaching teams intentionally designed their classroom environments so the children could choose centres where they could go to up-regulate or down-regulate on their own in order to return to a calm and alert state. This is evident in observations made by two of the teaching teams. For example, Sharon felt that when children were able to self-regulate they knew what they needed at that moment and why. So, if a child needed to be moving around a little bit more, being active and moving their body, she knew the place in the room where she could do that and if she needed to be in a calmer, quieter place, she also knew where she could go (SI3). Sharon also explained the role of defined spaces in her classroom:

> We also have it designed in a way that can limit the interruptions because there are twenty-eight bodies in here normally. You need to have those quieter zones, the spaces, the learning areas that are not going to be distracted…If you look along that spread [Books, Small Blocks, Discovery, Drama], this I would consider a calmer zone, louder, calmer, louder…I think when we make our learning areas we try not to put something

necessarily beside something else, like two loud areas…or an area that might encourage

louder. (SI2)

This helps to avoid it being loud and chaotic in one part of the room because there is a buffering

zone in between. Mikayla thought that children need to be able to choose a centre where they

can, "soothe themselves… calm their bodies down…[and] lower [their] anxiety" (MI5). She

often saw children, who are at a heightened level of anxiety or at an activity where they are

getting overly worked up, choosing to go to the snack table to eat and drink some water (MI5).

Having something to eat or drink helps them to soothe and calm their body down.

The other example involved Victoria and Kathryn talking about having a balance of

activities available at the Inquiry Centres for the girls to choose from. Kathryn explained, "So

there's some that are a little quieter, some that maybe require a bit more energy" (KI2). Victoria

commented, "They [the children] seem to know what they need" (VI2). The girls' will choose

quieter, calmer activities when they need to down-regulate. Kathryn said, "They definitely each

kind of have their place where they want to go to bring that energy level down" (KI2). The girls

also chose more active busier learning areas when they needed to up-regulate, which indicates

that the girls knew what they needed to manage their own energy levels and the environment

offered them ways they could do this.

The teaching teams keep the classroom organized, uncluttered and neutral in colour.

Shanker's (2016) *Self-Reg* method is designed in part to help teachers learn to recognize

when a child is overstressed, and to identify and reduce the child's stressors. He points out that

there are an increasing number of children who are easily overwhelmed by visual stimuli in the

classroom environment (Shanker, 2013a). He also explains that for many years educational

programs like Reggio Emilia have emphasized that children are able to concentrate better in an

environment with a reduced number of visual distractors. Tarr (2004) highlights the importance

of painting classroom walls white or in light pastels because these colours reduce visual overload and have a calming effect. Visual clutter can be distracting so there should also be a reduced amount of material on the walls. She observed that feelings caused by visual chaos and clutter occur when there is no empty space on the walls "to allow the eyes to rest" (Tarr, 2004, p. 92). For these reasons, I believe that classroom environments that are organized, uncluttered and neutral in colour support the children's ability to self-regulate.

As the teachers in this research study were Reggio-inspired, it was not surprising to me that they were cognizant of keeping their classrooms uncluttered and neutral in colour. Lauren felt it was important that the classroom looked clean, organized and uncluttered. The colours in the room were neutral and only materials that were used and needed were at the centres or on the walls. Darlene wanted her classroom to be tidier, more organized and less cluttered so if the materials were not in use they were put away. The colours in the environment were neutral and many of the materials were made from natural products. All the teaching teams were aware of how visual clutter can lead to sensory overload for some children so they created classroom environments with a reduced number of visual distractions. Teachers that are Reggio-inspired believe that it is important to have lots of natural light in the classroom and find it difficult to deal with the challenges of fluorescent lighting. Darlene and Kerri, for instance, often turned the electric lights off when the sun was shining (DI2).

In all the classrooms, I found the materials were well organized. Sharon's classroom, for example, was new and well designed to be organized and uncluttered as it had lots of storage space for materials not currently in use. Heroman and Copple (2006) remind us that when we organize materials logically, this enables children to find them on their own and return them to their proper place when finished. The Ontario Ministry of Education (2016) notes that when

children help to organize the materials and find places to store them for easy access they can make independent choices as they play and interact in the classroom environment.

The teaching teams all felt that it was important for the classroom space and materials to have a calming effect on the children. Kathryn described her classroom as a natural calming space where the neutral colours helped the girls to avoid being visually distracted. It was organized and uncluttered where unused materials were kept in a storeroom and the girls knew how to restore all the materials to the right place. Kathryn and Victoria explained that the environment made them feel calmer as well. Kathryn said, "The trees do a lot in there. I love the branches, the trees. I think that's what I notice the most" (KI2). Victoria added, "So many people come in and say oh, this is my favourite room in the school…It kind of hugs you when you walk in" (VI2). Shanker (2016) notes that teachers also need to be able to identify and reduce their own stressors so that they can stay calm and attentive when interacting with their students. I believe that when classroom environments enable both the teachers and children to feel calm, this helps everyone remain optimally self-regulated.

The teaching teams adapt the classroom environment and extend beyond it to enable the children to continue to think through their ideas and theories.

Shanker (2013a) emphasizes that teachers should adapt their classroom environments to enhance children's self-regulation, which in my view can be done by planning specific provocations that provide children with collaborative learning experiences. Recollect that when working on inquiries, the teachers used provocations to prompt further thought and action. Malaguzzi (in Gandini, 2012b) explains that classroom space and materials are valued for their potential to spark all kinds of social, affective, and cognitive learning and contribute to a sense of wellbeing and security in children. In the Invisibility Inquiry, for example, Lauren added the worm jar to the Nature Centre and took the pots, pans, and drumsticks outside so the children

could explore the connection between sound and invisibility. Gandini (2012b) adds that a classroom environment needs to be flexible, "It must undergo frequent modification by the children and the teachers to remain up-to-date and responsive to their needs to be protagonists in constructing their knowledge" (p. 339). In the Community Inquiry, Sharon adapted the classroom so the children could build the CN Tower and city in the Small Block Centre, recreate the river on the Discovery Centre table, and recreate the Valley at the Playdough Centre and Light Table. The classroom was also extended outdoors on several occasions when the children visited the Valley.

Heroman and Copple (2006) observe that responsive classrooms will be shaped and reshaped as the children's interests emerge. Similarly, the Ontario Ministry of Education (2016) notes that when children express their interests through their theories and ideas, a dynamic social space evolves that is fluid and inclusive. For instance, in the Office Inquiry, Kathryn let the girls make an office in the Drama Centre to explore what it meant to be 'working' and took them to visit the Junior School Office twice. In the Running Club Inquiry, Darlene created a space in the Cubby area for the Running Club to meet, a Science Centre so the children could think about the connection between running and how it makes their body feel, and used the hall outside the classroom so the children could share their running ideas. The classroom environments, during the inquiries, became collaborative creations that reflected and extended the children's learning.

The teaching teams develop daily routines in the classroom that the children can navigate without assistance.

Shanker (2013a) argues that it is important to keep your daily routines predictable. It helps children anticipate transitions throughout the day, which enables them to up- or down-regulate knowing what activity is coming next. This allows the children to self-regulate with little or no external input from the teachers. Remember that all the teaching teams established

daily routines that were predictable so the children would know what to expect. Lauren was thoughtful when choosing daily routines that she wanted the children to follow, like having the children pick a book from their folders, so they could navigate through the day themselves. Kathryn established daily routines, like the collaborative community cleanup, that were predictable so the girls would feel confident and be able to do them on their own. Darlene's daily routines, such as coming to the carpet at the end of the morning so the children could reflect on their activities, enabled the children to manage without help from others as they knew what would happen next.

Heroman and Copple (2006) add that when teachers plan and organize the day in a thoughtful and intentional way, young children feel more secure because they know what happens next. Daily routines in Sharon's Kindergarten, such as using picture cards to explain the schedule, helped the English Language Learners feel more confident because they understood how the day would unfold. I believe that predictable daily routines help children feel more secure, which develops their self-confidence and a sense of responsibility as they learn to navigate on their own.

The teaching teams use expansive time frames in the classroom to enable the children to sustain their play and focus on the inquiry.

Recall that the children at all four Kindergarten sites enjoyed expansive time frames where they were given a choice about where they wanted to play and whether they wanted to participate in the inquiries that were the focus of this research. In Chapter Six, I emphasized that children learn how to self-regulate during play (Shanker, 2010, 2013a) and inquiry. Expansive time frames in the classroom give children enough time to sustain their play and concentrate on the inquiries. They also enable children to take breaks when tired and to relax so they can restore their energy before pursuing the activity once again (Wien, 2008). In Lauren's class, for instance,

the children enjoyed expansive time frames when they worked on the Invisibility Inquiry or played at the learning centres during Free and Stay Exploration time. The children in Sharon's classroom played during Choice Learning and Free Choice Learning or they worked on the Community Inquiry. In both classrooms, expansive time frames gave the children the freedom to move around between the centres as well as have a focused intentional time so they could sustain their play or work on the inquiry.

Heroman and Copple (2006) observe that Kindergarten children are eager to make choices about where they can play. In Kathryn's class, the girls would make plans before exploring the Inquiry Centres where they could focus on their play or pursue the Office Inquiry during an uninterrupted block of time. In Darlene's class, the children would choose their learning centres and engage in purposeful play during Free Exploration or focus on the Running Club Inquiry.

When children are at learning centres, they develop skills in the multiple domains of self-regulation. They learn how to be independent, resourceful, take risks, persevere, problem-solve, show initiative, and be creative. As with purposeful play (Heroman & Copple, 2006), I believe that these skills are also practiced and applied during inquiries. Expansive time frames allow children to make choices to pursue inquiries, which help them feel successful at school. When children feel successful they try harder and it is easier for them to learn when they feel more confident (Heroman & Copple, 2006).

The teaching teams build authentic relationships in the classroom so the children feel accepted and develop empathy for others.

Wien (2014) believes that "the foundational element in educators' capacity to create emergent curriculum is the stance of…aesthetic responsiveness" (p. 6). This stance or disposition integrates the qualities of authenticity, attentiveness, appreciation, and empathy. Empathy,

explains Wien (2014), is "an integrative feeling that brings people into partnership" (p. 7).

Shanker (2013a) explains that one of the key attributes of the prosocial domain of self-regulation

is empathy, which is the capacity to care about other people's feelings and to help them deal with

their emotions. He stresses that when we think about empathy simply as, "putting ourselves in

someone else's shoes" and feeling what that person is feeling we miss the following three critical

aspects of empathy: caring about someone else's emotions; trying to help other people deal with

their emotions; and understanding the difference between your own and someone else's

emotions. Recollect that during the inquiries, authentic relationships were evident when the

children showed empathy towards their peers. In Kathryn's classroom, for example, Vicky was

empathetic towards Sally when they were tidying up the Light Table. In Lauren's classroom,

Kaitlyn and Cassie were empathetic towards Jian and used different strategies to help him

recover from a stressful situation. In Darlene's classroom, the members of the Running Club

were so empathetic that they would sacrifice winning a race to avoid hurting other children's

feelings. In Sharon's classroom, Amina was empathetic towards Adhita when she tried to distract

her from being upset because no one clapped.

At the heart of empathy is emotional connectedness, a sense of belonging. Recall that

during the inquiries, authentic relationships led to a feeling of acceptance. In Lauren's classroom,

for example, documentation in the environment helped the children feel like they were part of the

community. In Kathryn's classroom, when the girls were working in the Studio, there was a

strong sense of community where everyone felt like they belonged. In Darlene's classroom, it

took time for Lola to feel safe and become part of the community. In Sharon's classroom, she

established a sense of belonging and community through knowledge-building circles.

Prosocial, as I noted above, refers to positive behaviours that are helpful and promote

social acceptance and friendship. Social interactions that are successful occur when one child

connects with and cares about what another child is feeling. Empathy is developed further when two children resonate positively with each other emotionally, co-regulate, and turn to each other for support. Children with optimal prosocial regulation have a heightened ability to stay calm when experiencing stress in the other domains (Shanker, 2013a). In emergent curriculum inquiries, authentic relationships where children feel accepted and develop empathy for others do, I think, support their ability to self-regulate.

Conclusion

In this chapter, I have demonstrated that the design of the environment component of the four emergent curriculum inquiries included organizing the classroom space and materials, keeping the environment uncluttered and neutral, adapting and extending beyond the classroom, developing daily routines, using expansive time frames, and building authentic relationships. I used these findings to illustrate how this design component supports the children's ability to self-regulate in the Kindergarten classroom. I have argued that the organization of physical space and materials for the purpose of facilitating children's interests and autonomy during emergent curriculum inquiries enables them to stay focused, consider other perspectives, and figure out their own thinking, which are all important mental processes in the cognitive domain. Classroom environments that are free of visual clutter have a calming effect on both children and teachers. Teachers adapt and extend their classroom environments to enhance children's self-regulation by planning provocations that enable them to think through their ideas and theories. Predictable daily routines help children become more independent as they can anticipate transitions that enable them to up- or down-regulate knowing what activity is coming next. During expansive time frames, children have more time to develop skills such as independence, resourcefulness, risk-taking, perseverance, problem-solving, initiative, and creativity in the multiple domains of

self-regulation. Authentic relationships that create a sense of belonging and the capacity for

empathy promote positive behaviours in the prosocial domain.

Chapter Eight: The Documentation Component of Emergent Curriculum

In this chapter, I report my findings on the documentation component of the four emergent curriculum inquiries. In the early stages of the inquiry the teachers decide how the documentation will be generated and the possible forms the documentation will take. Documentation makes visible the process the children and teachers followed as they co-constructed the curriculum throughout the inquiry. It is a record that seeks to explain the children's ideas, theories, and learning experiences that took place in the classroom. In my view, pedagogical documentation is a research narrative about the children's and teacher's learning, shifts in their thinking, and their search for meaning. When teachers revisit documentation with the children, they use photographs, transcriptions and work samples to remind the children of their earlier ideas and theories about the emergent curriculum inquiry, which helps extend their understanding of the topic and come up with new or related ideas. When the teachers themselves study the documentation, it deepens their analysis of the inquiry, enables them to reflect on their teaching as well as how children think and learn. Revisiting documentation with the children includes keeping them invested in the inquiry, scaffolding their thinking, and better understanding their theories and idea. Studying documentation includes the teachers reflecting on the children's thinking and their engagement in the inquiry.

I have organized the presentation of the research findings around five assertions that characterize broadly the shared documentation component of the four emergent curriculum inquiries. These findings will then be used to illustrate how this documentation component of emergent curriculum supports the children's ability to self-regulate in the Kindergarten classroom.

Documentation Assertions

The teaching teams revisit documentation with the children to keep them invested in the inquiry.

  Lauren and Vanessa. Lauren reflected on the importance of sharing documentation with children to keep them engaged in the inquiry. She said,

> I think using the pedagogical documentation to reflect their own thinking back to them, that to them that's such a huge, huge—I don't want to call it an ego boost or a comfort— but that just demonstrates how important all of this really is, and so they understand that. Not only did you just take a photograph or videotape of what I said and did there, but she actually went back and typed it up and put it all together and now you're reading it back to me. It's like this is something that's really, really important. (LI6)

Lauren would sometimes share the documentation with all the children in the class even if they had not been directly involved in the inquiry. This way they would all know what everybody had been working on; as well it would provide an impetus for other children to join in and help think about what to do next. For example, Lauren shared the documentation of the Invisibility Inquiry by pointing to the pictures and reading highlights from the text. The children were focused and listened carefully to hear what happened next. Lauren talked about how Steven had made his mother invisible and Deepa had made her jewel invisible and that these ideas really got her thinking about what invisibility meant. Then she invited some children to see if they could make invisible drawings like Steven and use materials like Deepa did to make a gemstone invisible (LO4/I4/R4).

  Lauren continued, "Then we did another fascinating experiment…where we put a [smaller] glass…inside the larger glass and then poured vegetable oil inside" (LO4). At this point the children spontaneously started to join in and explain their thinking about the oil experiment.

Samantha: Then you can't see it…

Lauren: Then we talked about where the [smaller] glass might be and what happened to the glass. And so, the boys and girls…said that the glass was gone, it was nowhere. It was invisible you couldn't see it at all, and so it wasn't inside the big glass anymore…

Samantha: The little flask goes in and when you pour it in you can't see it anymore but it is still there it's just because the oil makes it that you can't see it there…

Tagwen: When you're doing it, it is the same colour as the glass but you pour oil inside it so you can't see it…it made one cup almost disappear…

Dhara: It [the small glass] might have been on…the bottom of the other glass (O4).

This led to a further discussion about what it means to be invisible.

Kathryn and Victoria. Sharing documentation with the girls was one of the ways that Kathryn and Victoria kept the girls interested in the inquiry. Kathryn wrote about her experience sharing the Office Inquiry documentation with the children:

Reviewing the process with them by asking them what was happening in the photographs, reading their theories aloud, and even some of our own thoughts, proved to be a rich opportunity for engaging them in pedagogical documentation. It appeared that when the students heard our own insights into their thinking, they felt valued and important. This experience allowed them the venue to be able to articulate their thinking, reflect on how it has changed, and build on their own and others' ideas. (KR1)

Kathryn believed that when you share documentation with the children and it includes the teacher's voice, it shows that the teacher honours their thought process and has thought deeply about it. It also enables a child to clear up any misunderstandings the teacher might have about their learning. Kathryn thought that when we share documentation with the children they feel more connected to it (KI1).

Victoria also shared The Office Inquiry documentation with the children. She explained to the girls that the teachers had made a book about one story that had been going on in the classroom. Alia guessed right away that Victoria was talking about the office. Victoria started to read the book and then paused to ask the girls where they were.

Sally: In the office.

Victoria: …Who's there?

Sally: Ms. Harland and Ms. Winters.

Nikki: I just realized I see the computer…and a jar.

Victoria: …A jar of what?

Nikki: Candies (VO5)?

Victoria continued with the story by asking the children what they did when they got back to the classroom. The girls talked about making a list of things they saw in the office and how they had made nametags. They also talked about what Olive had discovered.

Victoria: What is Olive looking at?

Olive: The printer.

Victoria: We called it a printer. It is an old fashioned typewriter, isn't it? What did you discover Olive? You were the typewriter discoverer.

Olive: It printed.

Victoria: Yeah and what did you do with the paper?

Olive: I writed THE K (VO5).

When the book was finished, Victoria explained to the girls that the story wasn't finished and there would be more pages added to show their new learning. This reminded the girls that they had been thinking about security and how they would continue working on that.

Darlene and Kerri. Darlene revisited documentation with the children to keep them focused on the inquiry and think about how to move it forward. For example, when Darlene asked the children what they had to say about all the documentation on the table, Michael took the group's thinking in a new direction by suggesting that they could connect all their running ideas and make them into one big idea. The other children were then invited to share their ideas and build on what Michael was thinking.

Michael: Okay…so for example if me and Connor were the only ones here we would make a big circle and run with one person at a time...

Darlene: Okay, so keep going, ask the next person.

Gabriel: My idea was the teacher could hold two clocks up and then you would try to run with another person and then when you come back you would try to beat your time. If you had a big one than you would have to try to get it lower. Like if I had 15 that the next one I would have 10. So, I would beat my score…

Michael: Adele…What was your idea?...

Adele: There would be a big line at one side of the hall and then another at the other side and then two people would be running from this side or this side and touching hands and then whoever was going this way would go here and whoever was going this way would go here…

Michael: Adele, so what you are saying is one goes on this side and one goes on that side. They run at the opposite direction and they high five and then go to the other end. And the [other] person goes to that end…

Darlene: Why did you like it that way instead of two people running side by side? Why in the other direction?

Adele: Because they didn't want to bump into each other…

Michael: But Adele if you missed the person, no high five, they would crash so that is why it is not so safe. Because like if I missed you say I was here and you were there and we didn't high five than I would like go like (crash sound). And you would be hurt…(O2).

This initial discussion about the documentation led to a lot of excitement about the inquiry and the children were very enthusiastic about going out into the hall and trying out their running ideas.

Sharon and Mikayla. Sharon reflected on how documentation kept the children invested in the inquiry. She wrote,

Students have to feel safe to take risks, ask questions and think critically. It is when they have that foundation of safety, with an environment that reflects themselves and their real lives that they engage with that documentation (the binders, the photographs) because it's about them and their ideas. Not simply a retelling of an event. It is the changes and the transformations of their ideas and meaning making over the process that come out in the documentation. (SR1)

Sharon felt that children only engage with documentation when there is a foundation of safety and when the environment reflects children back to themselves.

One day, Sharon showed a group of children a photograph of the valley with a building in the background. She asked the children if the picture was a place in their community.

Adhita: Yes.

Mahdi: I think it is nature.

Sharon: Is nature different then community?

Mahdi: I think a friend of the community. Nature is a friend of the community.

Sharon: Can you explain what you mean to us?

Mahdi: …Because, community and nature has the same things.

Sharon: Like what?

Mahdi: Like trees and sometimes crab apple trees…and sometimes it has some

rivers…and some buildings…[and] sometimes we see the forest in nature like today

(O4).

Mahdi was sharing his thinking about nature being a friend of the community and how nature

and community are the same. This led to a further discussion about how nature is a friend to us.

For instance, Mahdi said, "Nature shares butterflies and that makes me happy". Anan said,

"Nature shares sticks, rocks, and leaves". Amina said, "Nature helps us grow things like flowers,

trees, and animals" (O4). Then the children went off to draw pictures of how nature is our friend.

This work as well as other documentation related to the valley were put in a binder called,

"Nature is a Friend of the Community", which Sharon shared with the children at various points

as the inquiry progressed.

The teaching teams revisit documentation with the children to scaffold their thinking.

   Lauren and Vanessa. Lauren revisited documentation of the inquiry with the children

and offered them her assistance by guiding, coaching, and prompting their thinking. Lauren

reminds us that when we document we need to be patient and give children time to think things

through. She said,

   I always find even though I'm dying there inside, going okay, people are here recording

   this, this is awful, but it does happen and you just have to kind of sit with the

   uncomfortableness and just wait and wait and wait and just be patient…I don't want to

   lead them. I don't want to tell them. So, you just have to sit with that for a while. (LI3)

For example, Lauren shared photographs and then a video with the children of them making

sounds with the drumsticks and pots and pans outside. After the children described what they

could see in the photographs and the video, Lauren asked them to think about what was missing from the photographs that was in the video (LO3). She showed the children the video a couple of times to prompt their thinking; however, they were not sure what Lauren meant. She said, "I might leave this for a while and just let them think about it because I can tell them but I don't want to tell them" (LO3). Lauren didn't want to ask the children about movement and sound directly because she felt like it would be leading them too much. She considered leaving it for another day but then suddenly said, "Let's watch the video again…You have to really use your thinking brain…What is in the video that is not in the picture?" (LO3). Because Lauren gave the children another opportunity to watch the video, it gave them more time to think about her question and come up with the ideas that movement and sound were missing from the photographs.

On a different occasion, Lauren shared the photographs of the water experiment with the children who had participated the week before and revisited their thinking.

Lauren: So, Daryl why don't you tell us what is happening here.

Daryl: I am pouring the water inside a big glass cup [vase]…It gets higher…More water comes inside because it goes up.

Lauren: And what do you see right here?

Daryl: Bubbles go in at the bottom of the water…

Lauren: What's inside the bubbles…

Samantha: More bubbles…

Lauren: What's inside the bubbles inside the bubbles? What are bubbles made out of?

Daryl: …Water and soap…There's air inside the bubbles (O6).

Lauren guided the children's thinking by asking them questions about the bubbles.

Similarly, the children looked at a photograph where the table was covered in water. Lauren asked the children what they were doing in this photograph.

Daryl: Blowing the table off…

Rory: We were blowing the water because we were thinking if it was moving.

Lauren: …And I think that someone said the water was bending.

Daryl: Yeah that's Rory…

Lauren: When you were blowing it was bending.

Samantha: Yeah, and I said they make these little pools (O6).

In both water examples, Lauren was able to scaffold the children's thinking by first using the photographs to bring back the children's memories of the water experiment and then prompting their thinking by asking questions and using verbal reminders like "bending".

Kathryn and Victoria. When Kathryn shared photographs with the girls of what happened in the classroom 'office' the previous week, she was able to scaffold their thinking.

Kathryn: This is a picture of an envelope. Evelyn what do you see on the envelope?

Evelyn: I see Angie's name on it.

Kathryn and the Girls: From Angie to Ming (Kathryn points to the words as they read).

Kathryn: Who is it for?

Girls: Ming.

Kathryn: Who is it from?

Girls: Angie

Kathryn: I noticed something else in the office…What does Laura have on her nametag?

Girls: Laura.

Kathryn: I am going to show you another one that is funny. What is Zola doing in the office?...

Girls: Printing (KO2).

Kathryn guided the girls thinking by first showing them photographs, asking them questions, and using gestures as the girls recalled how they had been writing letters, making nametags, and using the typewriter.

In another example, Kathryn shared The Office Inquiry book with the children to look at the new pages that had been added.

Kathryn: I want to share some of your great thinking and learning…I am going to read you what the top says. It says an outing is organized to take pictures of the outside doors because you were so interested in looking at the security and how to get into the school. And then you took pictures of five different doors to make what?...

Girls: The screen.

Kathryn: The screen. That's right, remember the screen?... Nikki, can you turn the mirror around so we can all see the screen please…Does it look very similar to the TV in the [school] office?

Girls: Yeah (KO7)

Then the girls recalled the different ways you can enter the school and how the Head of Security monitors who comes in.

Kathryn: Alright so then we got up to the door…what happened first?...

Anna: …We pushed the button and…

Kathryn: what did we all say?...

Girls: Ms. Harland, it's JK….She let us come in…

Kathryn: Who was waiting for us when we got in there?

Liza: The security man.

Kathryn: …But then we went back outside and we got in a different way. How did we get in the second time we came through? Vicky, do you remember?

Vicky: We got in from a different door…

Anna: We put the card on the red thing and then we pulled it and then it opened.

Kathryn continued by explaining that Rachel was really inspired by that idea. She asked Rachel what she did when she came back to the classroom.

Rachel: Make something in case the door is locked so you go over and they know it is you…

Kathryn: You used paper to make your own card and can I read you Rachel's words? Okay I'll read Rachel's words. We make four red squares. Can we count the red squares that she used?

Girls: One, Two, Three, Four.

Kathryn: We need four red squares for the security: it goes on the door. You hold the card up like this. (Rachel held up her swipe card and used the mirror to show the door swinging open). What would happen on [the Head of Security's] computer when Rachel went into the school?

Girls: He sees it.

Kathryn: He sees it on his computer and that helps him keep the place safe (KO7).

Kathryn guided the children's thinking by reading some of the text, having the girls help her read parts of it, and asking the girls questions. She also had Nikki move the mirror to show the TV screen and Rachel use her swipe card to get into office. At the end, the girls counted the squares aloud that were on the monitor that they used for their swipe cards. Kathryn even made sound effects to help prompt their thinking.

Darlene and Kerri. Darlene offered the children her assistance as she guided and prompted their thinking when they shared pictures of how their body felt before and after they ran. Gabriel was having difficulty recalling what he said about his pictures.

Darlene: I think we wrote on the back of it. It says when we couldn't run it felt like my heart was melting…Can you explain that feeling of a melting heart?

Gabriel: Because I was very hot when I couldn't run and I couldn't get any energy.

Darlene: So, you feel hot when you don't have energy…Is it something that builds up inside you Gabriel?... You're a boy that likes to move a lot. How does it feel to you when you don't get to move a lot?...

Gabriel: Bored.

Darlene: And this one says, 'when I could run my heart was beating really fast and I was happy'…Why are you feeling your heart now?

Gabriel: Because it is not beating fast.

Darlene: So, what do you want to do about that?

Gabriel: Run (O2).

Darlene guided Gabriel's thinking by first showing him his pictures and reminding him of what he said previously. She then prompted further thinking by asking Gabriel to explain what he meant by a melting heart. Darlene also connected with Gabriel on a personal level because she knew him so well, which also helped her scaffold his thinking.

Similarly, Michael shared his thinking about his pictures.

Michael: This is how my heart was beating before and this is how my heart was beating after.

Darlene: And…can you tell me the difference?

Michael: Because this one is taking less air in my throat and this one is taking more air to get the energy.

Darlene: …in the picture it looks like the heart of you in red looks bigger.

Michael: That is because it is getting more air in it.

Darlene: So, when it gets more air it expands?

Michael: Yeah…It is like a sponge (O2).

Once again, Darlene asked questions to prompt further thinking. She also highlighted what she saw in the pictures and this led to Michael responding with an explanation of how he thinks the heart works.

Sharon and Mikayla. Sharon often revisited documentation to guide the children's thinking, which was especially important in her class because the children were English Language Learners. For example, Sharon showed the children photographs that she took in the valley that morning and asked the children to explain what they were doing in them.

Adhita: We're going down the steep road…

Sharon: Yeah. Into the…

Adhita: Valley…

Sharon: What was this part of our trip? Mahdi?

Mahdi: We were having some fun and we were playing.

Sharon: Anybody else want to share what they were doing in this part?

Esita: …Me and Abeedah were sliding down [the hill]…

Ehsan: We were having so much fun.

Sharon: Yeah, what was fun about it?

Ehsan: We were climbing up the hill and then we were rolling down…(O4).

Sharon used different strategies to prompt the children to elaborate on their experience in the valley. She asked questions, added connectors, invited other children to share their thinking, and had them explain ideas like fun in more detail.

In another example, Sharon shared the collaborative valley paintings that some of the children had worked on with the rest of the class. She invited the children to look at one of the paintings and tell her what they saw.

Alma: I see water…

Sharon: Where do we see the water in the valley? Adhita?

Adhita: The…river…it's underneath the bridge.

Sharon: Oh, where's the bridge? (Adhita points). Can you describe it?

Adhita: …It's the brown thing...

Sharon: Brown thing…I see something else on the bridge. What do you see on the bridge…

Amina: I see people. I even see lots of different leaves and lines, even I see rocks and suns and aeroplanes and lots of things (O7).

Sharon was able to scaffold the children's thinking by asking them questions and having them point to different features on the painting.

The teaching teams revisit the documentation with the children to better understand their theories and ideas.

Lauren and Vanessa. When Lauren shared documentation with the children, it helped to clarify their ideas and theories. For example, Lauren showed a group of children a video of Samantha talking about invisibility. Then Samantha explained her thinking, "when you camouflage the colours you blend in…and then I said invisibility is…white, it's not colours"

(O6). Lauren wanted to see if Samantha could clarify her thinking about invisibility being white by comparing it to Daryl's idea of invisibility being see through.

> Lauren: Now Daryl you said something last time about water being see through...so you can see through it. Is that what you are kind of talking about Samantha?...So is the water in this vase white or is it see through?
>
> Daryl: …I know the water's clear. It's not white, it's clear…White is…a bit darker so we can't see through it so then water is see through so we can see through it. It's clear…
>
> Lauren: So, when you are invisible are you clear?
>
> Daryl: Yes.
>
> Samantha: No…Like nobody can see you…If something was invisible…you couldn't see it….you could see through it if it was see through. If it wasn't see through then you wouldn't be able to see any part of it.
>
> Lauren: Daryl said if you are invisible then you're see through. Right. You're clear. Samantha, you said you're not see through if you are invisible. What would you look like if you are invisible? What would you be like?
>
> Samantha: You would just be white…(O6).

After the conversation, it was clear that Samantha believed that invisibility is white and not transparent. Lauren followed-up with Samantha's thinking about invisibility being white by holding up a white piece of paper in front of Kaitlyn's face and then holding up a piece of acetate. This demonstration seemed to help Samantha understand that invisibility is transparent rather than white.

Lauren reflected on the documentation, as she shared it with the children, to think about how the children's theories evolve over time. For example, one day when Lauren was sharing the

Invisibility Inquiry binder with the children, they returned to thinking about the book *Purple, Green and Yellow* by Robert Munsch.

> Lauren: Was the girl still really there if you couldn't see her and she was invisible?
>
> Andrew: …Yeah, because you can see the bubbles.
>
> Lauren: Cause, we could see the bubbles but could you see the girl?
>
> Andrew: No…
>
> Lauren: So, was she still there?
>
> Andrew: Yeah because she coloured herself.
>
> Lauren: Because she coloured herself with the markers so you could see her again. Raina what do you think?
>
> Raina: She's there but you can't see her (O4).

Lauren notes that Raina's thinking has evolved because initially she thought the girl was no longer there. By revisiting the documentation, Raina was able to share new thinking about her understanding of invisibility.

On a different occasion, Tagwen had drawn a picture of a girl sitting near a tree with her back against it. The girl was invisible because the tree shade was black. Tagwen described what she had drawn to show her theory of invisibility.

> Tagwen: Mine she has black skin and black clothes…that's why and then she is blending into the tree…
>
> Lauren: So, is she invisible right now?
>
> Tagwen: Yeah…this one is blending into the tree and this one is black and he blended into the vine because this thing is attached to the vine because it's like that (O4).

Tagwen explained that in her picture the children were hidden because one blended into the shade of the tree and that the other blended into the vine. She then started to think about a

previous experience she had using the acetate so she wanted to use a piece of acetate so that she could draw black all over the top of her picture.

> Lauren: All black on top?
>
> Tagwen: Yeah and then she would be invisible…
>
> Lauren: So, you would make her even more invisible then she is now?
>
> Tagwen: Yeah…because there's a human and then if you colour all black and then if you colour your skin black you can't see one part of their skin (O4).

Later that day, Lauren asked Tagwen how she could make the person in her picture visible and Tagwen said she could use coloured markers on top of the acetate (O4). When using the markers, Tagwen discovered that she could see the clothes and the inside of the girl's body when she added colour. If she added colour everywhere she would be able to see everything in the drawing even the tree's body. Tagwen said, "Black won't work because it will just make it darker then these [light] colours". Tagwen thought that darker colours like black, purple, blue, brown and grey camouflage the picture (LI5). The documentation helped Lauren see how Tagwen's thinking evolved from how you draw something that is invisible, to how to make it more invisible, to how to make it visible.

> ***Kathryn and Victoria.*** One day when Kathryn was sharing the Office Inquiry book with the children, she had the girls revisit, "Why are the doors locked" (KO7)? She then went on to read some of the children's responses.

> Kathryn: Liza said they don't want the cold to come in. And Susan said, I saw in the office they were checking for people coming in and coming out and Alia said, yeah, it's for safety…Does anyone have any other ideas or thinking to add to that?
>
> Nikki: …They keep the doors locked because they don't want any people to maybe think…that maybe the cars has to go inside.

Laura: Strangers.

Kathryn: Okay so it's so the cars stay out and Laura you think it's so strangers stay out…Great good thinking. Does anyone have another idea to add? Sally, is your thought ready now? Go ahead.

Sally: They will lock the doors because they don't want anything to blow away.

Kathryn: …Now if the door was just closed and it wasn't locked, it was just closed would things blow away?

Sally: Um hum.

Kathryn: Do you think that is the real reason that they want the door to be locked?...

Laura: If the door is unlocked and you think it's locked we give it a try and you find out it's locked.

Kathryn: So, if you were walking down the street and you go up to the door and you pull it and you'd find out right away wouldn't you whether it was locked or unlocked. What a great thought, Laura (KO7).

As Kathryn shared the documentation with the girls, she reflected on how their thinking about the doors being locked had evolved over time.

Darlene and Kerri. Darlene and the children looked at the oval circles that recorded their running times to help clarify their thinking about who were the fastest and slowest runners. In the first example, we can see that Michael just needed a bit of time to think through his original theory.

Michael: The smallest number is…the fastest and whoever had the biggest number was the slowest…we were using a stopwatch and if you were so fast you would only be seconds and if you don't want time in your score you want no time, so like you run and challenge yourself…so whoever has the lowest number wins.

Darlene: Good explanation so you must of left and thought about that a lot because at the beginning you thought that the highest number was the winner.

Michael: Yeah. But I forgot that we used the stopwatch.

Darlene: Aw so this is what helped you decide the right way (O5).

Michael now understood that the person with the most time was the slowest runner.

Evan, on the other hand. who is a year younger than Michael, was still struggling to figure out who the fastest runners were and why.

Darlene: Tell me which one is the fastest runner, is it Connor or Adele?

Evan: Adele.

Darlene: What about you Evan? You got 21. So, are you faster than Connor or slower than Connor?...

Evan: I guess if Gabriel and Connor have the same number they are both faster than me because Gabriel's faster than me.

Darlene: So, these three got the same number so we will put them here, then Michael came with the next highest number and then you got the highest out of all of them. Connor, Zara, and Gabriel got 17, Michael got 19 and you got 21. So, who is the fastest out of this group?

Evan: I guess these three are not the fastest and I guess me and Michael are the fastest.

Darlene: Because why?

Evan: Yes, so Max and me are both not the same number but we're both fast (O5).

Darlene did not try to correct Evan's misperception; she was using documentation to clarify what he was thinking.

On a different occasion, Darlene was looking at a transcription of an earlier conversation she had with Connor.

Darlene: Connor I have a question for you…You say that when you run with somebody else, it's too fast. You have to run too fast. When you run by yourself you don't have to run as fast. Why is this?

Connor: It's not like a race and if somebody wins it is not fair…

Michael: Is what you are saying is when you're racing you have to go as fast as you can to win, but when you're not racing against someone, you don't have to go as fast because you're not worried about losing?

Connor: Yeah and because like, so it is fair (O5).

Darlene also invited other children to contribute their thoughts when trying to clarify someone else's thinking. Michael here articulated what he thought Connor meant, pinpointing his concern about winning and losing.

Sharon and Mikayla. Sharon often shared documentation with the children to better understand what they were thinking. For example, Sharon read aloud the transcription of the conversation she had earlier with Mahdi when he said that 'nature is a friend of the community'. As this idea was rather vague, Sharon decided to break it down into smaller pieces and first clarify the children's understanding of friendship.

Adhita: They help each other…

Mahdi: They play with each other…

Dea: Friends always work together…

Mahdi: They make things together.

Sharon: I wonder if the community and nature make things?

Adhita: Yes, they do…Leaves. They make some food.

Mahdi: They do. Actually, I agree with you (O4).

Sharon also drew out the comparison that friends and nature both make things. Through this discussion, Mahdi was also able to clarify his own thinking about how nature is a friend.

When this transcription was later shared with the whole class, Sharon followed up by writing, "What is a friend"? on chart paper.

Amina: A friend is like when someone is hurt and someone is trying to help you. That's a friend…A friend is helpful…

Sharon: Someone who helps.

Amina: Someone who is very nice.

Sharon: …What do you do in our classroom to be a good friend?

Adhita: …When you share things to others.

Mahdi: …Someone says nice things…

Sharon: Let me review. Someone who helps is a friend. Someone who is nice is a friend. Someone who shares things is a friend. Someone who says nice things is a friend. Is there anything else we should add to this list? Saami?

Saami: I am your best friend…

Sharon: That's a friend if you say, "I am your best friend"…

Adhita: By respecting other peoples' wishes…

Amina: A friend…that you take care of…that means love…

Sharon: They take care and love?

Amina: Yeah. And that's how you be a friend (O5).

Sadi then returned the group to Mahdi's bigger idea that 'nature is a friend of the community'. He said, "Nature is our friend because he helps us a lot". Sharon replied, "You're right, Sadi. When we are talking about nature is helpful, that's one of the things that we said makes a good

friend. They help us, right" (SO5)? The children continue to think through the connection between nature and friendship.

> In a different example, Anan explained where he thought water came from:
>
> Water comes from the sky and then it goes down the drain and the drain is so dark and it's so far down…when water comes down that means it's raining and if you have a thunderstorm people have to [go] inside because [a] thunderstorm has so much rain and it's dark. (SI3)

The following week, Sharon read Anan's theory to the class just after they had gone to the river. Alma added on to Anan's theory by saying, "Rain comes from clouds". Sadi added that, "The rain from the clouds it falls everywhere on the roof even on sidewalks even on the river" (O4). Other children added on new ideas to help clarify Anan's thinking about where water comes from. For example, Mustanjid said, "Water comes from the lake". Aasfa commented, "Water comes from a waterfall". Mahdi added, "I think the water comes from Niagara Falls then it goes to Oshawa and then to Toronto". Eshan said, "I went to Niagara Falls and I saw some waters and they were moving" (O4). Stephanie also invited other children to contribute their thoughts when trying to clarify someone else's thinking.

The teaching teams study the documentation to reflect on the children's thinking.

> ***Lauren and Vanessa.*** Lauren reflected on what children were thinking when she studied the documentation. When she listened to an audio recording of a learning experience, she had time to consider the children's ideas and theories in a more thoughtful way. Lauren believed that when we are working with children sometimes we interpret what a child has said one way but then when we listen to it on the tape we might realize that was not what the child meant. Lauren said, "So then…I like to go back [to the child] and say, you know yesterday, 'I thought you said this, but you actually said this. Can you tell me more?' Because you really have to honour what

their original thoughts and ideas are" (LI2). If Lauren did not transcribe the audiotapes, she would not have realized that her perception had changed the direction of the conversation. This process allows teachers to correct those kinds of miscalculations.

While Lauren and Vanessa looked at the documentation of Samantha trying to make a gemstone invisible, they reflected on what she was thinking, feeling, and doing. In one photograph, Samantha is looking at the gemstone she has hidden by wrapping it up in green felt. Lauren said,

> She's totally focused…her eyes are so focused on what she's doing that you can just see
>
> like all her energy is going into watching what she's doing with her hands and trying to
>
> figure out how to make that thing [gemstone] invisible. (LI3)

Vanessa added, "She looks excited but again, still maintaining that focus and looking at the felt" (VI3). While Samantha problem solved how to make the gemstone disappear, she talked aloud to help clarify her thinking. She thought the gemstone was kind of invisible. She said, "When you put a gem in and you fold it up you might kind of see it still because I see a little part of it" (I3).

In another photograph, Samantha has found a way to make the gemstone invisible. As she placed the green felt on top of all the other materials she said, "If I go like that now I can't see it (I3). Vanessa commented, "She's showing her excitement, but still her eyes and her hands are focusing" (VI3). Lauren added, "She looks satisfied there. It's like okay, done. There" (LI3).

In a final photograph, Samantha is trying to figure out how to make her gemstone the most invisible by using all the materials. Lauren noted that Samantha was thinking through each step in a methodical way. First, she put the gemstone on top of the green felt, then she placed the bottle cap and glass container on top, and finally she covered the whole thing with the black material (LI3). Samantha explained that the gemstone is really invisible because you can't see it. She said, "I can just feel it…I can feel it a lot …I can hear it. Aw, shake, shake, shake" (I3).

Lauren said, "I'm really drawn to her mouth. Like, she's almost got a line—like set in the line of determination. She's determined to make her point somehow…It's almost like she's happily determined" (LI7). Lauren also noticed Samantha's hands. She said, "It's like she's got them set in a purposeful way. But it's not like she's clutching anything or grasping. She's very gently, almost gingerly, keeping her idea in place" (LI7). Lauren noticed how Samantha's eyes showed just how absorbed she was as she completed the task.

Kathryn and Victoria. When examining the documentation, based on the first and second trip to the Junior School office, Kathryn reflected on how the girls' thinking about what is in an office had expanded. After the first visit, the girls helped co-construct a list of items on the whiteboard of things they saw during their visit—a computer, printer, desk, pencils, paper, books, and decorations (KI7). During the second trip to the Junior School office, the girls looked to see if there was anything else they could add to their classroom office. After the visit, the girls shared what they had found and Kathryn recorded their ideas on the whiteboard. These items included a clock, a tray with sand and sparkles, candy and lollipops, and artwork for the walls. The girls then made these items and added them to the office. Kathryn noted that during the second trip to the Junior School office the girls had picked up on the finer details of what was in the office (KI7). Comparing both visits to the office enabled Kathryn to reflect on how the girls' thinking about what goes in an office had evolved.

Kathryn and Victoria analyzed documentation to help clarify what the children were thinking. For example, they were looking at the photographs of Olive in the classroom office. Victoria recalled that Olive had written THE K on a piece of paper and then run it through the roller on the typewriter over and over again. Victoria commented on how Olive was focused and followed through the process methodically step by step. Olive was intent on finding a way to make the typewriter work (VI5). Kathryn and Victoria were thinking about Olive's

understanding of how a typewriter worked because this one was broken. Did Olive really understand that if you press the keys on the typewriter the letters should appear on the paper? Victoria said, "Well, I think Olive did. When she put THE K into it, she obviously was figuring that when you press those, it would print. Because it wasn't doing that, she printed it herself" (VI3). Did this mean that Olive understood that if she touched the keys with the THE and K on the keyboard, it would have spelled that on her sheet of paper? Kathryn said, "I think she did" (KI3). Victoria thought, "No, I don't think that far…I think she knows that when you press those buttons, not the specific ones, that the printing comes up" (VI3). Although Victoria wondered if they should tell the girls that there was a part missing on the typewriter, Kathryn was not that concerned. Kathryn later said, "Well, it's not a real office, you know. It's very developmentally appropriate" (KI6).

Victoria and Kathryn continued to document Olive throughout the inquiry to see if it could clarify her thinking about how the typewriter works. On a different occasion, when Victoria was looking at the Office Inquiry book, she reflected on what Olive was thinking when she told Kathryn the typewriter was printing something. Kathryn asked Olive what the print said and she responded, "It says THE K. We didn't know it would actually work. I printed something, look it actually works…This actually works…It prints in real life. It printed out for real life" (O2). Victoria didn't think that Olive really believed that the typewriter printed THE K. She said, "I feel that they [the children] fuse fantasy and reality quite strongly. Fantasy is very close to reality for them" (VI5). Kathryn noted, "What they [the children] articulate might be different than what they believe" (KI6). She speculated that Olive had put a blank piece of paper in the typewriter and saw that it didn't work. She thought about that and then went through the slow process of writing THE K (KI6).

Darlene and Kerri. Darlene reflected on the documentation to see how the children's theories were evolving when she analyzed the children's drawings of their running ideas. When Darlene looked at Gabriel's first drawing, she could see that he had drawn two people holding clocks so that two runners could run at the same time. Then each runner was supposed to try and beat their own time. Darlene recalled that Gabriel was very excited to show the other children his running idea. He took the stopwatch from the running box into the hallway and had the children line up so that he could tell them exactly when to start. Gabriel had each child run twice, so that his or her scores could be compared. Zara assisted Gabriel by recording each child's times on a clipboard. Darlene reflected on how Gabriel's second drawing was different from the first. In the second drawing, he had drawn himself holding the stopwatch and he had recorded Michael's running times to show how Michael beat his time. His second drawing more accurately represented what had happened during the run (DI5).

In Adele's first drawing, she showed children lined up at either side of the hall and two children high fiving in the middle. Darlene remembered that when it was Adele's turn to share her running idea, she had Rose help her set up the hall. When the rest of the Running Club joined them, they formed a circle and Adele explained how her running idea worked. While Adele was demonstrating her idea, she spontaneously added warm-up exercises. Adele organized the children in pairs and the running idea unfolded. In Adele's second drawing, Darlene noted that Adele had added the idea of doing exercises to warm up and having the tape clearly show where the runners should begin. She speculated that because Adele is a hesitant drawer, she only drew the exercise piece because it was a new idea (DI5).

Darlene could see that in Evan's first drawing, he showed the boys on one side of the hall and the girls on the other so they could race against each other. Darlene recalled that she helped support Evan when he shared his run by setting up the hallway for him. Everyone gathered into a

circle and Evan explained his idea. He chose a boy and a girl and lined them up. He told the boy when it was his turn to run and then a few seconds later he would tell the girl to run. In his second drawing, Darlene reflected on how Evan drew exactly what happened which showed how his thinking had evolved. He had the boy slightly ahead of the girl so that it was not a competition. They ran simultaneously but the girl ran a bit behind the boy. When Darlene asked Evan why he changed his mind he said that he didn't want anyone to get hurt (DI5).

In Rose's first drawing, she drew a line and the children who didn't want to race could go on one side and the children who did want to race could go on the other side. Darlene remembered that when it was Rose's turn to share her running idea she announced that she had a new idea. She had the children who were not racing on the far side of the hallway as spectators and the two children racing against each other on either side of the line. Rose had pairs of children race against each other. In Rose's second drawing, Darlene observed that she had only focused on the children who wanted to race. Even though Rose didn't time the runs, she still drew a clock on the wall. Darlene speculated that Rose had been influenced by Zara's run and how the fastest runners had the shortest times. Darlene explained, "She was still thinking about the times and how it didn't make sense to her, I think, and that's why she wanted to race them against each other" (DI5). In all four sets of drawings, Darlene could see how the children's thinking about their running ideas had changed.

Sharon and Mikayla. Sharon examined the children's work samples to see how the children's thinking had changed. For example, Adhita had gone around the classroom and asked her peers 'What is Toronto?' and then she wrote their response. Sharon commented, "Well Adhita is very organized, I would say, and she's very precise. And she is the type of individual who has an idea, follows through with it and would like it to be a certain way" (SI7). Sharon said that letting some of her peers sign their own name was a success for Adhita. In the past, she

would have wanted to do it completely by herself. Sharon explained the methodical thought process Adhita used to create the work sample, "She cut it up and then she glued it together. So, she was asking all of them and then she cut up the strips and then put it together in the precise order that she wanted it to be" (SI7). After Amina had observed what Adhita was doing, she created a similar work sample that focused on, 'Why are cities important?' When thinking about Adhita and Amina's work samples Sharon said, "Amina always felt that she had very important ideas, whereas Adhita I felt …maybe just because I worked with her so much on being open to the ideas of others because that was a challenge for her" (SI7). Looking at the work samples enabled Sharon to think deeply about how Adhita's thinking had changed.

When Sharon was looking at a series of photographs of Amina, she reflected on how Amina's sketches of the tree evolved. In the first photograph, Amina is sitting by herself on a cement wall looking at a tree in front of her as she thinks about how to begin sketching it. Amina looks intently at the tree sitting in a moment of stillness as she soaks it all in. Sharon commented, "It just speaks to stillness and calmness and [being] present in the moment outside in nature…She has a design, a very clear plan in her mind about how she's going to start" (SI7). In the second photograph, Sharon observed that Amina used one hand to hold the clipboard while the other hand held the marker in a resting position. Amina looks at the tree through her hair, purses her lips and pauses in deep concentration. She has placed a lot of importance on this task. In the third photograph, Amina has her head tilted and is looking at what she is drawing. One hand holds the marker as the other steadies the clipboard that is now turned purposefully in a different direction on her lap. Sharon pointed out, "She's tilted this clipboard…she's very mindful and focused" (SI6).

The teaching teams study the photographs and work samples to reflect on the children's engagement with the inquiry.

Lauren and Vanessa. Engagement with the inquiry means that children were confident, focused, thoughtful, driven and purposeful. Lauren studied a set of photographs that showed the children banging on pots and pans with drumsticks and their hands as they explored what sounds they could make. Lauren explained that Tagwen was the child most interested in this provocation. When looking at her photograph, Lauren said, "She looks like she's comfortable and enjoying herself and she looks focused. And she also looks like she's in control of the drums…She's using it [the drums] in a deliberate manner" (LI7).

In another photograph, Tagwen has taken on a leadership role with her peers. She is showing Emma how to tap the pot with her hand. She carefully points out to Emma that she should hold the pot to keep it from sliding off the bench. Lauren commented,

It looks like she's showing her…where to hit it to get the best sound…She doesn't have her own drumstick so it's almost like she's beyond participating…like she's almost sort of demonstrating or helping to support Emma. It seems like that because Emma's really watching what she's doing. (LI7)

Lauren thought that Tagwen had explored the pots and pans on her own, was feeling very confident, and now was sharing her advice with a friend.

In the last photograph, Tagwen is showing Daryl how to hold the drumstick. She gently held the end of the stick while Daryl started to tap. Lauren found this to be an interesting photograph because Daryl looked a bit tentative, which is not like him. She thought that because Tagwen was taking charge, Daryl deferred to her. Lauren commented, "I love that she's holding it from behind so that as he's looking at his hand he's not seeing her hand...he doesn't need to notice her guidance if he doesn't want to. It won't interfere with his enjoyment" (LI7).

When Lauren analyzed both a photograph and a work sample together she got a deeper understanding of the children's engagement in the inquiry. For example, when Lauren looked at the photograph of Iliana representing high and low sounds with the coloured markers she said, "She's very focused…and I don't know, it's not even just that she's looking down at it, because there's something more there…She almost has that little smile of accomplishment or 'I'm getting my intention across'" (LI7). When Lauren zoomed in to look at the photograph more closely she said, "You can almost hear the conversation she's having with herself in her head about what she's doing" (LI7). Looking at Iliana's work sample, Lauren commented,

> Even though…she's put a lot of things on the page, it's got some kind of an organization so it doesn't look hectic. And it doesn't look like there's too much. Like these things, I'm imagining are…almost like a bass sound, a deep sound. And then, I mean, just to sit there and to actually put all those little marks in that way, it looks like a piece of fabric or a weaving of some kind. Which would have taken her forever to do…She's very thoughtful. Like you can tell she spent some time thinking about this theory…She really thought about…how she was going to make that look in order to be understood. (LI7)

Iliana explained her drawing by saying, "I am drawing the noise…That's noise coming from the pot…A banging noise" (I7). When studying the documentation, Lauren and Vanessa were able to gain new insights and better understand the significance of what the children were learning.

Kathryn and Victoria. When Kathryn and Victoria looked at two photographs of the girls in the Construction Centre "working", they reflected on how the children approached their roles as office workers. Victoria explained that the girls used the chairs as desks and were concentrating on drawing and writing in their I Wonder books. She commented, "They are totally engaged…they've provided themselves with the equipment that they need. Nobody provided it for them…they are totally self-directed" (VI5). Victoria went on to say, "They are all

in close proximity but working very individually really, although collaboratively. They are all on the same mission but there's not any interaction between each other. They are all self-motivated". Victoria added that the girls were very independent and didn't want any help from the teachers, "They just want to be left on their own" (VI5).

Kathryn agreed, "It appears the girls are not talking…they have spaced themselves out…they have selected the materials themselves...they have taken the initiative to move the chairs to a Centre where there typically are not chairs" (KI6). Kathryn recalled, "There was a lot of, 'I need the red pencil' and taking it from them and just saying 'hey I'm using that', and navigating any social conflicts that came through because of the collaborative setting that they are in" (KI6). Kathryn speculated that in the second photograph where Alia is standing up looking at Liza's work she was, "thinking about how her work is work and how her own work is work…seeing that it's different and thinking that's okay and then continuing on" (KI6).

Kathryn and Victoria also shared their reflections about two photographs taken in the Junior School office. In the first photograph, Liza and Vicky are talking to Ms. Harland at her desk. Kathryn recalled how Vicky was doing all the talking, as Liza waited patiently for Ms. Harland to type up their request to revisit the Junior School office. Ms. Harland then printed the confirmation slip and handed it to Liza (KI6). In a second photograph, the girls have just returned to the Junior School office for a visit with the rest of the class and Liza hands Ms. Winters the confirmation slip. Kathryn and Victoria remembered how surprised they were. Kathryn said,

> Victoria and I didn't even know where that piece of paper was…But we came back and
> they were like, do you have the confirmation of your appointment and Liza is like yep,
> here it is! And we were like whoa, where did that come from?...She had it! She had
> brought it with her. It was incredible. (KI3)

Victoria added, "The fact that she took it to the office and we didn't even know she got it" (VI5). Liza had independently taken responsibility for the confirmation slip and kept it in a safe location until it was needed. By examining these photographs, Kathryn and Victoria were reminded of how Liza could think through quite a complex task in a logical way.

When Kathryn examined both the photographs and work samples, it enabled her to get a clearer picture of what Vicky and Kristina were thinking and doing in the classroom office. In a series of photographs, Vicky and Kristina are working together side by side and collaborating with one another as they used sticky notes to make nametags for all their friends. Kathryn recalled that Vicky watched Kristina write down some names and then Kristina shared the materials with Vicky and invited her to write names. Vicky said, "Kristina how do you spell your name" (O2)? Kristina spelled her name aloud as Vicky carefully held the sticky note with one hand and the marker with the other as she recorded the letters. Vicky also spelled her name for Kristina. Kathryn explained that then the girls took turns helping one another to spell their friends' names. For example, Vicky started to write Angie's name as Kristina held Angie's plastic nametag for her. Vicky also wrote the names of her family members independently on the same sticky note. She said, "These are my family's names. Papa, Mama, and Owen" (O2). Kathryn commented, "Vicky could probably write letters to mom and dad and Owen all day" (KI4). When looking at the work samples, Kathryn could see how both Kristina and Vicky took their time as they carefully wrote out the names. They didn't rush their work but instead they focused on their goal, which was to make sure that all the girls had nametags. Vicky also wanted to make sure that her family had a nametag as well (KI6). Kathryn gained a deeper understanding of the girls' learning processes by looking at both types of documentation.

Darlene and Kerri. When Darlene looked at a photograph of the Running Club

children sitting on the couch sharing the documentation of their running ideas with the rest of the class, she reflected on their engagement. In the photograph, the children are looking down and they seem quite intense as Rose shares her idea. Darlene commented,

> I think that they're trying to get that feeling across to the rest of the group that this is really serious, what we've been doing. And, that they're listening to Rose. And they want to bring…that seriousness about [it] to the rest of the group…I think they're driven and serious and feel that they are of the greatest importance right now and that's why they're sitting there like that. (DI6)

Darlene thought that the group wanted everyone to understand the importance of the work they were doing so they were being respectful towards Rose as she shared her thinking. She added, "They don't want to engage with the audience at all. They don't want to be distracted because they want their message to get across…and they want Rose to be respected and this is their way of controlling the group" (DI6).

When Darlene and Kerri looked at Connor and Michael's work samples and photographs it gave them a richer understanding of the boys' engagement in the inquiry. For example, in a series of photographs of Connor, he is explaining what he has drawn in his picture about how his body feels when he runs. In the first photograph, Connor is leaning forward on his chair with his head bent and pointing to his knees in the picture. In the second photograph, Connor is standing and leaning over with a smile on his face pointing to the line he has drawn beside his knees. In the third photograph, Connor is back to leaning on his chair while he looks towards Darlene and points to the line beside his ribs. In the fourth photograph, Connor is hunched over as he writes knees on the line in his picture. Kerri thought that Connor seemed very interested in explaining the ideas in his drawing. She said, "He was obviously very interested in what he was doing and he had control…he's clearly explaining everything and wanting to express himself. So, he needs

to really concentrate and focus" (KI2). Darlene thought that Connor seemed very excited and proud of the work he did drawing his picture. When looking at the work sample, she noted that Connor drew both the inside and outside of his body in great detail. Darlene said,

> So, he's looking at what makes a body work. He's showing different parts of the body, especially in the movement area…It's all about the bones and I think that the time he took in doing this and the detail he put into this picture shows how important it was for him to show what his thinking was and his knowledge and understanding of the human body. (DI6)

Connor had used different colours to accentuate different parts like dark green for the heart. He had written his name in big capital letters and drawn a large arrow towards his body. Darlene felt that it was important to Connor to take his work a step further by labelling the body parts with some help from her so that other people understood what he was thinking.

In the second example, Darlene was reflecting on a series of photographs of Michael. In the first photograph, Michael is waiting with his hand raised as the children are sharing their thoughts about the documentation sitting on the table. Darlene said, "He wants to say something…I mean, he's dying to say something" (DI6). She speculated that Michael realized that his friends wanted to share their ideas and that he just needed to wait his turn. In the second photograph, Michael is still waiting with his head resting on his head. Darlene commented, "I think he's really listening to somebody and interested in what they're saying" (DI6). Darlene also thought that Michael was already starting to think about how to connect the running ideas as he waited patiently for there to be a pause in the conversation so he could have his turn to share his thinking. She commented, "Yeah…so that brain was just connecting everything together and listening and paying attention" (DI6). In the third photograph, Michael is standing as he looks at all the work on the table. He seems delighted that it his turn to share his idea and he knew that

everybody would be listening to him. Darlene said, "Oh, here he goes…he's going for it…He's got to stand and share it" (DI6). She felt that he looked confident and proud as he shared his thinking. She added, "Just the fact that he decides to wear his pyjamas to school every day is another sign of being very confident and sure of himself" (DI6). In his work sample, Michael has divided his paper into quarters so that he can draw his running idea. In the first square, he has drawn the runner racing by himself. In the second square, he has drawn two runners racing against each other. In the third square, he had drawn the runners in a line and in the fourth square he has drawn the runner being timed. Darlene thought that Michael had to do a lot of problem solving to show how to combine everyone's running idea. She said,

> I see a plan, like a big plan in his mind and I see that he was able to show that in his drawing. To me, like, he had a vision and…this was a way of Michael being able to show that and get it out to other people and get them to understand exactly what he was thinking through, like a storyboard. (DI6)

Darlene was able to more thoroughly analyze Michael's interpretation of the big running idea by looking at both the photographs and work samples.

Sharon and Mikayla. When Sharon looked at the documentation of the children in the valley, she reflected on the first photograph of Ehsan lying on the grass in the meadow. Sharon said, "He's having a moment to himself, away from everybody else. He's lying down. So, it's a different position for his body to rest. He's looking up at the sky. His hand is over his heart area" (SI6). Sharon speculated about whether Ehsan was making a connection to his heart, perhaps feeling his heartbeat slow the longer that he lay there. She added, "You can tell like even the tilt of his feet, he's relaxed. His feet aren't upright. He's [in] that yoga pose…it's a very relaxed posture. He is sunk into the grass" (SI6). Sharon thought that Ehsan seemed very focused and intent on what he was doing even though in the distance there were children moving around,

laughing and playing with one another. She said, "You can see in his face he's very peaceful and calm. There's no tension. No tightness" (SI6). Similarly, in a photograph of Amina, she is lying on the grass with her hands behind her head and her legs bent with one foot on the ground and one in the air. Her eyes are shut and she has a big smile on her face. Sharon said, "I think she's just so happy. She is just enjoying life and enjoying the sunshine and being outside" (SI7). She commented that even though there were lots of other children running around her, Amina was totally focused and in her own space.

In a different set of photographs, Omja is looking through the magnifying glass into a container. He is experimenting with moving his head and the magnifying glass so he can see the snail at different angles and distances. Sharon commented,

He has got something that he's looking at very intently. Like look at his head bent there…and he's not distracted and he's definitely focused on something…He's a kid that has very little English so a lot of it is through demonstration…what he would show me. So, it's interesting to see him so intense and focused on this. Because he's clearly more interested in seeing it for himself than bringing it to my attention at this point in the year. (SI7)

Sharon felt that Omja no longer needed to confirm what he was looking at with her, he was confident in his own abilities to explore and problem solve on his own. Similarly, in another set of photographs of Ehsan, he is holding a magnifying glass as he looks around the valley to see what he can find. In the first one, he is holding the magnifying glass right up to his eye. In the second one, he has lowered the magnifying glass to look at something off in the distance. In the third one, he has raised the magnifying glass up to his eye once again. Sharon said, "He's definitely investigating and very curious about something…he's in the moment" (SI7). Sharon thought Ehsan looked happy and full of joy as the sunshine crossed his face.

When Sharon looked at both the work samples and photographs she could reflect more deeply on the children's learning. For example, in a photograph of Bihar and Adhita they are sketching the collaborative building project. Bihar sits with his knees crossed to steady the clipboard. He is hunched over as he focuses his eyes on what he is drawing. He uses one hand to hold the clipboard and the other to hold the pencil. Beside him sits Adhita, her knees are also crossed, one hand holding the clipboard while the other rests on top. She is observing her peers as they build. Sharon said,

> I see a lot of focus. I see a lot of calm, intention [and] patience…When I look at Adhita's face, for example, she is pausing in the activity to really observe and look at the landscape that she has helped to co-create. (SI7)

When looking at Bihar, Sharon said that he was always eager to draw pictures and when he saw what Adhita was doing he wanted to join her. She noted, "He wants to get down on his clipboard what he's seeing" (SI7). Sharon said that both Adhita and Bihar were very absorbed in their work, there was a lot of activity in front of them but they were able to stay focused for an extended period of time. When Sharon looked at Adhita's detailed work sample, she noted how patient Adhita was when thinking about the directionality of all the different shapes and words she used to label her drawing. Sharon explained, "So she's trying to label the actual physical material as well as the imaginative part of it" (SI5). Sharon thought that Adhita labeled her work carefully because it was important to her that others understand what she was trying to show. She said, "It's almost like she has drawn it…for an audience. Like she had made this to share with somebody else" (SI7). Sharon saw that Bihar's work sample was of the CN Tower and a few other buildings around it. In the sky, there is a large sun that illuminated the city. He was totally engaged in trying to draw what he could see.

Documentation and Self-Regulation

What do these five assertions about documentation tell us about self-regulation in Kindergarten? I argue here that considered together the findings in these assertions illustrate that documentation supports the children's ability to self-regulate in Kindergarten.

The teaching teams revisit documentation with the children to keep them invested in the inquiry.

Shanker (2016) explains that negative emotions drain energy and positive emotions enhance energy. Children are more vulnerable to negative emotions when their energy is depleted and more likely to experience positive emotions when they feel calm and alert. When children are invested in the inquiry, their positive emotions lead to greater capacity for emotional growth. Children also have a greater ability to up-regulate or down-regulate strong positive and negative emotions, be resilient and move forward, learn on their own and in collaboration with others, and be proud of their own efforts and achievements as well as the efforts and achievements of others. Importantly, children need the energy associated with positive emotions (curiosity, interest, happiness) in order to explore more challenging emotions (honesty and compassion) and difficult emotional situations. Negative emotions drain the energy needed to navigate through new emotional territory.

When sharing documentation with the children, the teaching teams provided contexts for multiple listening. Rinaldi (2006) makes the connection between the act of listening and emotion, which is important for supporting self-regulation. For her, listening is, "Being open to differences, recognizing the value of the other's point of view and interpretation…giving meaning to the message and value to those who offer it" (p. 65). She explains that in a listening context, one learns to listen and to narrate. Rinaldi (2006) argues,

Behind the act of listening there is often a curiosity, a desire, a doubt, an interest; there is

always an emotion. Listening is emotion; it is generated by emotions and stimulates

emotions. The emotions of others influence us by means of processes that are strong,

direct, not mediated, and intrinsic to the interactions between communicating subjects. (p.

65)

For example, in Lauren's classroom, she revisited the documentation of the inquiry with the

whole class and the children spontaneously joined in to share their thinking about the oil

experiment. In Victoria's classroom, the girls revisited the Office Inquiry book and when

Victoria said that new pages would be added to show their new learning this inspired the girls to

think more about pursuing their interest in security.

In listening contexts, individuals feel permitted to express their theories and are open to

listening to others' theories and offering their interpretation. Children from a young age

demonstrate that they have a voice and that they know how to listen and want to be listened to.

Rinaldi (2006) adds, "Listening that takes the individual out of anonymity, that legitimates us,

gives us visibility, enriching both those who listen and those who produce the message (and

children cannot bear to be anonymous)" (p. 65). In Darlene's classroom, the children revisited

documentation of the inquiry which proved to be the incentive for Michael to take the group's

thinking in a new direction. Each child was invited to share their running idea and then with

great enthusiasm they ran into the hall to demonstrate their ideas. In Sharon's classroom, a

photograph was the stimulus that led to Mahdi's theory that nature is a friend of the community.

The data offers evidence that all the Kindergartens in this research study provided listening

contexts where individual children were visible.

When children revisit documentation, they feel like their contributions are valued, which

encourages them to continue to participate in the inquiry. Dahlberg, Moss, and Pence (2013) note

that children, "can revisit what they did before and find new inspiration and become further engaged" (p.157). Lauren felt that when the children's thinking is reflected back to them they understand how important their work is (LI6). Darlene thought it was important to get the documentation up on the wall so that it will invite other children to wonder and ask questions as well (DO2). She said, "Like, I want to see them looking at that. I want to see if that tweaks any more interest" (DI1). Sharon argued that when children have a foundation of safety in an environment that reflects their lives they engage with the documentation because it is about them and their ideas. Children need to feel safe to take risks, ask questions, and think critically (SR1). Kathryn believed that when children hear your insights into their thinking they feel valued and important. It gives them the opportunity to articulate their thinking and build on to their own and others' ideas (KR1).

The teaching teams revisit documentation with the children to scaffold their thinking.

Recollect that the scaffolding process was used by the teaching teams during all the inquiries. The scaffolding process during emergent curriculum inquiries, I believe, significantly reduces the children's stress levels and supports their ability to self-regulate, which fits in well with the discussion earlier of Shanker's (2016) *Self-Reg* method. Wood, Bruner, and Ross (1976) explain that the scaffolding process is most effective when children are focused and interested in an activity which is manageable. The teaching team's assistance reduces the children's potential for frustration so they are more willing to take risks. Kathryn, for instance, shared photographs with the girls of them 'working' in the classroom office as well as documentation in the Office Inquiry book. The photographs and book helped the girls recall these experiences. Kathryn guided the girls' thinking by reading some of the text, asking questions, and using gestures and sound effects. Similarly, Darlene showed Gabriel and Michael pictures they had drawn of how they felt before and after they ran. The pictures helped the boys remember how they felt and the

writing helped Gabriel recall what he said. Darlene also asked the boys questions, made personal connections, and commented on what she saw in the pictures. Scaffolding is evidently a strategy teachers can use to support the children's self-regulation.

Shanker (2016) observes that the source of our strong emotions and urges is located in the limbic system, and in particular the amygdala and nucleus accumbens. This system, also known as the 'emotional brain', plays a critical role in the formation of memories and the positive and negative emotional associations that get attached to those memories. Rinaldi (2006) connects the role of memory to documentation. Different forms of documentation such as photographs, videos, transcriptions, and drawings can support a child's memory as they review previous thinking, self-correct, find confirmation and denials, and make comparisons with the theories and ideas of others. A child can see herself in a "new light", comment on herself and listen to the comments of others. This can lead to a transformation in knowledge construction. For example, Sharon shared photographs of the valley and the collaborative valley paintings with the children to bring back memories of these experiences. She guided the children's thinking by asking questions, adding connectors between sentences, inviting other children to share their thinking, encouraging children to add more detail to their responses, and having the children point to the features they were describing. According to Rinaldi (2006), the reflexive aspect and the capacity for concentration and interpretation benefits from memory-enhancing materials.

Fraser (2012) adds that when teachers and children revisit documentation of earlier experiences together, the children are moved to a higher level of cognitive functioning where they are encouraged to focus their attention and remember previous experiences in detail (Fraser, 2012, citing Bodrova & Leong 1996). Lauren, for instance, showed the children photographs and a video of them making sounds with drumsticks and pots and pans as well as photographs of the water experiment. The photographs and video brought back memories of these experiences; then

Lauren provided verbal reminders of what was said before and asked the children questions leading to new insights about invisibility.

The teaching teams revisit the documentation with the children to better understand their theories and ideas.

When the teachers and children revisited the documentation together, the children drew on their cognitive processes to clarify their thinking. This involved thinking about: their ideas and theories in a logical sensible way; multiple concepts simultaneously; finding solutions to problems; considering other perspectives; and, keeping all kinds of information in their mind so they could draw on it when needed. It also involved being able to multitask by looking at different pieces of documentation and listening to others while not being distracted by things going on in the background. Recall that the teaching teams shared the documentation with the children to elucidate the children's theories and ideas. For example, Lauren shared a video with a group of children to see if Samantha could explain her thinking about invisibility being white. When Lauren revisited the documentation with the children, Raina's thinking about the girl had changed from "she is no longer there" to "she's there but you can't see her". When talking to Tagwen about her drawing, Lauren could see how her thinking had progressed from how you draw something that is invisible, to how to make it more invisible, to how to make it visible. Darlene had some children revisit the oval circles with running times to help clarify who was the fastest runner. She also shared a transcription of Connor so he could explain his thinking about winning and losing and invited Michael to contribute his thoughts about Connor's concerns.

Shanker (2013a) explains that cognitive processes of metacognition and executive functions are highly relevant for successful learners. Executive functions are cognitive processes such as reasoning, problem-solving, flexible thinking, multitasking, and working memory. Metacognition is an awareness and understanding of one's own cognitive processes or thinking.

The more self-regulated the child, the better she can develop or exercise her executive functions, and the better a child's executive functions the more she can reduce the arousal created by stress. Revisiting documentation to help children better understand their ideas and theories supports in this way their ability to self-regulate.

Rinaldi (2006) argues that when children share their theories with others, they reflect on those theories, modify and enrich them, and develop a more conscious vision of them. Children's theories evolve in classroom contexts when they have opportunities to listen and be listened to, to express their differences and be receptive to the differences of others. Documentation makes visible how the children's learning processes change over time. For example, Sharon read a transcription of Mahdi's idea that nature is a friend of the community and by discussing it further Mahdi clarified his own understanding of how nature is a friend. Sharon said that studying documentation with children is "not simply a retelling of an event. It is the changes and the transformations of their ideas and meaning making over the process that come out in the documentation" (SR1). After Kathryn read the transcription of, *Why the doors are locked*? the girls built on to their previous theories and ideas. Kathryn commented that sharing the documentation with the children allowed them a "venue to be able to articulate their thinking, reflect on how it has changed, and build on their own and others' ideas" (KR1).

The teaching teams study the documentation to reflect on the children's thinking.

Shanker (2013a) emphasizes how valuable it is for teachers to better understand children's cognitive processes: "a better understanding of the nature of these core processes helps us to devise classroom activities that will enhance our students' ability to focus attention and become self-regulated learners" (p. 46). When teachers study documentation, it deepens their understanding of the children's cognitive processes. Taguchi (2010) reminds us that documentation is not just a record of the children's learning but also "in itself an active agent in

generating discursive knowledge. It is part of the process of constructing meaning about children's learning" (p. 63).

Recall that when the teaching teams reflected on the documentation they were able to focus on the children's reasoning, problem-solving, and flexible thinking. Lauren listened to audio recordings and then would go back to a child to clarify what he or she was thinking. Lauren and Vanessa reflected on photographs of Samantha when she was trying to make the gemstone invisible. When looking at the Office Inquiry book, Kathryn realized that the girls thinking about what goes in an office became more refined after their second trip to the Junior School office. Kathryn and Victoria looked at photographs of Olive in the classroom office and thought about whether she really understood how the typewriter worked. When looking at the first and second drawings of the children's running ideas, Darlene could see how the children's thinking had changed after demonstrating their run. When Sharon looked at Adhita's *What is Toronto?* work sample, she reflected on how Adhita was now more open to the ideas of others. These examples illustrate how studying documentation is a valuable way for teachers to deepen their understanding of children's self-regulation in the cognitive domain.

The teaching teams study the photographs and work samples to reflect on the children's engagement with the inquiry.

Documentation gives teachers a unique opportunity to re-visit, both individually and with others, the events and processes that took place during the inquiry. When teachers study documentation, they make sense of the events that took place and create shared meanings and values. It deepens their analysis of the inquiry, and enables them to reflect on their teaching and planning as well as how children think and learn. Recollect that the teaching teams studied the documentation to reflect on the children's engagement – confident, focused, thoughtful, driven, purposeful – in the inquiry, which made their self-regulation visible. Lauren examined

photographs of Tagwen when she took on a leadership role outside with the pots and pans. When she looked at Iliana's photograph and then the work sample of her representing the high and low sounds, she found her very focused. Kathryn and Victoria analyzed the photographs of the girls in their roles as office workers, as well as the photographs of Liza and Vicky asking for a confirmation slip and Liza later producing it when they returned to the Junior School Office. Darlene and Kerri reflected on photographs and a work sample of Connor drawing how his body feels when he runs. Darlene also studied photographs of Michael when he was waiting for his turn to share his running idea. She commented, "That's such a big step in self-regulation too. Like a huge step" (DI6). Sharon reflected on the photographs of Omja and Ehsan using a magnifying glass to explore the valley. When looking at the photographs and work samples of Bihar and Adhita sketching the collaborative building project, Sharon could see how absorbed the children were in the activity.

Through collaborative discussions, teachers share their interpretations of the documentation and consider next steps (Fraser, 2012; Jacobs, 2008; Stacey, 2015; Wien, 2008). This flexible planning enables teachers to think about possibilities for provocations and activities. Teachers plan by making hypotheses and predicting future experiences based on their relevance to the learning processes and interests of the children (Rinaldi, 2006). When teachers reflect on the children's engagement in the inquiry, it gives them insights into the children's self-regulation, which informs their hypotheses and predictions. The better we understand children's engagement, "the better we can design classroom practices that will enhance a student's self-regulation" (Shanker, 2013a, p. xxi).

Conclusion

In this chapter, I have found that the documentation component of the four emergent curriculum inquiries included revisiting documentation with the children to keep them invested

in the inquiry, to scaffold their thinking, and to better understand their theories and ideas. Studying documentation enabled the teachers to reflect on the children's thinking and their engagement in the inquiry. I used these findings to illustrate how the documentation component supports the children's ability to self-regulate in the Kindergarten classroom. I have argued that when children feel valued and are invested in an emergent curriculum inquiry, they learn to listen to others and have a greater ability to modulate their emotions, work collaboratively, and take pride in their achievements. When teachers use documentation to scaffold the children's thinking, it supports children's memory as they review previous thinking, self-correct, find confirmation and denials, and make comparisons with the theories and ideas of others. Scaffolding also reduces the children's stress levels and aversion to risk-taking. When teachers and children revisit documentation, the children draw on their cognitive processes like reasoning, problem-solving, flexible thinking, multitasking, and working memory to clarify their thinking. This helps strengthen the children's executive functions so they can reduce arousal created by stress. When teachers study the documentation, it deepens their understanding of the children's cognitive processes and engagement in the inquiry so they can plan future classroom activities that will improve the children's ability to focus their attention and become self-regulated learners.

Chapter Nine: The Conversation Component of Emergent Curriculum

In this chapter, I report my findings on the conversation component of the four emergent curriculum inquiries. Recall that conversation involves "a more reflective study of what is being said, a struggle to understand, in which speakers constructively confront each other, experience conflict, and seek footing in a constant shift of perspectives" (Forman & Fyfe, 2012, p. 249). Teachers and children participate in conversations during Reggio-inspired emergent curriculum inquiries to co-construct ideas and theories about topics that they are investigating. The children have opportunities to engage in exploratory talk that has purpose and is of interest to them. Conversation during inquiries involves interactions that go beyond teachers merely listening to children, to teachers reflecting on and analyzing what is heard and said. Conversation includes encouraging the children to participate and express their different ideas and theories; nurturing their reasoning and problem-solving capabilities; and supporting their awareness of how to regulate their emotions.

I have organized the presentation of the research findings around four assertions that characterize broadly the shared conversation component of the four emergent curriculum inquiries. These findings will then be used to illustrate how the conversation component of emergent curriculum supports the children's ability to self-regulate in the Kindergarten classroom.

Conversation Assertions

The teaching teams use specific strategies to encourage the children to participate in conversation.

Lauren and Vanessa. Lauren engaged the children in conversations using a variety of strategies. She focused, in particular, on how she asked children questions. Lauren explained,

I really try to think about the questions that I'm asking and how I'm asking the questions because so many times, just the way you phrase a question will either [open up] the learning or shut if off completely. So, you have to really make sure that the questions that you're asking are appropriate and that you are aware of the kinds of responses you are getting from the questions. Like, I've really worked hard, even writing down my questions and then say, how can I say that better. How can I keep that a little more open, or how could I spark a child's interest with a question? (LI1)

When Lauren was working on the Invisibility Inquiry with the children, the dialogue was reciprocal. She would ask a child a question, listen attentively to their answer and then phrase the next question in light of the child's previous response. Lauren would ask the children several questions, which nudged them to think more deeply about their ideas and theories (LI1).

For example, Lauren and Iliana talked about the different sounds she had drawn on top of the acetate.

Iliana: I am drawing the noise…coming from the pot…

Lauren: What does it sound like?

Iliana: A banging noise.

Lauren: Can you make the banging noise? (Iliana bangs her hand on the table). I see, and what about these here?

Iliana: Those are the noise coming from the other pot…

Lauren: And so, what do those sound like?

Iliana: They sound like markers banging.

Lauren: Okay…will you show me? (Iliana bangs the markers on the table)…Oh, interesting Iliana, wow (O3).

By the end of the conversation, Lauren had asked Iliana to describe and demonstrate all the different sounds she had created.

In a different example, Lauren held up a small glass jar that she had filled with water and a small glass jar that was empty.

Lauren: Okay is there water in this one?

Group: No.

Lauren: Is there water in this one?

Group: Yes.

Lauren: How do you know? Daryl?

Daryl: Cause that one I can see there's air in it. I can see air in that one...It's in the water…

Lauren: Raina, what do you think? Which one has water in it?

Raina: That one…It's more darker…

Lauren: Henry…how can you tell which one has water and which one does not have water?

Henry: Cause that one I can see through…and that one I can't really see…

Lauren: Daryl, what do you think?...

Daryl: I can see the water in there…Cause where it stops at the top, where there's no water.

Samantha: If you look at the top you can see…the water moving (O5).

Here, Lauren asked each child to participate and share their theory about which jar had water in it. By asking questions that lead to reciprocal dialogue and deeper thinking, Lauren encourages the children to participate in conversation.

Kathryn and Victoria. During the Office Inquiry, Kathryn and Victoria provided opportunities to encourage the girls to participate in conversations. For example, Victoria asked the girls if they could remember how the inquiry started.

Rachel: It started with chairs…Cause I wanted to let nobody in…only the people who wanted to play…And I was the guard.

Victoria: …I remember trying to visit the office and you said you were busy working and you really didn't want me in there…Can you remember what happened next?

Alia: Drama in the office.

Victoria: We changed it to Drama so we could leave it up every night…We wanted a permanent office. But what did we do next we went on a visit…

Liza: To the office.

Victoria: …That's right what did you find out? What did you learn at the office? Did you see anything that surprised you in the office?

Alia: A button.

Victoria: You saw a button…a button that you press to come into the school?...And we found out about that a bit later on, didn't we. That was exciting...What's in the office that you like to use?

Girls: The printer…the candy…and the sand too.

Victoria: …Why do you think they have those in the office?

Rachel: To keep them busy (VO5).

Victoria asked the children thought provoking questions, listened attentively to their responses, and acknowledged what they had said by adding on to their ideas.

Darlene and Kerri. Darlene used specific strategies to help the children learn how to engage in conversation such as repeating what they said. For example, Darlene had Michael explain his drawing of how his body felt before and after he ran.

Michael: My heart was running really really fast because I was excited.

Darlene: Your heart was going fast because you were excited. I can see that and tell me about this part here [pointing to the drawing].

Michael: Those are my ribs…

Darlene: Those are your ribs, wow…now can you show me something about how it looked after you ran…And maybe how your heart was feeling…

Michael: This one is before when my heart was beating really really fast and this one my heart was beating slowly. It was beating fast because I was so tired.

Darlene: Because you were so tired. What feeling did you like better? Slow or fast?

Michael: Slow…Maybe if we were really quiet we could actually hear our heart.

Darlene: Can we hear our hearts if we are quiet? Do you know I have a stethoscope inside [the classroom]. We can listen to our hearts (O1).

Darlene explained that although she didn't like to repeat what the children said too much, she thought it helped to slow down the conversation. She explained, "It makes me think about what they are saying" (DI2). It gave Darlene time to think about how she was going to respond back to the children. The children also had an opportunity to think about what they said and whether that was what they meant. If not, the children could rephrase what they were thinking (D12). In this conversation, we can also see how Darlene asked thought provoking questions to further Michael's thinking about how running made him feel.

Darlene also helped the children learn how to participate in conversation by revisiting earlier work and giving them an opportunity to expand their thinking. For example, when Gabriel

first explained how his body felt before and after he ran he emphasized how running depleted his

energy level. The second time he tries to describe internal reactions in his body.

Gabriel: When I couldn't run, it felt like my heart was melting.

Darlene: …How does it feel when your heart is melting? What does it feel like inside of

you?

Gabriel: Really hot.

Darlene: …You said here…when I run my heart is beating fast. And what kind of feeling

is your heart beating fast for you?

Gabriel: It just feels really good…When your heart beats slow and then you might die if

you can't get your heart beating (O3).

Similarly, Michael originally emphasized the internal changes in his body and the second time he

expanded his idea by including the lungs.

Michael: My body felt before, it felt excited. It was beating slow and after it was beating

high.

Darlene: So, you drew a picture of before and after…talk about your heart expanding.

Remember that?...

Michael: It's like a sponge because it gets full of air and then it breathes out and then it

gets full of air again.

Adele: Like a sponge gets full of water.

Darlene: So, my heart expands when I run because it is getting more air in it?

Michael: Yeah.

Darlene: So that is why it is like a sponge?

Michael: And the lungs also do that too.

Darlene: So, they expand in and out as well (O3).

By responding to Darlene's questions, Gabriel and Michael were able to extend their original theories.

 Sharon and Mikayla. Sharon and Mikayla provided many opportunities for the children to participate in conversation. As most of the children in their class were English Language Learners, they created a lot of visual support and used simpler language to teach the children how to take part in conversations (MI5). Sharon explained that they used sign language for words like stand, sit, play, music, no, and finished, to help students understand what they were talking about (SI7). They also used tone of voice and body language like gesturing to help the children understand their message. Mikayla said, "I'm very aware of like, what my face is saying, even if they don't understand the words" (MI5). Sharon explained that she and Mikayla provided intensive support, modeling simpler language especially at the beginning of the school year. She said, "I play with them and I label what I'm doing…Here you go. My turn. Your turn. Pass me the block" (SI7). Sharon would also describe a lot of actions, orally labelling materials in the room and being very specific. For example, "Can you hand me the marker?" rather than, "Can you hand me that" (SI7). When a child was ready, Sharon would get her to expand a bit on what she said. For example, when a child said, "Look me" Sharon would respond, "You are standing on the rock…say 'I am on rock'" (SI7). The child would add, "I'm rock". During the Community Inquiry, Sharon would engage in conversation with the children to get them to think more deeply about a particular idea or theory.

 For example, Sharon and Alma had a discussion about what she could see and hear from her balcony.

Alma: This is the window and that's behind my building and this is the balcony…

Sharon: Do you go out on the balcony?

Alma: Sometimes I go on my balcony. Sometimes.

Sharon: Who do you go out on the balcony with?

Alma: Sometimes I go with my daddy. Sometimes I go by myself. Sometimes I go with my sister. But my Mommy does not want to go out there…

Sharon: What do you see when you go on the balcony?

Alma: …Just some cars. Some garbage beside the garbage bins…

Sharon: What do you hear on your balcony?

Alma: I can hear some cars…and sometimes I can see some people (O3).

Sharon focused on asking Alma questions in order to encourage her to say more about her observations about where she lives.

Sharon explained that when the children engage in conversation during knowledge-building circles, she prefers to summarize what the children have said at the end.

I try not to summarize every time someone has said something…I find that sometimes if I summarize too much then they…won't attentively listen necessarily to each other. I prefer to bring it back to or summarize at the end…I usually print out the discussion and I highlight and I go through and I pull out the information and I take that, condense it and I would revisit it with them in another way, which is a different way to consolidate than summarize. If you are summarizing after every single student, are you respecting listening? (SI3)

Sharon thought it was okay to repeat what the children said sometimes because it gave them a chance to listen to what they said and then if it was not what they meant they could go back and rephrase their idea. It also gave Sharon a chance to think about what a child had said and ask a question that pushed their thinking further (SI3).

Sharon also encouraged the children to explain their ideas in more depth and to build on each other's ideas. For example, after a trip to the valley, Sharon thought the children probably had lots of things they would like to share. She wondered what they saw, heard or even smelled.

Sadi: The snail, the snail was gone when we picked it up, it was already gone. Then we found more of snails, then Raem found one, then I found one and then Mustanjid found one…

Saami: You know, when I was in the valley, Raem's mom find two snails' shells.

Raem: When we go to the valley, I told my mom I found a bug.

Sharon: Can you tell me more about the bug?

Raem: Yes, and then my mom found a leaf and then the bug come on the leaf.

Sharon: For the people that didn't see the bug can you tell us what it looked like…Does someone else want to help Raem talk about it?

Mustanjid: …Yes, Raem and Raem's mom and Sadi and Saami and me, we saw the bug was like first a circle then you have to draw other circle for his face and then you have to draw legs (O6).

This discussion shows the children learning the vocabulary they need to participate in conversations and express their ideas more clearly.

The teaching teams facilitate conversation so the children can express their own ideas and theories about the inquiry.

Lauren and Vanessa. On numerous occasions, Lauren facilitated conversation so the children could share their ideas and theories about invisibility. She emphasized that children, "Always have to be free to really express what it is that they are thinking" (LI3). Lauren also thought it was important that the children knew their ideas and theories were valued and that there is no right or wrong answer. She said,

You can never make them [the children] feel that A there is one right answer and B that they're not giving you the right answer…That you are going to accept whatever it is that they say because that's where the value for them comes in because it's not oh, I have one hundred different things going on in my head and I have to pick the one right thing or it's going to be a disaster…Everyone genuinely wants to know what it is that they [the children] are thinking, what are their ideas and so they have to be willing and able to share, but also to understand their ideas are going to be valued no matter what or how outrageous they might seem to someone else and they're not going to be mocked. I'm not going to say wrong, that's the wrong answer. So, they are very comfortable. (LI3/LI6)

By setting this emotional tone in the classroom, the children felt it is a safe space to share their thinking.

For example, to extend the discussion about invisibility to the whole class, Lauren showed the children the worm jar from the Nature Centre. She wanted to talk about things in the classroom that might be invisible or have some aspect of invisibility to them.

Lauren: Can you always see the worms in here?

Daryl: …No, cause they're under the dirt sometimes…

Lauren: So, does that mean that they're invisible?

Daryl: Yes…

Lauren: Then are the worms actually still in there if you can't see them…

Alison: Yes…

Lauren: Can you see the worms in here?

Shannon: No.

Lauren: So, does that make them invisible? Are the worms still in here? How do you know?

Shannon: Because she put the worms in there…

Rory: If the worms go under the dirt and you can't see the worms then you can probably still see their hole they make and where they went…

Lauren: So then if you can't see the worms are the worms still in there?

Rory: Um-hum.

Lauren: And maybe the worm holes that they make can help you see where they've been. Help you know that they are there.

Daryl: You can still see the worms because sometimes they make spaces and you can see them in the corner where there's no dirt (O5).

During the conversation, the children were able to think about things being invisible and things being hidden. The children certainly thought that the worms were still in the jar even when they could not see them.

A little while later, Lauren asked the children if there was anything else they wanted to say about invisibility. A few children were still thinking about the worms in the jar.

Zara: Worms blend into the dirt…

Lauren: You can't see them…how do you know they are still there?

Zara: Because they're just underground…

Tagwen: You can't see the worms. If you feel it inside then you can feel them.

Lauren: Aw so even if you can't see the worms in the dirt what you can do is you can feel inside the dirt and you…can feel the worms and you know the worms are in there…

Rory: If the worms blend into the hole then you can still stick your hand in and then if you feel something and then you pull it up and you look at it, it is a worm (O5).

Lauren realized the children were still interested in the worms and had new ideas and theories to share.

Kathryn and Victoria. Kathryn and Victoria encouraged conversation so the girls could share their thinking about the Office Inquiry. In the following discussion, Victoria is trying to determine if the girls know what their Mom or Dad does at their office.

Victoria: Who's got a Mom or Dad that goes to an office? What do you think they do in the office?...

Olive: My mommy she types stuff on her computer…

Zola: Mommy has her own computer…and she types lots of things.

Victoria: Oh okay. Alright, Nikki? Does Mommy work in an office?

Nikki: Actually my Dad does…He works…He does homework (O5).

It was clear that the girls were not really sure what their parents did at the office. So, Victoria had the girls' brainstorm some questions they could ask their Moms and Dads about their jobs. She asked the girls if anyone could come up with a good question.

Nikki: I think they write.

Victoria: Is this a question or a comment?

Nikki: A question…I think what he does is just writes numbers…I could ask him if he writes, if he reads.

Victoria: If he reads. That's a great question. You could say, 'Daddy, when you're at the office, do you have to read?'...

Evelyn: My dad types names…Daddy, why do you type names?...

Susan: I have only been to my Mommy's work, not my Daddy's.

Victoria: Okay, so what could you ask your Daddy to do so that you know what his office looks like?

Susan: Daddy, can I come to your office?

Victoria: Yeah you can ask Daddy if you can come to the office but if you can't go to the office what could Daddy do so that you know what it looks like? Any ideas? Evelyn?

Evelyn: Take a picture.

Victoria: …That's another question we could ask them [the parents] isn't it? Can we have a picture of your office (O5)?

Later that day, Victoria sent the parents an email that included the children's questions. After some of the parents sent in their responses, Kathryn shared them with the whole class. She encouraged other girls to share their thinking about their parents' jobs. For instance, one girl said, "My dad works in an office and he helps people feel better". Zola responded, "My mom works on the computer and she prints things out". Anna added, "My dad works in his office and he types" (KO7).

   Darlene and Kerri. Darlene often facilitated conversation so the children could express their ideas and theories during the inquiry. She felt that during conversations the children were able to extend their thinking:

> They're truly interested. They want to hear…from each other. And they grew their ideas
> from each other. It wasn't just like I'm thinking of the next thing I'm going to say. They
> actually grew their ideas through each other's thoughts (DI6).

For example, after Adele shared her running idea in the hall the children continued to think about how to make the big idea work.

Adele: Exercises help you not get hurt, that's what I know.

Darlene: So, do you think that maybe that it could be part of the whole big idea that Michael was talking about that everybody does a little bit of warming up before?

Adele: Yeah…So, I think the next time we do this in the hall, Gabriel should hold up one of these clocks…

Darlene: Along with your idea you mean?...(Adele nods)

Zara: How about we have two persons holding the clock and then see on each side how long they took.

Darlene: So, then we would have one, two ideas. And you know what the boys were going on one side and the girls were going on the other. So that was part of Evan's idea about the girls so we'll actually have three ideas going at once (O4).

Darlene could see how the children were starting to expand their own ideas and incorporate other running ideas into them. She commented, "So Michael's idea of building, taking a bunch of little ideas and making it into one huge idea has almost happened naturally" (DO6).

When Darlene later reflected on how the inquiry had progressed to this point where the children were starting to come up with the big idea for running, she said,

So, I think it is building trust amongst us as a whole group. I think that's huge too. To allow them to take risks, to be able to change their thinking, to feel safe in sharing their ideas in the beginning and have other children sort of help them change that thought process…Like it is just a back and forth. It is that respect, it's that relationship that they have together as well. And that trust they have for each other. (O6)

The children in the Running Club were very comfortable with sharing their thinking about the inquiry.

Darlene also thought it was important that the children knew their thinking was valued when they engaged in conversations. For example, the children in the Running Club sat on the couch with a microphone ready to present their running ideas to their peers. Darlene put all the children's pictures of their running ideas on the whiteboard to help prompt the children, if needed.

Darlene: Michael had a very important question the other day when we were working together.

Michael: You guys, if we put a little bit of our ideas and put them altogether [to make one big idea]…

Darlene: Do you remember your idea, Evan? It was about the boys and girls, wasn't it?...

Evan: The girls were on one side and the boys were on the other side. And then one person runs and then the other person runs.

Darlene: Great. Adele?...

Adele: One person would go on one side of the hall and one end of the hall and one person would go on the other end of the hall and they would both run at the same time and try to clap hands…

Rose: So, I was thinking you could put a piece of tape in the middle and like one team could go on this side and one team could go on this side…

Darlene: Some people didn't want to race so is that how your idea came about Rose? Did you want to race or not race?

Rose: I wanted to race. And one team could go on this side and one team could go on this side and they could see the line and like they could come back to their side of the team…

Gabriel: I was thinking that there could be one line and one person would go and get through their turn but if they got 15 and then after their other turn they got 10 then they would beat their time…you would use a clock and you would try to beat your score…

Connor: …My idea was like we could make a circle and tell each other our ideas and we would hold hands and we would do all of our ideas together and make a big one (O3).

Then Darlene invited the other children to share their thinking about what the Running Club was working on. She said, "Anybody else have a question or an idea" (DO3)? So, for example, Faith

said, "If you win you can get another turn. And if the other person wins they can get another turn" (O3). By engaging in conversation, Darlene showed the children that she valued their ideas and theories. The children's ease of expression reveals that they were accustomed to such opportunities to share their thinking.

Sharon and Mikayla. The children engaged in conversation and expressed their thinking on many occasions throughout the Community Inquiry. For instance, Sharon followed-up an earlier conversation she had with the children where they disagreed with the statement, "The CN Tower is the tallest building in Toronto".

> Sharon: Zahir, can you tell us what you're thinking…what did you want to disagree with?
>
> Zahir: There's another CN Tower that's more bigger…I mean two more that are bigger.
>
> Sharon: Where?
>
> Zahir: I don't know.
>
> Sharon: You don't know. Who told you?
>
> Zahir: My Dad.
>
> Sharon: Do you think that you could bring some information to school to share with us about that if you talk to your daddy about it? Or...maybe he can…get a picture off the computer…[or] maybe your daddy could come and tell us.
>
> Zahir: Yeah (O3).

Zahir was remembering that there are buildings taller than the CN Tower elsewhere but he didn't realize that their focus was on buildings in Toronto.

Sharon then asked Amina if she would like to add on to Zahir's thinking. Amina recalled that the CN Tower was very tall, that there was an elevator that goes up, and that people can lie down inside it. Then Adhita followed up on Zahir's idea.

Adhita: There are other different kinds of towers that are bigger than the CN Tower and

one tower is bigger than the CN Tower.

Zahir: There were two.

Adhita: Two towers. One tower had fire on it and it is smaller than the CN Tower and the

other tower is taller than the CN Tower and…the two towers were in New York…

Adhita was recalling what she knew about the Twin Towers in New York. It was not clear

whether Zahir and Adhita were both thinking about the same two towers. It was also not clear

whether she agreed with the original statement or not, because the Twin Towers were shorter

than the CN Tower. Sharon then asked Sadi if he would like to add more information.

Sadi: There is a tower in Paris. This one is taller than, the Paris is taller than the CN

Tower. It is bigger than the CN Tower.

Sharon: Do you know what the name of it is Sadi? You said it was in Paris.

Sadi: Eifel Tower (O3).

Sadi believed that the Eiffel Tower is taller than the CN Tower. Other children then joined in the

conversation and shared their ideas and theories about the CN Tower.

Sharon felt that during conversations it was important for every child to feel like their

thinking was valued. Each child was given a chance to speak and their ideas were just as

important as everyone else's. She wrote, "I want students to feel that they are valued, respected

and active participants in their learning" (SR1). Sharon said that knowledge-building circles

modelled what happens in the real world. The children learned how to listen to other people's

ideas, build on to them, adjust their own theories, and disagree respectfully (SI2). When English

Language Learners listen to their peers share their ideas, they have heard enough vocabulary that

they often feel brave enough to share their own thinking by the end. Sharon said, "It might be a

repetition of what someone else has said but they feel the value that they've been included"

(SI2).

The teaching teams use conversation to nurture the reasoning and problem-solving

capabilities in children throughout the inquiry.

 Lauren and Vanessa. Lauren often used conversation to foster the children's reasoning

and problem-solving skills. For example, after the children looked at photographs and watched a

video of them tapping on the pots and pans outside, Lauren asked them to think about what was

missing from the photographs that was in the video (LO3).

 Iliana: I know it…the movement.

 Lauren: Okay the movement was in the video but not in the picture. Very good noticing

 Iliana…

 Iliana: Because the picture doesn't have any movement because…

 Samantha: It's a picture (O3).

Lauren said to the children that there is something else in the video that was not in the

photographs. It was there when they were banging on the pots with the drumstick. Lauren

showed the children the video one last time.

 Iliana: The banging…

 Lauren: Even though it is a picture about banging …you are not getting…the noise,

 right?

 Samantha: Yeah because it is not even moving…

 Lauren: There is something invisible on this picture…Think about the banging that Iliana

 talked about…you can actually see her banging on the pot but...what happens as soon as

 your drumstick hits the pot?

 Samantha: It makes a sound.

Lauren: It makes a sound. Samantha, brilliant! Thank you (O3).

During this discussion, the girls thought about what made the most sense as they problem-solved what was missing from the photographs (LI3).

In the second example, Samantha noticed that the spill of water on the table had disappeared and this led to an interesting discussion about where it went.

Samantha: It went away…

Raina: It evaporated…

Lauren: It disappeared so where did it go?

Samantha: It went all in the table.

Raina: It went between the tables…

Samantha: I don't see any water on the floor…I know so when the water drops and it goes to the crack it went into the table…

Lauren: So, what do you think Kaitlyn?

Kaitlyn: When the water spills then the water is blue…

Samantha: Nope, nope it isn't blue, it is still the same colour. The water is still the same colour. When you put the water on the table then it just makes the table lighter (O5).

As Samantha and Raina tried to make sense of what happened to the water the focus of Samantha's thought process shifted to the colour of water. After the children dipped their fingers in the water and made some marks on the table, Samantha changed her mind about how the water makes the table lighter.

Rory: The water is actually blue.

Daryl: No, it's not. You can't see the water because it is see through. It is camouflaged with the table…

Lauren: What do you think is true, girls?

Samantha: Because the water is all the same colour, it's just see through. Remember when I told you when you put water on the table it makes it lighter…It made it a little darker. So, it's still there. I know it's still there because I can feel it and I know the water is not blue (O5).

Through further experimentation, Samantha was able to use her reasoning and problem-solving skills to think about how water made the table darker.

In a third example, the children had drawn their invisible selves on the mirrors and after explaining what they drew, they shared why they thought their pictures were invisible.

Lauren: So, what's making your pictures invisible...

Samantha: Well I don't really know. Cause I can still see it lots…

Daryl: You can't see my eyeballs inside…

Zara: The clear marker is making everything invisible...

Raina: I made everything invisible…because it is kind of the same colour but it is not exactly the same colour…

Kaitlyn: The marker you draw and then you colour your face and then you can't see the eyes because the marker is white (O7).

The children were trying to reason and problem-solve what was making the pictures hard to see. Interestingly, Raina was the only child who drew out the connection that both the marker and mirror are silver.

Kathryn and Victoria. Kathryn supported the children's reasoning and problem-solving capabilities through conversation. For example, she placed a typewriter in the center of the circle and a discussion unfolded about how it works.

Kathryn: What do you notice about the typewriter?

Susan: I know that something rolls.

Kathryn: Susan can you point to the part that rolls? (Susan then points to the roller). Now Zola, I'd like you to explain… what you think it's [the roller] for?...

Zola: I think this is a big knob. You can remember what your paper is for. You can try a number for this, if people are five or four.

Kathryn: Okay so if people are five or four you can type that. Do you see numbers?

Zola: Yeah, and you can give it to people.

Kathryn: Okay, so what's this roll part for?

Zola: Printing the paper (KO2)

Kathryn then summarized what the girls were thinking so far. She said, "So I am hearing girls say that it has a keyboard like a computer and it almost has its own printer because when you type on it, that can come out" (KO2). She then invited the children to share any other thinking they had about how the typewriter worked.

Sally: This was like where you put your page in…Then the letters would come out. So, if you put a paper in between this, it will stay…

Nikki: If you push the buttons, if it was a real printer and you pressed the letters then it would come out and go on the paper. When you finish writing you can take it out…

Sally: You can take it out and read it if you want to (KO2).

Here the girls are interacting with the physical object to help them think logically as they tried to figure out how the typewriter works.

On a different occasion, Kathryn wanted the girls to think about if they had further questions about the Office Inquiry. She said, "I was trying to push it that way [what they wonder] but I wasn't getting anything. So, then I went on to roles" (KI4).

Kathryn: What did you notice about what the people in the office were doing?...

Sally: Working…

Kathryn: What do you mean they were working? What were they doing?

Sally: They were writing on pieces of paper.

Kathryn: So, when people are writing on pieces of paper does that mean that they are working?...

Nikki: Maybe they might sign some things…One time when we came inside the office Ms. Harland told me that she was working...

Kathryn: I wonder what she meant by that…Ms. Dixon and I are at work right now. This is our job. Are we doing the same kind of work as Ms. Harland?

Girls: No.

Kathryn: How is our job different...

Laura: Because they are the office girls and you are a teacher…

Nikki: The office girls, they work on what is the day today.

Anna: I know. Get a checkmark on each day.

Kathryn: Put checkmarks on all the things that they have to do…What do you think are some things they will put on that list of things they have to do?...

Laura: Check people who are sick.

Nikki: They might give a message to everybody's Mom and Dad…

Kathryn: These are some really fabulous ideas and it got me really thinking about what their job is in the office and what is work (KO4).

During this conversation, the girls were thinking in a logical sensible way when they articulated that teachers and office girls have different jobs. They also tried to figure out what exactly the ladies in the office do when they are working.

Darlene and Kerri. Darlene provided numerous opportunities through conversation to nurture the children's reasoning and problem-solving skills. For example, Darlene wanted to find

out more about the connection the children were making in terms of shorter and longer running times and who was the fastest runner. She showed Michael the sheet on which Connor recorded all the times and how they were the same as the numbers on the oval shapes on the table.

Darlene: What does it tell us about who is the fastest runner?

Michael: Let's see who has the biggest number…That she [Adele] is the fastest. Wait do I have the lowest number?...I think we should race again because I don't think that's right…if we have a race between Gabriel and Adele we can see who is faster…I think Gabriel's faster than Adele.

Gabriel: But Michael I think that if you have the highest number you are going slowest because if you have 17 you are running faster than 28 seconds.

Adele: Well 28 is actually a higher number than 17.

Gabriel: Yeah, but if Connor was behind me, so pretend he got 19 and I got 17. So, Connor run behind me and I would touch and he would touch after so he would have a higher score. So, the lowest one…would…win… Let's see who has the lowest, me or Adele?

Adele: Ah, we already seen who has the lowest.

Darlene: …who was the fastest?

Zara: Gabriel

Gabriel: And Connor and you [Zara]. We all have 17.

Darlene: Rose who's the fastest runner there? What do you think? Adele has 28 and Gabriel has 17 and Connor and Zara have 17. Who is the fastest? 28 or 17.

Rose: Well 17…Because it's lower and they were running faster than me and not stopping (O5).

Here the children were trying to make sense of the numbers and problem solve why the children with the shortest running times were the fastest. It is difficult for some children this age to understand that the shorter the time it takes to run the race, the faster the runner.

In a different example, the children were trying to problem-solve how to sort the competitive runners who wanted to race from the runners who just wanted to run for fun.

Rose: Okay so I was thinking we could put like a piece of tape or something on the line. Then one person, like the people that don't want to run could go on one side and the people that want to race they could go on the other side…

Gabriel: I think I know, so there was tape, the people that wanted to race are on the other side and the people that didn't want to race on this side and that's how many tapes there was.

Rose: There's only one tape, Gabriel…

Adele: I think she means a long piece of tape against a line.

Rose: Yes, that's right…So say this was the piece of tape, then one person went on this side and one person went on this side…And then they ran…

Gabriel: There should be three lines. Okay there's two people racing.

Rose: I know that I just want to put one line, piece of tape, just one long piece of tape (O2).

As Michael listened to this discussion, he used his reasoning and problem-solving capabilities to come up with a solution where each child would be in charge when it was their turn to demonstrate their running idea.

Michael: Rose I have a good idea. If we all did our ideas in a row than we would all have a chance to do our own ideas…So basically when it is our turn, we are the teachers. So,

we tell everybody what to do…when it is my turn I would tell everybody what to do.

When it was Adele's turn, she would tell everybody what to do, etc.

Darlene: How does this sound?

Rose: It's perfect (O2).

Michael's idea offered everyone an opportunity to take on a leadership role in the inquiry.

In another example, Michael and Gabriel had just crashed in the hall during a race,

Darlene supported them as they tried to problem-solve what happened.

Darlene: What happened to you in the middle when you ran that one time?...

Michael: I fell down…because Gabriel didn't think…and he hit me…

Darlene: So, try it right here right now. How would it work in slow motion? Gabriel, try

it in slow motion.

Michael: He was wiggling because I was trying to dodge him and he was wiggling trying

to hit me.

Gabriel: No.

Darlene: So, if you were like a car on the road which side would you stay on?

Michael: I would stay and try and avoid Gabriel and if I didn't I would just put my lights

on.

Darlene: Try it in slow motion. Somebody should be…You know on the road the cars

always have to be on the right side so this is right side and on your side over there you're

on the right side too. So, if you stayed in your lane and went, then it would work, see

that? Alright.

Gabriel: Cause, we were at the same side and I tried to get on the other side before…

Darlene: So, you crossed lanes. You would have had a head-on collision if you were a car

(O4).

With Darlene's support and the analogy of the car, the boys were able to think through running into each other so it would not happen again.

Sharon and Mikayla. Sharon supported the children's reasoning and problem-solving capabilities through conversation. For example, during a small group knowledge-building circle, Sharon showed the children some photographs of the apartment buildings that surrounded the school and soon realized that not all the apartment buildings were in the photographs so she asked the children how they could solve that problem.

Sharon: Did everybody see their building?

Saami: …No.

Sharon: Your building wasn't in my pictures? What should we do…Saami?

Saami: We can go outside again and take more pictures.

Sharon: Yeah, I think so. I think it would be nice if we could have large photographs of all of our friends' [buildings]…

Amina: Maybe we could print them off of the computer (O3).

Sharon took advantage of this opportunity to let the children find a solution to the problem. She followed-up on Saami's idea by taking the children for another walk so she could take more photographs.

On a different occasion, Omja found a caterpillar in the valley and this led to a discussion about stewardship.

Mahdi: When the caterpillar will eat his leaf again and again and again then he'll turn into a butterfly...

Amina: He can't…because when it was in the leaf he was trying to go to sleep, then someone stepped on it and now he's died. He fell on the floor. Now he is not going to turn into a butterfly because he died.

Mahdi: Really?

Amina: Yes, it was Muhid. It was a good creature but Muhid stepped on it and it died. Now it's died and he can't be a butterfly…

Sharon: So, what can we say about that…why don't we want someone to step on a caterpillar?

Saami: …Because if you step on it they will die. We don't want them to die. We want them to stay alive.

Sharon: Why?

Mahdi: Because we respect them…Then our community and our nature will not be beautiful.

Amina: Nature helps us because he gives us the sun, he gives us the sky for breathing. So, we can't step on butterflies or anything (O6).

The children were trying to make sense of the repercussions of stepping on a caterpillar and why it is important to respect nature and want to protect it.

The teaching teams use conversation to help children become more aware of when and how to regulate their emotions.

Lauren and Vanessa. Lauren, who is very calm and soft-spoken, was always able to support the children's recognition of how to regulate their emotions. For instance, after Andrew had a conflict with Henry, Lauren took Andrew aside to speak with him. After a while I heard her say, "What do you need to do"? Andrew responded, "Tell Henry I am sorry". Lauren said, "That's a start". Lauren called Henry over and said, "Andrew has something he needs to tell you". Andrew said, "I am sorry, Henry. I won't do that again". Lauren reminded Andrew to look at Henry when he was speaking. Then she gave Andrew a fist bump. When Andrew indicated that he wanted to return to the blocks, Lauren said, "I'm worried you're not ready to go back".

Andrew sat with Lauren a little while longer until he was completely calm and ready to return to his play (O1). Similarly, after Andrew had a conflict with Daryl he sat with Lauren for a while and made some interesting observations about the other children. Lauren said, "So who is doing what they should be doing" (LI3)? Andrew gave Lauren a few examples like the children playing at the dollhouse and then said, "He's not listening very well". Lauren asked, "How do you know that" (LI3)? Andrew explained his reasons. Lauren said, "So you know what it looks like and what it sounds like" (LI3). By engaging in this conversation, Lauren helped Andrew become more aware of how others were behaving without actually telling him that he could be more empathetic and caring.

On a different occasion, Lauren offered Samantha some guidance after she jumped on some girls who were sitting on the carpet. Lauren gently called Samantha over and said,

Samantha, you are having a hard time to calm your body…I see your cheeks are really pink and that shows me that you're really excited…I'm watching your eyes and your eyes are going really fast looking at things quickly…Put your hand over here and feel your heart…I bet your heart is beating really fast, isn't it? (LI3)

Samantha replied, "Yeah it is". Lauren explained, "Well you're going to need to calm everything down. Calm your cheeks down, calm your eyes balls down…calm it all down" (LI3). Lauren then suggested she go to the Calm Centre. She said, "Choose two or three different strategies…try them all and see what makes you feel the most calm" (LI3).

Also, when Lauren anticipated that the children would need to sit for a longer period of time than usual, she advised them to sit in a place where they were not going to be distracted by others. She said to the children that they needed to, "have your listening ears and your thinking brains on" (LO4). For example, one day when Lauren and the children were about to explore the connection between water and invisibility she said,

Okay, boys and girls we need to focus here on what we are doing. So, let's not let other

people distract us because this is really exciting work…and I love it. I am so excited

about what we're doing and what you are talking about. And I really want to hear your

ideas. But if you turn around every time someone comes over here, then it stops the flow

of our ideas. And I don't want to stop the flow of our ideas. (LO5)

Lauren supported the children's emotions by letting them know ahead of time what to expect.

She also reminded individual children when they needed guidance around listening. Lauren said,

Did you see that everybody was listening to you when you talked? They weren't talking

to their friends. They were listening to what you were saying. So, when other people are

talking like Daryl's talking, I want you to listen to what he is saying. Cause he is a really

good thinker and he's got really good ideas. Just like you're a good thinker and you have

good ideas. But really good thinkers need to listen to other people's ideas because

sometimes that makes their ideas even more amazing. (O6)

Through conversation, Lauren helped children recognize that they needed to regulate their

emotions when listening to other people's ideas.

Kathryn and Victoria. Kathryn and Victoria used conversation to help the children

manage their emotions and become more aware of the need to regulate them. For instance,

during a class meeting Angie and Evelyn were not listening while other children were sharing

their learning. Kathryn asked them to go to the Book Nook. She said, "Go read a book until your

body is ready to sit and listen" (KO1). After Angie and Evelyn went to the Book Nook, Kathryn

said to the rest of the girls, "They will join us when their bodies are ready" (KO1). Kathryn

wanted Evelyn and Angie to honour and respect what the other children were saying. The girls

knew that they were welcome to come back to the carpet at any time when they were ready to be

calm. A few minutes later Kathryn asked Angie and Evelyn, "Is your body ready to be respectful? Great come over and join us" (KO1).

On another occasion, when the girls were in the Studio using black pastels to draw trees, Kristina said, "It looks beautiful to me, though. Liza said this doesn't represent a tree but it does". Victoria responded, "Sorry" (VO3)? Kristina replied, "Liza says that this doesn't look like a tree, but it does". Victoria reassured her by saying, "It does look like the tree, it really looks like a tree (VO3)". Kristina added, "Like the top isn't very good". Victoria tried to reassure Kristina, but Kristina's confidence had been undermined by Liza's comment as she decided the top of her tree was not very well done.

On a different occasion, Susan and Liza had a conflict. Susan came to tell Victoria that Liza pinched her. Victoria asked Liza to come and talk with her. Victoria took the girls to a quiet spot in the classroom and asked the girls to tell her what happened. After the girls explained the situation, Victoria said, "Can you come up with a plan, Liza? Can you tell Susan what the plan is? Look at Susan when you say it". Liza told Susan that she was not going to pinch her again (O5). Similarly, Angie and Olive had a conflict in the classroom office. Angie tried to roll the sticky notes through the roller and Olive said, "Only big papers work." Olive waited and then pushed Angie's hand out of the way and said, "I can do mine. No, stop doing that and now you ripped it." Kathryn came over to see what was happening. Olive said, "She ripped it." Kathryn responded, "Can we move forward" (KO2)? Sometimes when the girls were having difficulties Kathryn asked them if they were ready to move forward in an effort to de-escalate the situation.

Darlene and Kerri. Darlene supported the children's developing awareness of how to regulate their emotions. For instance, after a spontaneous run with the teams that Gabriel and Michael created, Darlene saw that Leigh was quite upset. Leigh said, "Gabriel said we didn't get any gold". Darlene brought Gabriel and Leigh together and waited. She commented, "They're

solving it together…they have the tools to know how to work things out" (DI6). When it was

apparent that the situation had not been completely resolved, Darlene said,

> You know what I noticed, Gabriel, is that you were picking all the children that run
>
> fast…Gabriel you are a year older. Come on, think about that. What sounds more fair?
>
> You need to pick people that are high, medium and low like on your soccer team. (DO2)

Gabriel smiled at Darlene, aware that she realized that he has stacked his team deliberately.

Darlene reminded Gabriel how he felt when someone beats him (O2/I4). She then turned her

attention to Leigh.

> Leigh: He said that we didn't get any gold.
>
> Darlene: …Why would you [Gabriel] say that?
>
> Gabriel: Maybe he misheard me but I said all of us got gold.
>
> Leigh: Well I didn't hear it.
>
> Darlene: Well maybe you need to be clear with him now.
>
> Gabriel: Maybe you didn't hear…I said we all got gold.
>
> Darlene: Tell him, don't tell me.
>
> Gabriel: Your whole team got gold…I knew it wouldn't be fair if the people wouldn't get
>
> gold, right… So, you did get gold (O2).

Darlene coached Gabriel as he tried to explain to Leigh what he meant by winning "the gold".

Leigh was visibly calming down even though he didn't really believe what Gabriel was now

telling him. Under other circumstances Darlene would have just told Gabriel to go and sort the

situation out with Leigh because "we don't want our friends to be sad". In this instance, she

thought that Gabriel needed to be reminded about his feelings when he lost so that he could

relate to how Leigh felt as well (DI4).

On a different occasion, the children were in the hall trying to organize themselves so they could start to race. Gabriel had taken the lead, saying, "Guys come on, line up here…Raise your hand if you want to race…Rose you are on my side…When he has crossed the line you can go". Connor commented, "This is not really working". Adele was trying to be the starter and Michael was trying to organize his team of runners. Gabriel persisted as he tried once again to get the runners organized. He said, "Whoever is racing come here…You are the first ones to go…We need one more player". Adele decided to join in the racing and Tara took over as the starter. Then Gabriel started to get upset and his voice got louder and louder because he felt like no one was listening to him (O2). Darlene supported Gabriel by encouraging the children to listen to his instructions. Gabriel eventually managed to get all the children to sit down and look at him while he explained what to do (R2).

Darlene later said that Gabriel, "Trusted himself to be able to do it. And worked it out and got everybody settled and listening to what he needed to say" (DI6). He reorganized the children once again and then when two children came back he told the next two to go. Suddenly, the whole group started to understand how the race was going to work (O2). Gabriel persevered and he eventually got the children lined up in two rows of five and had them race two at a time. Darlene later commented, "Did you [Brenda] see Gabriel in the hallway, that he got upset because they weren't following? Like, he got all choked up and ready to cry and then he pulled himself back together" (DI2). Darlene commented,

> The children seemed very self-regulated to respond to Gabriel the way they did, too. You could tell they just pulled themselves down. They listened, most of them followed his direction and listened to his idea. He came on strong with confidence, and he did very well. I thought it was just amazing. (DI2)

Darlene provided Gabriel with just the right amount of support to ensure the run would be successful.

  Sharon and Mikayla. Sharon and Mikayla fostered the children's awareness of their emotions through discussion. They found that most of the problems in the classroom came down to communication. One child would be trying to express something and the other child did not understand so the problem escalated. Sharon and Mikayla said that they would try to figure out the issue and then model for the child possible language to use. For instance, when the children were playing with the spinners at the Light Table, a conflict arose so some children went to Sharon for guidance. She found that often when the children came to her, they told her about what has happened between two other children. Sharon sent them back with some ideas about how to solve the conflict. She gave the children suggestions about questions they could ask like, "Do you know why they said that…Maybe go back and ask them why they said, 'Don't do that'…So I am trying to get them to have those conversations amongst themselves" (SI3). Sharon felt that it is only after a lot of modeling and coaching through role-play, having conversations using positive language, sharing relevant books, and teachers playing with the children at their level that children can solve conflicts on their own (SI3).

  Mikayla said it depends on the children. Some Senior Kindergarten children can solve conflicts so she encourages them to come up with a solution on their own. She explained,

> There are other kids that I know do not have those tools and so I'll step in and just talk it through, ask questions. If the emotions are running too high…I don't think you can ask children to talk it out when they are [upset]…I don't think it's fair to, you wouldn't ask an adult to do that. So, if they are in that mode, I'll just read a book with one of them or re-direct, something to just diffuse and then we can revisit it later, not necessarily with those specific children but as a group, role-playing and that kind of thing. (MI5)

Mikayla thought it was important to let children calm down first because they cannot talk through conflicts when they are really upset.

<div align="center">**Conversation and Self-Regulation**</div>

What do these assertions about conversation tell us about self-regulation in Kindergarten? I argue here that considered together the findings in these four assertions illustrate that conversation supports the children's ability to self-regulate in Kindergarten.

The teaching teams use specific strategies to encourage the children to participate in conversation.

Recall that the teachers used different strategies to help the children learn how to engage in conversations during the inquiries. Lauren focused on how she asked children questions, as we saw in her discussion with Iliana about the sounds coming from the pot and with a group of children sharing their thoughts about which jar had water in it. Victoria had a conversation with the girls about what had happened in the inquiry so far and asked them thought provoking questions, listened attentively to their responses, and acknowledged what they said by adding on to their ideas. Darlene sometimes repeated what the children said to slow down time so she could make a thoughtful response. She also revisited earlier work to give the children an opportunity to add on to their ideas and theories. Sharon invited the children to think more deeply about a particular idea or theory and build on to each other's ideas. She would also summarize what they had said at the end of a discussion.

Children use oral language as a self-regulatory tool. The origins of this idea can be traced back to Vygotsky (1978) who believed that oral language is fundamental to learning how to self-regulate. Language enables children to solve difficult tasks and manage impulsive behaviour. Vygotsky, explain Bodrova and Leong (2007), believed that language is an actual mechanism for thinking, a mental tool. Language makes thinking more abstract and flexible and allows the child

to imagine, manipulate, create new ideas, and share their ideas and theories with others. In their view, language performs two roles: it is part of cognitive processing and instrumental to the development of cognition. Listening and talking occur during conversations where children share their thinking in order to understand others. Dickinson, McCabe and Essex (2013) explain further how the development of language and self-regulation are linked. Between ages three to six the rapid development of language plays a pivotal role in the linguistic cognitive-affective systems of literacy development as well as social development. When children learn to use oral language, this helps them to intentionally regulate their own emotions and behaviours. I think that when children are encouraged to participate in conversations during emergent curriculum inquiries this supports their use of oral language as a self-regulatory tool.

The teaching teams facilitate conversation so the children can express their own ideas and theories about the inquiry.

Recollect that during all the inquiries the children's theories and ideas were welcomed and valued. Central to listening to what children say, notes Fraser (2012), is the image of the child as competent with their own ideas and theories. She emphasizes that listening attentively to what children say and following up with questions that reveal the child's understanding are essential elements of conversation during emergent curriculum inquiries:

> When teachers expect children to say interesting things and to contribute ideas, they will be much more likely to pay attention to what children have to say. When children know that their ideas are appreciated, they will be more willing to share them. Slowing down and taking the time to really hear what the child is saying and then trying to see it from the child's perspective is important. Reflecting on the child's responses to questions also helps a teacher learn what kind of questions are most effective. (pp. 187-188)

Effective questions are reflective and encourage more elaborate responses. The child's response in turn provides the teacher and other children with unexpected insight into what the child is thinking and feeling. Lauren wanted the children to feel like their ideas and theories about invisibility were valued and that there was no right or wrong answer. When she asked questions about the worm jar and the invisible paintings, the children willingly shared new thinking about their understanding of invisibility.

Language plays a central role in cognitive development and children use language to help them think and perform tasks. Vygotsky believed that, "Children become capable of thinking as they talk. The child can think aloud…He argues that in some cases, our external speech helps us form ideas that may exist only vaguely…When children become capable of thinking as they talk, speech actually becomes a tool for understanding, clarifying, and focusing what is in their minds" (Bodova & Leong, 2007, p. 68). Darlene, for instance, felt that through conversation the children could extend their thinking and they grew their ideas through each other's thoughts. When the children shared their thinking, they incorporated other children's ideas into their own thinking so the big running idea almost came about naturally. This example shows that when children express their theories and ideas during inquiries, it supports their ability to self-regulate in the cognitive domain.

Language enables us to think logically and acquire new knowledge that is socially constructed within a particular context such as a classroom (Bodrova & Leong, 2007). Sharon thought it was important for the children to feel like their ideas and theories were valued and that this happened in knowledge-building circles where the children learned how to listen to other people's ideas, build on to them, adjust their own theories and disagree respectfully as could be seen in the discussion about the CN Tower. Also, Victoria had the girls share their thinking about what their Mom or Dad did at their office and then brainstorm questions they could ask their

Moms and Dads about their jobs. After sharing some parents' responses, Kathryn had the other girls share their knowledge about what Mom and Dad did at work.

The teaching teams use conversation to nurture the reasoning and problem-solving capabilities in children throughout the inquiry.

Recall that the children shared their ideas and theories in a logical sensible way and found solutions to problems during the investigations. Shanker (2013a) explains that executive functions like reasoning and problem-solving are important for self-regulated learning. He argues that when, "a [teacher] responds to what a child is thinking and trying to communicate by deliberately repeating, recasting, or expanding on the child's utterance…more than language is being learned in such a process: the child's ability to focus attention is also being enhanced" (p. 51). Kathryn offered the children a typewriter as a provocation which led to a focused discussion on how it works and what people might use it for. The girls also thought about what it means when we say the ladies in the office are working and how is their work different than the work of a teacher. Sharon asked the children to come up with a solution to how to solve the problem of the missing photographs. She also engaged in conversation with the children as they thought about why it is not a good idea to step on a caterpillar.

Oral language is also fundamental to learning how to solve more complex problems (Vygotsky, 1978; Bodrova & Leong, 2007). When children have trouble understanding something, it is especially helpful for them to explain their thinking to someone else. To think while talking to their peers helps to clarify their understanding of complex concepts. By talking with others, children actually understand their own thoughts better, including how to regulate their emotions and behaviours. Lauren, for example, asked the children what was missing in the photographs of the pots and pans that was in the video and they came up with ideas like

movement and sound. The children also thought about the colour of water and what happened to it when it disappeared as well as what was making their pictures in the mirrors invisible.

Complex ideas and processes such as learning how to solve social conflicts (which is important for self-regulation in the social domain) can only be learned using language (Bodrova & Leong, 2007). This also explains, in my view, why conversations during inquiries that nurture the children's reasoning and problem-solving capabilities support their ability to self-regulate. Darlene, for instance, helped Gabriel and Michael problem-solve why they crashed in the hall during a race. She also used conversation to have the children think about who the fastest runners were, how to separate the competitive from the non-competitive runners, and how each member of the Running Club could take it in turn to demonstrate their running idea.

The teaching teams use conversation to help children become more aware of when and how to regulate their emotions.

Remember that the teachers supported the children's recognition of how to regulate their own emotions. Rinaldi (2006) observes that children are not afraid to express their feelings of anger, love, sadness, passion, fear, trust, dread, joy, or disappointment. Emotions help children to explore their world, to understand and create relations. Children's emotions can be intense and strong, which can make teachers uncomfortable so they try to evade or downplay these emotions. Rinaldi (2006) argues that teachers need to be open to emotions, especially difficult emotions. She explains that if teachers, "Listen to these feelings, if we legitimate them, then children will talk about them, narrate them, share them, in order to give them a shape and accept them" (p. 95). Lauren supported Andrew's emotions when he had conflicts with Henry and Daryl and drew his attention to how other children were behaving. She also used conversation to offer Samantha some guidance when she jumped on her friends and had difficulty listening to others. Sharon and Mikayla found that most of the problems in the classroom came down to communication so they

supported the children's emotions by modelling the language they needed to solve problems. Mikayla would offer her guidance after the children had time to calm down. The support that teachers provide children during inquiry conversations to better understand their emotions, I think, is valuable for the children's ability to self-regulate.

Shanker's (2016) *Self-Reg* method offers guidance for teachers to enhance the development of children's self-regulation skills. It is important to help children become aware of when they need to reduce their stress and to develop strategies to regulate their emotions. Darlene, for example, talked with Gabriel when he had a conflict with Leigh and reminded him how it felt when he lost a race. She also offered Gabriel her guidance when he became stressed as he tried to organize his peers to line up for a race. Kathryn supported Angie and Evelyn by sending them to the Book Nook so they could calm down and reassured Angie that mistakes are part of learning. Victoria guided Susan and Liza through a conflict by having them come up with a plan.

Shanker (2013a) also emphasizes that it is important for teachers to be able to recognize when they themselves are overstressed and dysregulated and know how to regulate their own emotions so they can cope with a child's anger, anxiety or frustration. He thinks teachers need to remain calm when a child is having difficulty modulating their emotions, as the teacher's behaviour can have a dysregulating effect on the child. When teachers can maintain or quickly restore their own equilibrium, they are better able to help a child remain optimally regulated (Shanker, 2016). Although the focus of my research was on how conversations support the children's ability to self-regulate, during my classroom visits it was evident that the teachers' awareness of their own self-regulation was elevated by our conversations. My research in their classrooms drew the teaching team's attention to the effects that arousal regulation strategies have on children, which I highlighted in the previous chapter when discussing the importance of

teachers studying documentation. The teaching teams internalized this information, which also increased their awareness of the importance of their own self-regulation and how it affects their teaching.

Conclusion

In this chapter, I have demonstrated that the conversation component of the four emergent curriculum inquiries included encouraging the children to participate, expressing their different ideas and theories, nurturing their reasoning and problem-solving capabilities, and supporting their awareness of how to regulate their emotions. I used these findings to illustrate how the conversation component supports the children's ability to self-regulate in the Kindergarten classroom. I have argued that when children use oral language as a self-regulatory tool during conversations this helps them to regulate their own emotions and behaviours. Oral language makes thinking more complex and flexible and allows the child to imagine, manipulate, create new ideas, and share their ideas and theories with others. When children express their thinking during conversations, speech is used to help them understand, clarify, and focus their thoughts. Conversation provides children with opportunities to use their cognitive processes to solve difficult tasks and social conflicts, which is important for self-regulated learning. Children become more aware of their own emotions and how to regulate them when the need arises.

Chapter Ten: Conclusions

In the epigraph that opened this dissertation, Pascal (2009) states that self-regulation is, "the cornerstone of development and is the central building block of early learning" (p. 4). It is a reflective learning process where children become aware of what it feels like to be overstressed, recognize when they need to up-regulate or down-regulate, and develop strategies to reduce their stress. This process enables children to see themselves as self-regulated learners in a manner that has long term implications for their capacity to learn. Self-regulation is a prominent issue because children are experiencing much more stress than in the past, which has resulted in many more emotional, social, learning, behaviour, and health problems (Shanker, 2012c, 2013a, 2016). Many consider self-regulation a better indicator of school success than IQ (Blair & Diamond, 2008).

The empirical research in this dissertation provides new evidence of the connection between curriculum and self-regulation. I have specifically focused on the relationship between self-regulation and emergent curriculum inquiries in Kindergarten. Emergent curriculum inquiries are sustained investigations built around the children's interests. The data for my research was generated during an ethnographic case study of four Kindergarten classroom environments. My arguments show that when teaching teams co-construct emergent curriculum inquiries with children in their Kindergarten classrooms, this teaching practice supports the children's ability to self-regulate.

My analysis of the data relied on the distinction I drew between four components of emergent curriculum: inquiry design, design of the environment, documentation, and conversation. I found that the inquiry design component of the four emergent curriculum inquiries included building the curriculum around the children's interests, engaging in reciprocal actions, taking ownership over the direction of the inquiry, promoting positive emotions such as

excitement and curiosity, and encouraging collaboration and inclusivity. I demonstrated that the design of the environment component included organizing the classroom space and materials, keeping the environment uncluttered and neutral, adapting and extending beyond the classroom, developing daily routines, using expansive time frames, and building authentic relationships. I have shown that the documentation component included revisiting documentation with the children to keep them invested in the inquiry, to scaffold their thinking, and to better understand their theories and idea; studying documentation enabled the teachers to reflect on the children's thinking and their engagement in the inquiry. I determined that the conversation component of the four emergent curriculum inquiries included encouraging the children to participate, expressing their different ideas and theories, nurturing their reasoning and problem-solving capabilities, and supporting their awareness of how to regulate their emotions.

Assertions grounded in the data about these components of emergent curriculum provide new evidence of a relationship between inquiries and self-regulation. When looking across all the findings, four especially important and compelling arguments emerged to support my belief that when Kindergarten teachers co-construct emergent curriculum inquiries, this teaching practice supports the children's ability to self-regulate.

Children Learn How to Self-Regulate During Emergent Curriculum Inquiries

I have argued that, just as they do in play, children learn how to self-regulate during emergent curriculum inquiries. The organization of physical space and materials for the purpose of facilitating children's interests and autonomy during play and inquiries enables them to stay focused, consider other perspectives, and figure out their own thinking. Expansive time frames give children more time to develop skills such as independence, resourcefulness, risk-taking, perseverance, problem-solving, initiative, and creativity in the multiple domains of self-regulation. Children stay immersed in play and inquiries while working collaboratively and

inclusively with others, as they are in a state of experiential flow and can ignore distractions. Inquiries support the children's ability to self-regulate in the same way as play does because they emerge from the children's interests, are enjoyable and intrinsically rewarding, and there is a sense of control over the activity. Children can concentrate and feel capable of meeting the demands that the inquiry places on them. Classroom environments can be designed so that children can independently choose areas to play where they can up-regulate or down-regulate their energy levels.

Scaffolding Supports Self-Regulation During Emergent Curriculum Inquiries

I have argued that during emergent curriculum inquiries the teachers used scaffolding and that this process supports the children's ability to self-regulate. When teachers use documentation to scaffold the children's thinking, it strengthens their memory as they review previous thinking, self-correct, find confirmation and denials, and make comparisons with the theories and ideas of others. Scaffolding also reduces the children's stress levels and any aversion to risk-taking so they can move to a higher level of cognitive functioning. Teachers adapt and extend their classroom environments to enhance children's self-regulation by planning provocations that enable children to think through their ideas and theories. Reciprocal actions that are challenging, but not overwhelming, support self-regulation because they enable the children to feel more confident and stay focused on the investigation.

Emergent Curriculum Inquiries Promote Positive Emotions Important For Self-Regulation

I have argued that emergent curriculum inquiries promote positive emotions such as elation, inspiration, pride and curiosity that generate energy, which improves children's concentration and strengthens their ability to self-regulate. During inquiries, children become more aware of their own emotions and how to regulate them as the need arises. When children feel valued and are invested in an inquiry, they learn to listen to others and have a greater ability

to modulate their emotions, work collaboratively, and take pride in their achievements. Authentic relationships that create a sense of belonging and the capacity for empathy promote positive behaviours in the prosocial domain. Classroom environments that are free of visual clutter avoid sensory overload and have a calming effect on the children. Daily routines that are predictable help children become more independent as they can anticipate transitions that enable them to up- or down-regulate knowing what activity is coming next.

Oral Language is a Self-Regulatory Tool During Emergent Curriculum Inquiries

I have argued that when children use oral language as a self-regulatory tool during emergent curriculum inquiries, this helps them to regulate their own emotions and behaviours. Oral language makes thinking more complex and flexible. It allows children to imagine, manipulate, and create new ideas, as well as to share their ideas and theories with others. When children express their thinking during conversations, speech is used to help them understand, clarify, and focus their thoughts. Conversation provides children with opportunities to use their cognitive processes to solve difficult tasks and social conflicts, which is important for self-regulated learning. Children draw on their cognitive processes like reasoning, problem-solving, flexible thinking, multitasking, and working memory to clarify their thinking when revisiting documentation. This helps strengthen the children's executive functions so they can reduce arousal created by stress.

Implications and Future Directions

My efforts here in this doctoral dissertation to connect self-regulation and emergent curriculum inquiries in innovative and unanticipated ways are intended to uncover even greater potential for emergent curriculum. I hope the new evidence I have provided will help teachers, Early Childhood Educators, administrators, and policy makers to better appreciate the important contribution of emergent curriculum to self-regulation in the Kindergarten classroom.

My conclusion is that emergent curriculum inquiries in Kindergarten support the children's ability to self-regulate, which is so important for school success. This conclusion opens-up possibilities for future research. As our world becomes more and more stressful, government policy around curriculum should be amended in ways that better enable children to learn how to self-regulate so they can be successful in school. I think it is important going forward to establish whether emergent curriculum inquiries also support children's self-regulation in the primary grades. If researchers provide this evidence, then policy makers could be persuaded that emergent curriculum inquiries as a teaching practice is more beneficial to young children than a standardized curriculum. The newest Government of Ontario document, *The Kindergarten Program*, is a change in the right direction. In my view, this change in policy should be extended throughout the primary grades. This would also require many teachers to be educated on how to do emergent curriculum inquiries in their classrooms so that they could develop expertise generating and studying pedagogical documentation.

As emergent curriculum inquiries are so beneficial to the development of children's self-regulation, I think it is also important to pursue looking at the four components of emergent curriculum that I have identified in this doctoral dissertation and think about if there are other components of emergent curriculum that also support self-regulation. The better we understand which components of emergent curriculum support the children's ability to self-regulate the more positive impact we can have on children's success at school. This also leads me to wonder about what other teaching practices can be shown to support the children's ability to self-regulate.

An unexpected insight of this research is that the teachers and Early Childhood Educators' awareness of their own self-regulation was elevated by our conversations. They came to recognize that their own self-regulation affects their teaching. When educators are cognizant

of what is causing them to feel stressed they can reduce those stressors and develop strategies to alleviate their stress. It is important for teachers and Early Childhood Educators to know how to regulate their own emotions and behaviour so they can cope with children's anger, anxiety and frustration. Further research on how to support teacher's self-regulation in the classroom would also benefit the children as they learn how to self-regulate.

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Appendix A

Teacher Informed Consent Form

Dear Teacher,

My name is Brenda Jacobs and I am currently a graduate student working on my PhD in the Faculty of Graduate Studies at York University. I will be conducting research in Full-Day Kindergarten classrooms on Pedagogical Documentation, Self-Regulation and Literacy as part of the requirements for completing my PhD. I would like to invite you to participate in this research because generating and studying pedagogical documentation is part of your teaching practice.

The purpose of my research study is to explore whether, and if so how, pedagogical documentation supports self-regulation and literacy development in the Full-Day Kindergarten classroom. The following three general questions will be the focus of my research: What conditions need to exist in a classroom environment for pedagogical documentation to occur? Does pedagogical documentation support a child's ability to self-regulate? Does pedagogical documentation contribute to literacy development?

I ask your permission to allow me to visit your classroom five or six times, for two to three hours. During the visit, I will be observing the classroom, writing field notes, asking interview questions informally, taking photographs, audiotaping conversations, and collecting samples of the children's work. Part of the visit will involve us working collaboratively to generate and study your pedagogical documentation. I also ask your permission to use any data that you might collect when I am not there.

The teachers involved in the research will benefit from me sharing my experience when working together collaboratively to generate and study the pedagogical documentation. The findings of the research will also enhance the teacher's understanding of the relationship between pedagogical documentation, self-regulation and literacy development. This new knowledge will further enhance the teacher's practice of generating pedagogical documentation in the future. Enhanced teaching practice will in turn be beneficial to the school community including the children, their parents, and other staff. There are no risks or discomforts anticipated during this research.

Data for this research study will be collected through observations and field notes; pedagogical documentation study sessions; informal interviews; photographs; samples of the children's work; and audiotaped recordings. I will erase audiotaped recordings as soon as they have been transcribed. Only my supervisory committee (CarolAnne Wien, Stuart Shanker and Jacqueline Lynch) and I will have access to the data that I collect. The data will be stored in a locked office. The electronic data will be stored in files on a password protected computer. All data will be securely stored until the research study is completed and the findings disseminated, at which point the data will be destroyed. I intend to include transcribed conversations, photographs, and work samples in presentations of the research findings in my doctoral dissertation, other articles/papers and/or publications and in academic and research contexts such as conferences. To keep your identity confidential, I will use pseudonyms to refer to you, your

school, and any person to whom you may refer to in order to ensure anonymity. Identifying details such as names will be removed from the photographs and work samples. Confidentiality will be provided to the fullest extent possible by law.

Your participation in the research is completely voluntary and you may choose to stop participating at any time. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with the researchers, York University, or any other group associated with this project. In the event, you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

If you have any questions about the research in general or about your role in the study, please feel free to contact me. This research has been reviewed and approved by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, you may contact the Senior Manager and Policy Advisor for the Office of Research Ethics, 5th Floor, York Research Tower, York University, telephone 416-736-5914 or e-mail ore@yorku.ca

I, _____consent to participate in a study called *Pedagogical Documentation, Self-Regulation, and Literacy in the Full-Day Kindergarten* conducted by Brenda Jacobs. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

_____   _____

Teacher   Date

_____   _____

Principal Investigator   Date

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Appendix B

Teacher and ECE Informed Consent Form

Dear Teacher and ECE,

My name is Brenda Jacobs and I am currently a graduate student working on my PhD in the Faculty of Graduate Studies at York University. I will be conducting research in Full-Day Kindergarten classrooms on Pedagogical Documentation, Self-Regulation and Literacy as part of the requirements for completing my PhD. The External Research Review Committee of the TDSB and your school principal have granted approval for this study. I would like to invite you to participate in this research because generating and studying pedagogical documentation is part of your teaching practice.

The purpose of my research study is to explore whether, and if so how, pedagogical documentation supports self-regulation and literacy development in the Full-Day Kindergarten classroom. The following three general questions will be the focus of my research: What conditions need to exist in a classroom environment for pedagogical documentation to occur? Does pedagogical documentation support a child's ability to self-regulate? If so, how? Does pedagogical documentation contribute to literacy development? If so, how?

I ask your permission to allow me to visit your classroom five or six times, for two to three hours. During the visit, I will be observing the classroom, writing field notes, asking interview questions informally, taking photographs, audiotaping conversations, and collecting samples of the children's work. Part of the visit will involve the three of us working collaboratively to generate and study your pedagogical documentation. I also ask your permission to use any data that you might collect when I am not there.

The Kindergarten teams involved in the research will benefit from me sharing my experience when working together collaboratively to generate and study the pedagogical documentation. The findings of the research will also enhance the Kindergarten team's understanding of the relationship between pedagogical documentation, self-regulation and literacy development. This new knowledge will further enhance the Kindergarten team's practice of generating pedagogical documentation in the future. Enhanced teaching practice will in turn be beneficial to the school community including the children, their parents, and other staff. There are no risks or discomforts anticipated during this research.

Data for this research study will be collected through observations and field notes; pedagogical documentation study sessions; informal interviews; photographs; samples of the children's work; and audiotaped recordings. I will erase audiotaped recordings as soon as they have been transcribed. Only my supervisory committee (CarolAnne Wien, Stuart Shanker and Jacqueline Lynch) and I will have access to the data that I collect. The data will be stored in a locked office. The electronic data will be stored in files on a password protected computer. All data will be securely stored until the research study is completed and the findings disseminated, at which point the data will be destroyed. I intend to include transcribed conversations, photographs, and work samples in presentations of the research findings in my doctoral

dissertation, other articles/papers and/or publications and in academic and research contexts such as conferences. To keep your identity confidential, I will use pseudonyms to refer to you, your school, and any person to whom you may refer to in order to ensure anonymity. Identifying details such as names will be removed from the photographs and work samples. Confidentiality will be provided to the fullest extent possible by law.

Your participation in the research is completely voluntary and you may choose to stop participating at any time. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with the researchers, York University, or any other group associated with this project. In the event, you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

If you have any questions about the research in general or about your role in the study, please feel free to contact me. This research has been reviewed and approved by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, your may contact the Senior Manager and Policy Advisor for the Office of Research Ethics, 5th Floor, York Research Tower, York University, telephone 416-736-5914 or e-mail ore@yorku.ca

I, _____consent to participate in a study called *Pedagogical Documentation, Self-Regulation, and Literacy in the Full-Day Kindergarten* conducted by Brenda Jacobs. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

_____   _____

Teacher/ECE   Date

_____   _____

Principal Investigator   Date

Appendix C

Invitation to Principal to Participate in the Research Project:

Pedagogical Documentation, Self-Regulation and Literacy Development in Full-Day Kindergarten

Dear Principal,

My name is Brenda Jacobs and I am currently a graduate student working on my PhD in the Faculty of Graduate Studies at York University. I will be conducting research in Full-Day Kindergarten classrooms on Pedagogical Documentation, Self-Regulation and Literacy as part of the requirements for completing my PhD. The External Research Review Committee of the TDSB has granted approval for this study. I would like to invite your school to participate in this research. I have chosen your school because several of the Kindergarten teams generate and study pedagogical documentation as part of their teaching practice.

The purpose of my research study is to explore whether, and if so how, pedagogical documentation supports self-regulation and literacy development in the Full-Day Kindergarten classroom. I have attached the brief description of the study that was included in my application to the TDSB External Research Review Committee.

I hope that two Kindergarten teams at your school will participate in the study. The research involves me visiting each classroom five or six times, for two to three hours, in early 2015. During the visit, I will be observing the classroom, writing field notes, asking interview questions informally, taking photographs, audiotaping conversations, and collecting samples of the children's work. Part of the visit will involve the Kindergarten team and myself working collaboratively to generate and study pedagogical documentation.

The Kindergarten team will benefit from me sharing my experience when working together collaboratively to generate and study the pedagogical documentation. The findings of the research will also enhance the Kindergarten team's understanding of the relationship between pedagogical documentation, self-regulation and literacy development. This new knowledge will further enhance the Kindergarten team's practice of generating pedagogical documentation in the future. Enhanced teaching practice will in turn be beneficial to the school community including the children, their parents, and other staff. There are no risks or discomforts anticipated during this research.

Data for this research study will be collected through observations and field notes; pedagogical documentation study sessions; informal interviews; photographs; samples of the children's work; and audiotaped recordings. I will erase audiotaped recordings as soon as they have been transcribed. Only my supervisory committee (CarolAnne Wien, Stuart Shanker and Jacqueline Lynch) and I will have access to the data that I collect. The data will be stored in a locked office. The electronic data will be stored in files on a password protected computer. All data will be securely stored until the research study is completed and the findings disseminated, at which point the data will be destroyed. I intend to include transcribed conversations, photographs, and work samples in presentations of the research findings in my doctoral dissertation, other articles/papers and/or publications and in academic and research contexts such

as conferences. To keep the identity of participants confidential, I will use pseudonyms to refer to you, your school, the Kindergarten team, the children and any person to whom you may refer to in order to ensure anonymity. Identifying details such as names will be removed from the photographs and work samples. Confidentiality will be provided to the fullest extent possible by law.

Participation in the research is completely voluntary and you may choose to stop participating at any time. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with the researchers, York University, or any other group associated with this project. In the event, you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

If you have any questions about the research in general or about your role in the study, please feel free to contact me. This research has been reviewed and approved by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, your may contact the Senior Manager and Policy Advisor for the Office of Research Ethics, 5th Floor, York Research Tower, York University, telephone 416-736-5914 or e-mail ore@yorku.ca

I, _____accept the invitation for my school _____ _____ to participate in a study called *Pedagogical Documentation, Self-Regulation, and Literacy in the Full-Day Kindergarten* conducted by Brenda Jacobs. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

_____   _____

Principal   Date

_____   _____

Principal Investigator   Date

<u>Brief Description of the Project</u>

Pedagogical documentation and self-regulation are now both important themes in Ontario's early learning policy. Pedagogical documentation is a process in the environment that helps us understand how children think and learn. It is a way of finding meaning in what children do and experience and making that learning visible to others for interpretation (Ontario Ministry of Education, 2014). In recent years, pedagogical documentation has emerged as a teacher practice in many Full-Day Kindergarten classrooms. Self-regulation is the ability to manage one's own energy states and deal effectively and efficiently with stressors in the environment. When children are able to manage their own stress levels and use self-regulation strategies they can control their emotions, focus their attention, follow instructions, cooperate, empathize and respond to the feelings of others (Ontario Ministry of Education, 2010-2011). When children are able to self-regulate, they can grow and flourish in the Full-Day Kindergarten. Teachers can support self-regulation by reducing stressors in their environment, and supporting children's efforts and increasing ability to self-regulate (Ontario Ministry of Education, 2014).

The central idea to be explored in this doctoral dissertation research is whether, and if so how, pedagogical documentation supports self-regulation and literacy development in the Full-Day Kindergarten classroom. This idea is not well developed in the empirical research on Full-Day Kindergarten. This research project will involve an exploratory study of four Full-Day Kindergartens with Kindergarten teams who generate pedagogical documentation. The research findings will help teachers and policy makers to better appreciate the potential of pedagogical documentation. The findings will also contribute to the existing literature on the academic benefits of Full-Day Kindergarten. The researcher is an experienced Kindergarten teacher who taught for many years in the TDSB and is currently a PhD candidate in Education at York University. The doctoral dissertation supervisory committee is composed of Professors CarolAnne Wien (Supervisor), Stuart Shanker, and Jacqueline Lynch (Committee Members).

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Appendix D

Parent/Guardian Informed Consent Form

Dear Parent or Guardian,

My name is Brenda Jacobs and I am currently a graduate student working on my PhD in Education at York University. I hope to visit your child's classroom and work with your child's teachers to observe and discuss how they make children's learning visible to others. Your child's teachers construct panels of photographs showing children at work and captions of children's thoughts. I want to explore how teachers construct and study these panels and their impact, if any, on children's self-regulation and literacy development.

I will be visiting your child's classroom five or six times, for two to three hours. My being there will not change the children's activities at all. I am asking your permission to observe your child in the classroom, to record their words, take their photograph, and collect samples and photographs of their work. Some conversations will be audiotaped and transcribed so I can recall exactly what was said. There are no risks or discomforts anticipated during this research.

To keep your child's identity confidential, I will use pseudonyms when referring to your child's photograph and work samples, their school, and any person to whom he or she may refer to in order to ensure anonymity. Identifying details such as names will be removed from your child's photograph and work samples. Confidentiality will be provided to the fullest extent possible by law.

The materials I collect will be included in my dissertation. They could also be presented at an education conference or possibly included in published articles or books. Photographs of your child will only be used for research purposes unless you give permission to include them in publications.

Participation in the research is completely voluntary and you or your child may choose to stop participating at any time. Your decision to stop participating will not affect your relationship with the researchers, York University, or any other group associated with this project. In the event, you withdraw from the study, all materials collected will be immediately destroyed wherever possible.

If you have any questions about the research in general or about your role in the study, please feel free to contact me. This research has been reviewed and approved by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, your may contact the Senior Manager and Policy Advisor for the Office of Research Ethics, 5th Floor, York Research Tower, York University, telephone 416-736-5914 or e-mail ore@yorku.ca

I, _____give consent for my child _____ to participate in a study called *Pedagogical Documentation, Self-Regulation, and Literacy in Full-Day Kindergarten* conducted by Brenda Jacobs. I have understood the nature of this study and agree to my child's participation. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

I also give permission for Brenda Jacobs to:

(Please check all that apply)

[   ] take my child's photograph

[   ] publish my child's photograph

[   ] audiotape my child's words

[   ] collect samples of my child's work

_____   _____

Parent/Guardian   Date

_____   _____

Principal Investigator   Date

Appendix E

Parent/Guardian Informed Consent Form

Dear Parent or Guardian,

My name is Brenda Jacobs and I am currently a graduate student working on my PhD in Education at York University. I hope to visit your child's classroom and work with your child's teacher and Early Childhood Educator to observe and discuss how they make children's learning visible to others. Your child's Kindergarten team constructs panels of photographs showing children at work and captions of children's thoughts. I want to explore how teachers construct and study these panels and their impact, if any, on children's self-regulation and literacy development.

The External Research Review Committee of the TDSB has granted approval for this study. The school Principal has also given permission for this study to be carried out in your son/daughter's school.

I will be visiting your child's classroom five or six times, for two to three hours. My being there will not change the children's activities at all. I am asking your permission to observe your child in the classroom, to record their words, take their photograph, and collect samples and photographs of their work. Some conversations will be audiotaped and transcribed so I can recall exactly what was said. There are no risks or discomforts anticipated during this research.

To keep your child's identity confidential, I will use pseudonyms when referring to your child's photograph and work samples, their school, and any person to whom he or she may refer to in order to ensure anonymity. Identifying details such as names will be removed from your child's photograph and work samples. Confidentiality will be provided to the fullest extent possible by law.

The materials I collect will be included in my dissertation. They could also be presented at an education conference or possibly included in published articles or books. Photographs of your child will only be used for research purposes unless you give permission to include them in publications.

Participation in the research is completely voluntary and you or your child may choose to stop participating at any time. Your decision to stop participating will not affect your relationship with the researchers, York University, or any other group associated with this project. In the event, you withdraw from the study, all materials collected will be immediately destroyed wherever possible.

If you have any questions about the research in general or about your role in the study, please feel free to contact me. This research has been reviewed and approved by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, your may contact the Senior

Manager and Policy Advisor for the Office of Research Ethics, 5th Floor, York Research Tower, York University, telephone 416-736-5914 or e-mail ore@yorku.ca

I, _____give consent for my child _____ to participate in a study called *Pedagogical Documentation, Self-Regulation, and Literacy in Full-Day Kindergarten* conducted by Brenda Jacobs. I have understood the nature of this study and agree to my child's participation. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

I also give permission for Brenda Jacobs to:

(Please check all that apply)

[   ] take my child's photograph

[   ] publish my child's photograph

[   ] audiotape my child's words

[   ] collect samples of my child's work

_____   _____

Parent/Guardian   Date

_____   _____

Principal Investigator   Date

Appendix F

Informal Interview Questions

1. How does your classroom environment invite pedagogical documentation to occur?

2. How often do you generate pedagogical documentation in your classroom? Who is responsible for collecting and organizing the data? How often do you meet with colleagues to study the pedagogical documentation?

3. Have you noticed instances of self-regulation occurring in your classroom? If so, can you give me some examples?

4. What opportunities do you provide in the classroom environment for children to develop their oral and written language?

5. Is the children's ability to self-regulate reflected in your pedagogical documentation?