Exploring Effective Strategies for Developing Executive Functioning Skills within an Early Childhood Classroom

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Abstract

This qualitative study focuses on the topic of executive functioning and implementation of the *Tools of the Mind (Tools)* program. This study examined teacher and administrative perspectives on the implementation of the *Tools* program within kindergarten classrooms. The focus of this study was to determine strategies implemented within kindergarten and first grade classrooms to promote the development of executive functioning skills.

This study took place in a suburban town in Massachusetts and included interviews and focus groups with kindergarten teachers, first grade teachers and principals of three elementary schools. Vygotsky’s Cultural-Historical Theory informs the theoretical framework for the literature review and examining the research questions.

The results of this study concluded that the majority of kindergarten teachers, first grade teachers and administrators have positive impressions of the *Tools* program and believe that it is developmentally appropriate for kindergarten students. Participants also agreed that there is a need to supplement parts of the math and phonics curriculum within the *Tools* program in order to meet the academic goals of a kindergarten curriculum. During interviews and focus groups first grade teachers articulated being interested in bridging the *Tools* program to first grade, however, they do not have enough training or information about the program. This study also includes a detailed list of activities and strategies used within a classroom to promote the development of executive functioning skills. The results of this study can provide educators with information regarding a developmentally appropriate early childhood curriculum, and inform curriculum leaders on relevant topics for future professional development.

Key words: executive functioning, Tools of the Mind, early childhood education, self-regulation, impulse control, kindergarten, first grade, Lev Vygotsky, Cultural-Historical Theory
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Chapter I: Introduction

Problem Statement

In early childhood classrooms (grades PreK-second) across the country, teachers are experiencing a drastic change in the academic demands placed upon young children (Chang & Singh, 2008). The development of a child’s readiness skills to succeed academically and socially in a classroom has been a topic of interest for researchers and educators for many decades. One of the most debated questions regarding early childhood curriculum is how much classroom time should be devoted to the development of social skills and how to equally balance structured play and academic instruction (Barnett, Jung, Yarosz, Thomas, Hornbeck, Stechuk, Burns, 2008).

Curriculum that was once taught in first grade is now being introduced in kindergarten as teachers push their students to reach high standards set by district leaders (Davies & Cress, 2010; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009). “Children entering kindergarten now are expected to come with prerequisite skills for early literacy and math and the social maturity to comply with school routines” (Logue, 2007, p 37). As academic demands increase, children are expected to attend and focus on activities at an early developmental age. Teachers are finding students struggle to keep focused and control impulsive behaviors as they push through the early literacy and math curriculum (Chang & Singh, 2008).

Over the past twenty years, the topic of executive functioning has been growing among educators and researchers as they examine the importance of its development in young children. Wu, Chan, Leung, Liu, Leung & Ng (2011) define executive functioning as “an interrelated set of skills including planning, problem solving, abstract reasoning, mental flexibility, and the capacity to utilize feedback” (p 1532). In order to meet the academic requirements of an early childhood classroom, children need to develop the skills necessary to attend and control impulses
throughout the school day (Biederman, Monuteaux, Doyle, Seidman, Wilens, Ferrero, & Ferarone, 2004). “Even in the earliest years of school, children’s ability to persist at work, stay on task, attend to learning goals, and participate actively in learning has been associated with increased academic success in school” (Rimm-Kaufman et. al, 2009, p 958).

The purpose of this general qualitative study was to examine the importance of executive functioning skills and a developmentally appropriate curriculum, which balances child-initiated play and social development with academic instruction. This qualitative study examined teacher and administrator perspectives on the Tools of the Mind (Tools) program and strategies used for promoting the development of executive functioning skills within a classroom. Interviews and focus groups with kindergarten teachers, first grade teachers and administrators within three public elementary schools provided information regarding specific strategies being implemented to help develop executive functioning skills in students.

Significance

Over the past decade, kindergarten classrooms across the country have become increasingly rigorous and school accountability demands have shifted the focus of kindergarten away from the development of social and emotional skills and more toward enhancing academic skills (Davies & Cress, 2010; Lee, Burkam, Ready, Honigman, & Meisels, 2006; Rimm-Kaufman et. al, 2009). The academic demands within an early childhood classroom continue to increase each year as schools feel the pressure to push for an early academic start. Many teachers observe young children struggling to keep focused during academics and whole group instruction (Chang & Singh, 2008). A child’s ability to adapt to a classroom’s environment is an important component to school success.
The increasing academic demands placed upon students, trickle down through the grade levels and start at the early age of kindergarten. “School accountability demands ushered in by the No Child Left Behind legislation shifted focus of kindergarten away from children’s social and emotional skills and towards the enhancement of children’s academic skills” (Rimm-Kaufman et. al, 2009, p 958). As a result, children are losing out on important social-emotional development (Cannon, Jacknowitz & Painter, 2006; Rimm-Kaufman et. al, 2009). In order for students to fully attend to academic tasks, children need to first develop executive functioning skills such as attention, impulse control, higher-order thinking and working memory (Biederman et. al, 2004; Bodrova, 2008). Educators will continue to see students struggle unless their social and emotional needs are met and addressed as a priority. Developmentally appropriate curriculum, which balances child-initiated play and social development with academic instruction, is critically important for a young child’s growth and learning within an early childhood classroom environment (Chang & Singh, 2008).

Researchers have found that early academic and social success in the primary grades is closely related to school success in the upper grades (LiGrining, Votruba-Drzal, Carreno, & Haas, 2010). Children who are able to achieve school readiness at an early age are more likely to develop a foundation for basic academic skills that facilitates later acquisition of more advanced learning (LiGrining et. al, 2010). Ryder, Burton & Silberg (2006) explain “children who are successful in early grades gain a strong foundation that helps them build literacy achievement that will carry them into their adult lives” (p 179). In addition, children from low-income families have been found to benefit greatly from high quality early childhood programs, which prepare them with the academic and social skills needed to succeed in school. “High quality programs have demonstrated impressive positive effects on poor children’s school readiness and
later life success….” (Magnuson & Shager, 2010, p 1186). Also, researchers focusing on special education services and referrals have found that “high-quality early educational intervention programs may not only decrease the rate of referrals into special education but may also reduce the length of time that special education services are needed” (Mann, McCartney, & Park, 2007, p 283). Children who are enrolled in high-quality child care, preschool and kindergarten programs are more likely to be identified as needing special education services early and therefore may receive the support they need to be successful later on in their school career (Mann, McCartney, & Park, 2007). Early academic and social success has been associated with many benefits for the future of students, continuing into their adult lives.

**Practical Goals**

This general qualitative study included an in-depth look into the perspectives of eight kindergarten teachers, seven first grade teachers, two K/1 teachers (mixed classroom) and three administrators within three public elementary schools in Massachusetts. Data gathered through interviews and focus groups provided information regarding strategies for developing executive functioning skills among young children and the impact of the *Tools* program. As a first grade teacher, this qualitative study offered me insight into the importance of creating a classroom environment that balances both emotional/social growth and academic growth throughout the school year. A future goal of this study is to create a guide for teachers including successful strategies to implement within the classroom to promote the development of executive functioning. The results of this study may also guide administrators in understanding how to improve professional development and what types of supports teachers may need in this specific area of education.
**Intellectual Goals**

Literature explains that early childhood teachers need to adhere to specific curriculum guidelines and general expectations as they prepare their students socially and academically for the upper elementary grades (Lee et al., 2006; Sherwood & Reifel, 2010; Shirvani, 2009). As a result of this academic push, some teachers are forced to focus on academic instruction at the expense of more child-centered and play-based strategies (Cannon, Jackowitz & Painter, 2006; Sherwood & Reifel, 2010). Therefore, the following study will examine developmentally appropriate curriculum, which balances child-initiated play and social development with academic instruction within an early childhood classroom setting. Through this study, educators will be exposed to research that examines best practices within an early childhood classroom. Educators can use this research to guide their instructional practices and provide them with options for creating a developmentally appropriate curriculum for their young learners.

Administrators and curriculum leaders can also use the information gathered in this study to guide their professional development planning. The study will add to the literature base on how teachers and administrators perceive a program, which focuses on executive functioning, and what are the best practices for balancing learning and structured play among young children.

**Central Research Question**

1. What are the perceptions of kindergarten teachers, first grade teachers and administrators of the impact of the *Tools of the Mind* program on the development of executive functioning skills among students within the classroom?

**Sub-Questions**

1. Based on kindergarten and first grade teachers’ experiences, what are the perceptions of best practices to promote the development of executive functioning skills including self-
regulation, impulse control and working memory?

2. Based on administrators’ experiences and observations, what are the perceptions of best practices to promote the development of executive functioning skills, including self-regulation, impulse control and working memory within the classroom?

The following study will present the research topic of executive functioning and explain the importance of its development among young children. A detailed explanation of Lev Vygotsky’s Cultural-Historical Theory will be followed by a literature review of existing studies that focus on the development of executive functioning skills and its impact on a child’s ability to succeed in an academic setting. Following the literature review will be an explanation of the research design, including the methodology and protection of human subjects. Research findings will be reported and discussed along with implications for educational practice.

**Theoretical Framework**

The most common theoretical framework discussed within the research of executive functioning is the educational philosophies of Lev Vygotsky. Vygotsky was a Russian psychologist who lived from 1896 to 1934 and his theory of development is often called the Cultural-Historical Theory (Bodrova & Leong, 2007). Vygotsky believed that social interaction plays a fundamental role in the process of cognitive development (Learning Theories, 2008). The Vygotskian approach to social constructivism includes the concepts of the “zone of proximal development” (ZPD), scaffold learning, and private speech (Bodrova & Leong, 2001).

According to Vygotsky, a child’s ZPD is the difference between a child’s actual and potential abilities (Pentimonti & Justice, 2010). Vygotsky suggested that a learner must “act, respond and create through the very act of learning” (Nieto, 1999, p. 14). According to Vygotsky, children are
largely controlled by their environment until they can learn to use their mental tools (Nieto, 1999).

The Cultural-Historical Theory emphasizes that learning is shaped by the social-historical context in which it takes place (Bodrova & Leong, 2001). Vygotsky believed that children acquire specific cultural tools and these tools facilitate the acquisition of higher mental functions (Bodrova & Leong, 2001). Within this theory it is thought that cognitive construction is socially mediated and influenced by present and past social interactions (Bodrova & Leong, 2007). Without manipulation and hands-on experiences, a child will not construct his/her own understanding of a concept (Bodrova & Leong, 2001). In the Vygotskian framework, “not only can development impact learning, but learning can impact development” (Bodrova & Leong, 2007, p 13). The relationship between development and learning and the concepts of language and mental tools all work together to shape ideas within the Cultural-Historical Theory.

An important aspect of the Vygotskian theory is the role that symbolic or dramatic play has in the development of children’s executive functioning skills. Vygotsky believed that play itself must include imaginary situations, roles and rules (Bodrova & Leong, 2001). “Play proves a unique context in which children are motivated to act and at the same time develop the ability to self-regulate their behavior” (Bodrova & Leong, 2001, p 16). Vygotsky viewed make-believe play not as something that should be seen as competing with academic learning, but rather enhancing it and propelling a child’s development forward (Bodrova, 2008). Vygotsky had his own specific definition of play, which was limited to dramatic and make-believe play. Vygotsky’s definition of play included three components: “children create an imaginary situation, take on and act out roles, and follow a set of rules determined by specific roles” (Bodrova, 2008, p 359). It was Vygotsky’s belief that structured, dramatic play had an important
role in the development of a child’s ability to act internally, develop abstract and symbolic thinking and engage in intentional and voluntary behaviors (Bodrova, 2008). Children’s ability to self regulate their social and cognitive behaviors can be linked to the relationship that exists between roles the children play and rules they need to follow while playing (Bodrova, 2008). “In play, the shared form of self-regulation exists as ‘other regulation’ as children monitor their play partners’ ‘playing by the rules’ at the same time following directions issued by other players” (Bodrova, 2008, p 362). Make-believe play and the scripts that children follow within the play contribute to the development of internalized and higher mental functioning (Bodrova, 2008).

A Vygotskian approach to learning is closely associated with the idea of scaffolding, which is the process of a teacher providing support to a learner and then gradually releasing this support and giving a child the opportunity for independent growth (Pentimonti & Justice, 2010). When scaffolding, tasks must be given to children within their zone of proximal development and therefore build upon their already existing base of knowledge in order to expand their thinking and provide strategies for future learning of new and advanced concepts (Pentimonti & Justice, 2010). One important concept of the Vygotskian approach to learning is the development of mental tools. Vygotsky believed that “we teach to arm children with tools, and children appropriate these tools to master their own behavior, gain independence, and reach a higher developmental level” (Bodrova & Leong, 2007, p 16). Mental tools help children master their emotions and their own cognitive behaviors, and without these mental tools the development of concepts such as planning, problem solving and memory would not be possible (Bodrova & Leong, 2007).

One important mental tool is the development of language. Within the Cultural-Historical Theory, language development is an essential mental tool, which contributes to the
emergence of a higher-level cognitive thinking (Bodrova & Leong, 2007). Inner speech and the development of language can be used to create strategies for mastering mental functions such as attention, problem solving and memory. Fuhs & Day (2011) explain that Vygotksy hypothesized that as children begin to self-regulate, they do so by verbalization of their own and later by inner/private speech. Using the Vygotskain theory, Winsler, Ducenne & Koury (2011) explain the importance of social interactions and the internalization of cultural tools used during these interactions and its relationship with the development of self-regulation. Similarly, Robson (2010) based her study on self-regulation around the social cognitive perspective of Vygotsky and his views on the importance of play and language being the key tools for the development of young children. Many researchers have used the Vygotskian approach to guide their studies with a solid theoretical framework, which relates directly to the overall topic of executive functioning.

Chapter II: Literature Review

Introduction

Early childhood classrooms have become increasingly rigorous over the past decade (Davies & Cress, 2010; Rimm-Kaufman et. al, 2009). School accountability and state mandated testing has led teachers away from focusing the on social and emotional development of children and more towards increased academic instruction (Rimm-Kaufman et. al, 2009). Logue (2007) discussed how states have adopted learning standards to guide content and yet these standards do not specifically address the social and emotional skills children need to master the academic expectations within a classroom. Early educators, such as John Dewey, noted the importance of “child-centered” lessons and hands-on learning for young children (Dewey, 2001). Dewey wrote, “the child’s impulse to do finds expression first in play, in movement, gestures, and make-
believe...” (Dewey, 2001, p 30). Dewey’s philosophy on the importance of exploration and a child’s freedom to question with hands-on learning is slowly diminishing as teachers feel the pressure to conform to state mandated curriculums. Today, early childhood teachers need to adhere to specific curriculum guidelines and general expectations as they prepare their students socially and academically for the upper elementary grades (Sherwood & Reifel, 2010). As a result of this academic push, some teachers are forced to focus on academic instruction at the expense of more child-centered and play-based strategies (Cannon, Jacknowitz & Painter, 2006; Sherwood & Reifel, 2010).

**Academic Expectations**

As early as the 1930’s, kindergarten classrooms began moving away from play-based curriculums and more towards teacher-directed instruction (Sherwood & Reifel, 2010). “With the passage of the No Child Left Behind Act, a federal law emphasizing accountability and high stakes testing, play has continued to be reduced or eliminated from early childhood classrooms” (Sherwood & Reifel, 2010, p 323). David Hursh (2005) wrote, “These new state and federal regulations have transferred power away from teachers, parents and local community members and towards corporate and political leaders at the state and federal level” (p. 605). With the pressure of high-stakes testing, educators are seeing the role of kindergarten begin to change from semi-structured transitional programs to more formal academic programs (Davies & Cress, 2010). The standards and assessment movement beginning in 1990 reinforced the academic focus on child development and kindergarten classrooms began to resemble first grade classrooms with an emphasis on reading and math instruction rather than socialization and play (Lee et. al, 2006).
Kindergarten programs in the United States vary from half-day programs to full-day programs, yet despite this difference, kindergarten curriculum leaders still need to comply with learning standards set by state government officials (Chang & Singh, 2008). Children are entering kindergarten with a wide range of social skills and knowledge and yet all students are held to the same level of academic expectation by the end of the year (Logue, 2007). Chang and Singh (2008) stated, “American kindergarten children are expected to pay attention to highly structured and segmented academic instruction such as reading, writing, mathematics and science lessons” (p 35). With these increasing demands, many teachers struggle to sustain their students’ attention as they attempt to keep up with state standards and curriculum expectations (Chang & Singh, 2008). In 1995, a report by the National Center for Education Statistics asked parents and kindergarten teachers what five-years olds should know before entering kindergarten. Compared to the teachers, the parents of preschoolers placed a greater emphasis on the importance of academic skills and academically oriented classroom practices (Ashiabi, 2007). Ashiabi (2007) stated that although research shows the importance of developing children’s social-emotional skills for school readiness, there is a belief among most adults that we need to place a greater importance on academic skills from the very beginning.

As the value of play is questioned in these times of rigorous academic accountability, teachers of young children are faced with trying to find a balance between play-based instruction and direct academic instruction (Myck-Wayne, 2010). Teachers continue to struggle as they attempt to respect the differences of students entering their classroom and at the same time teaching children the skills necessary to succeed academically (Bodrova & Leong, 2001). In order to meet the academic requirements of an early childhood classroom, children need to develop the skills necessary to attend and control impulses throughout the school day.
“Even in the earliest years of school, children’s ability to persist at work, stay on task, attend to learning goals, and participate actively in learning has been associated with increased academic success in school” (Rimm-Kaufman, 2009, p 958). Over the past few years the topic of executive functioning has caught the interest of many educators and researchers. Executive functioning can be defined as cognitive skills involved in planning and problem solving (Fuhs & Day, 2010). Executive functioning skills include abilities such as attention, reasoning, planning, self-control, self-regulation, set-shifting, inhibition, organization and working memory (Biederman et. al, 2004).

“Many children come to kindergarten with insufficient social skills to participate in the activities necessary for academic achievement” (Logue, 2007, p 35). Therefore, researchers are looking towards the importance of developing executive functioning skills at a young age. Recently, studies have focused on finding a relationship between executive functioning skills and the academic achievement of young children. One study titled, *Preschool Executive Functioning Abilities Predict Early Mathematics Achievement*, conducted by Clark, Pritchard and Woodward (2010), focused on the correlation between executive functioning skills and the academic performance of preschool students in the area of mathematics. Researchers explained that as a child’s prefrontal cortex develops and connectivity between neural systems increases, the child’s ability to regulate attention and goal-directed behaviors will progress steadily (Clark, Pritchard & Woodward, 2010). Within this study, a cohort of 104 children were followed from ages two to six years old and were given a variety of executive functioning tasks which assessed skills such as set-shifting, planning and inhibitory control (Clark et. al, 2010). At the age of six, the children’s mathematical achievement was collected through clinical and classroom assessments. Results concluded that early measures of executive function may be useful in identifying
children who are possibly at risk for experiencing difficulties with mathematical skills and concepts (Clark et. al, 2010). Researchers stated, “children who have problems manipulating information in working memory, flexibly applying cognitive strategies, and inhibiting inappropriate strategies or information are likely to experience conceptual difficulties with various aspects of mathematics” (Clark et. al, 2010, p 1188). The results of this study show the importance of executive functioning skills and its influence on early mathematical learning. It shows that children will be more likely to transfer math facts into long-term memory which, in turn, will benefit their learning as they continue towards more complex mathematical thinking and problem solving.

**Working Memory and Attention Control**

Two aspects of executive functioning of particular interest to researchers have been the skills of working memory and attention control. Children need to develop the ability to focus and shift attention while ignoring irrelevant stimuli in order to complete assigned tasks (Welsh, Nix, Blair, Bierman & Nelson, 2010). Working memory is associated with a wide range of academic skills including mathematical problem solving, written expression, language and reading comprehension (Martinussen & Major, 2011). Weaknesses in planning, organizing information, and monitoring schoolwork can be associated with working memory difficulties (Martinussen & Major, 2011). Therefore, children with poor working memory may exhibit academic difficulties as well as poor self-regulation skills (Martinussen & Major, 2011).

In a study conducted by Welsh et. al, (2010), 164 Head Start children were followed throughout their prekindergarten and kindergarten year to determine whether growth in working memory and attention control would predict growth in emergent literacy and numeracy skills. Through assessments conducted at three specific time periods (beginning of the prekindergarten
year, end of the prekindergarten year, and the end of the kindergarten year) it was determined that “growth in working memory and attention control skills during the prekindergarten year make unique contributions to kindergarten reading and math achievement” (Welsh et al., 2010, p 48). Through this study, classroom teachers are able to suggest the academic advantages of implementing a curriculum that includes a focus on the growth of working memory and attention control.

**Tools of the Mind Curriculum**

Studies have concluded that an early childhood classroom can benefit from a program that promotes the development of executive function skills (Welsh et al., 2010). “With the growing emphasis on academic performance in pre-school and kindergarten, teachers are now looking for guidance in how to choose instructional practices that are not only developmentally appropriate but also produce consistent achievement gains” (Bodrova & Leong, 2001, p 6). One program that has recently caught the attention of educators is the *Tools of the Mind* (*Tools*) curriculum (Barnett et al., 2008). The *Tools* curriculum is based on the work of Lev Vygotsky, and focuses on the development of self-regulation while teaching literacy and mathematics skills in a way that is a driven by dramatic play scenarios (Barnett et al., 2008). The *Tools* curriculum is child-centered and emphasizes the teacher’s role in guiding and supporting the child’s learning process. The basic principles of the *Tools* curriculum include the role of dramatic play along with teaching children to regulate their own social and cognitive behaviors, while emphasizing literacy and numeric skills (Barnett et al., 2008). Using teaching strategies that relate to ideas including scaffolding, play planning, zone of proximal development, external mediators, private speech and shared activities, students are guided towards developing the self-regulation skills needed to attend to academic tasks (Bodrova & Leong, 2001).
A study conducted by Barnett et. al (2008) randomly assigned a total of 274 three and four year olds to either a Tools curriculum classroom or to a control group which included a school district curriculum classroom (Barnett et. al, 2008). The participating students were observed and assessed with six different instruments in the fall (October and November) and the spring (April through June) (Barnett et. al, 2008). The results of the study concluded that a developmentally appropriate curriculum with an emphasis on play, such as the Tools program, could enhance both the academic and social learning of young children (Barnett et. al, 2008).

**Professional Development**

Research suggests that many children lack the social and emotional skills necessary to thrive in a preschool environment, and in general educators have limited knowledge and receive very little training about how to address these issues (Lloyd & Millenky, 2011). Lloyd and Millenky (2011) suggest an approach to training teachers in working with students who present challenging social-emotional issues that includes teacher training, classroom consultations, and stress management for teachers. Training for educators should include role-playing, vignettes, small group discussions and structured planning time along with an assigned clinical consultant to work with the teacher on specific challenging behaviors (Lloyd & Millenky, 2011). Another important component to teacher training is providing stress management workshops that can be designed to help teachers identify sources of stress and address them appropriately in order to maintain a positive classroom atmosphere (Lloyd & Millenky, 2011).

As the topic of executive functioning becomes more popular among educators and researchers, many school districts have been focusing their professional development on the topic and introducing educators to many strategies that can be used within the classroom to promote
the development of executive functioning skills among students of all ages. Greenberg and Rhoades (2009) recognize the importance of training programs that promote a combination of skills including self-control, emotional awareness, communication and problem solving skills. Greenburg and Rhoades (2009) mention two successful programs, *Promoting Alternative Thinking Strategies Curriculum (PATHS)*, and the *Tools of the Mind* curriculum, which both promote the improvement of socially competent behavior, self-regulation, working memory and inhibitory control. An important component of these programs is the training of educators to not only understand the importance of developing executive functioning skills at a young age, but also how to incorporate the program and strategies within their classroom on a daily basis. When developing workshops for teachers, administrators need to offer educators with a structured, systematic training experience that helps equip teachers with the skills necessary to experiment with successful strategies and feel competent when implementing them within the classroom (Schiff & BarGil, 2004).

**Summary**

As the United States continues to promote state mandated testing and the No Child Left Behind Act, early childhood classrooms across the country will continue to experience an academic push being placed upon students at a young age (Chang & Singh, 2008). “With the growing emphasis on academic performance in pre-school and kindergarten, teachers are now looking for guidance in how to choose instructional practices that are not only developmentally appropriate but also produce consistent achievement goals” (Bodrova & Leong, 2001, p 7). Research has shown that a child needs to develop self-regulation and higher order thinking skills to scaffold knowledge presented by their teacher and learn new concepts through already existing ideas and strategies (Pentimonti & Justice, 2010). “By balancing the emphasis on
academic mastery for children with opportunities for children to learn social skills in multiple ways, schools can better support academic achievement” (Logue, 2007, p 37). This literature review presented research that aimed to prove the importance of creating an early childhood curriculum that includes a balance between free exploration and direct academic instruction. Studies were examined which focused on the development of executive functioning skills at an early age and its impact on the academic and social development of young children. The importance of professional development was also discussed with an emphasis on school districts providing teachers with the supports needed to successfully implement a curriculum, which balances both social and academic growth.

Chapter III: Research Design

The following chapter will present the research design in detail. The research questions will be presented followed by information regarding the site and participants. Data collection and data analysis will also be discussed. The validity and creditably of the study will be presented along with the protection of human subjects.

Research Question

What are the perceptions of kindergarten teachers, first grade teachers and administrators of the impact of the Tools of the Mind program on the development of executive functioning skills among students within the classroom?

Sub-Questions:

1. Based on kindergarten and first grade teachers’ experiences, what are the perceptions of best practices to promote the development of executive functioning skills including self regulation, impulse control, and working memory?
The purpose of the first sub-question was to gain an understanding of the perceptions of kindergarten and first grade teachers on how to best promote the development executive functioning skills within a classroom. Self-regulation, impulse control and working memory are examples of executive functioning skills that the Tools program addresses. The kindergarten teachers’ perceptions were important because they are all trained in the Tools program and therefore have been experimenting with strategies that promote the development of executive functioning skills. The first grade teachers’ perceptions were important because they all have students in their class who have experienced a full kindergarten year of the Tools program.

2. Based on administrators’ experiences and observations, what are the perceptions of best practices to promote the development of executive functioning skills, including self-regulation, impulse control and working memory within the classroom?

The second sub-question focuses on the perceptions of three administrators on the impact of the Tools program in relation to the development of executive functioning skills. The perceptions of these administrators were important because they have been exposed to the Tools programs through observations within the kindergarten classrooms.

Methodology

This study was conducted using a general qualitative research design. A qualitative approach was chosen for this study because it provided an in-depth look into the perceptions of kindergarten teachers, first grade teachers, and administrators regarding the Tools program and the development of executive functioning skills. Detailed interviews and focus groups provided the best format for understanding how specific strategies and activities can impact the development of executive functioning skills.
Interviews and focus groups with eight kindergarten teachers, seven first grade teachers, two K/1 teachers, and three administrators took place to examine the beliefs of these educators and find out which strategies are being used within the classrooms for promoting the development of executive functioning skills, such as self-regulation, impulse control and working memory.

**Site and Participants**

This general qualitative study included participants from three suburban public elementary schools. One elementary school serves grades K-5 and was currently housing grades K-2 of another elementary school in the district, as their building was remodeled. The demographics of both schools include a majority of white students (84.3% of host school and 68.3% of visiting school) with the second highest percentage of Asian students (10.0 % of host school and 14.4% of visiting). The study also included teachers and administrators from a third elementary school, which also serves grades K-5. The demographics of this school include a majority of white students (70.7%) and with the second highest percentage of Asian students (20.5%).

For this qualitative study, purposive sampling was used and the sample size included the recruitment of eight kindergarten teachers, seven first grade teachers, two K/1 teachers, and three administrators. Fraenkel & Wallen (2006), explain that purposive sampling occurs when the researcher uses previous knowledge of a population and the specific purpose of the research to select a sample. Purposive sampling was chosen for this study because the kindergarten teachers at all three school had all been trained and were currently implementing the *Tools* program, which promotes the development of executive functioning skills. The kindergarten teachers volunteered to participate in a two-year pilot study for the *Tools* program. Therefore they received two years
of training and mentoring from the *Tools* program. At the time of this particular study, the kindergarten teachers were at the end of their second year of implementing the *Tools* program. The three administrators were chosen because they were currently leading a school where the *Tools* program was being implemented. The first grade teachers were chosen because the majority of their students were in a *Tools* kindergarten classroom the previous year.

Participants were contacted via email and interviews and focus groups were scheduled with participants at their convenience. Open-ended questions regarding the *Tools* program and its impact on the development of executive functioning skills was the focus of each session. Educators and administrators were asked their opinion on the best strategies for promoting the development of executive functioning skills, such as impulse control, self-regulation, and working memory within a classroom.

All of the participants of this study have a friendly relationship with the researcher and therefore they should have felt comfortable during the interviews and focus groups. All participants received a five-dollar gift card as gratitude for taking the time to participate in the study.

**Data Collection**

Interviews and focus groups took place between the months of March and April of 2013. Individual interviews were scheduled with each of the three administrators. Two separate focus groups were scheduled for kindergarten and first grade teachers. However, some teachers were not available to join the focus group and therefore individual interviews were scheduled as well. Individual interviews were scheduled with two kindergarten teachers and four first grade teachers. The interviews were approximately 30-minute sessions and each participant was interviewed
only once. The interviews of each administrator took place in their personal office, and the interviews of each teacher took place in either their own classroom or the researcher’s classroom. The location of each interview was determined by the participant.

Focus groups were scheduled with each group of teachers. The kindergarten teachers were asked to join a focus group and the first grade teachers were asked to join a focus group. The kindergarten focus group included six teachers, and the first grade focus group included eight teachers (two K/1 teachers). Each focus group was scheduled for approximately 45 minutes. The focus groups were held in the researcher’s classroom.

**Data Analysis**

All interviews and focus groups were audio-recorded and transcribed by the researcher. Common themes and differences among teacher/administrators’ responses were noted. The program, MAXQDA11 software was used when coding the data. Descriptive coding was used during the first cycle of the coding process. Saldana (2013), explains descriptive coding as, summarizing “in a word or short phrase-most often as a noun-the basic topic of a passage of qualitative data” (p 88). During the first cycle of coding, responses were coded based on strategies used within the classroom to promote the development of executive functioning skills, such as self-regulation and impulse control. Responses were also coded based on teachers and administrators’ opinions on the impact of the *Tools* program in regards to the development of executive functioning skills. Pattern coding was used during the second cycle of coding. Saldana (2013) describes pattern coding as, a way of grouping summaries “into a smaller number of sets, themes or constructs” (p 210). During the second cycle, themes related to teachers’ and administrators’ impressions of the Tools program were coded. Themes emerged in areas such as
the social and academic strengths and weaknesses of the program as well as how participants felt in regards to continuing the Tools program in the future and bridging the program to first grade.

Validity and Credibility

One limitation to this study was the population of just one school district and only twenty subjects. The homogenous sample may limit the ability to generalize results within a larger population. There were also a few threats to validity with this study, which included:

- **Data Collection Bias**: The researcher had already formed an opinion about the new Tools program and had already talked with teachers about their perceptions on the program and activities. Therefore the researcher had to push her personal opinions aside and keep an open mind during interviews and focus groups.

- **Attitude of Subjects**: The researcher was careful of how her relationships with the teachers affected the focus group experience. Being a co-worker and fellow colleague to the teachers may have impacted their responses to the questions. The researcher needed to make sure that the teachers stayed honest and open with her during the interviews and focus groups and they did not just answer the questions the way they thought the researcher wanted them answered. Before the interview/focus group the researcher talked with the teachers about the how their answers would not affect their job in any way and the importance of answering the questions honestly. Similarly, the researcher ensured the administrators that their responses would not affect their leadership position in any way. Participants were also informed that their responses would remain anonymous.

Protection of Human Subjects

To ensure the confidentiality of the participants, their names were not disclosed. All interviews and focus group answers will remain anonymous. When transcribing and analyzing
data, the names of teachers/administrators were coded using a letter or number system such as, Grade One# 1, Grade K #2, Administrator A, Administrator B, etc. Only the researcher has access to the data, and responses to the interview/focus group questions will be used for research purposes only.

Interviews and focus groups were audio recorded and transcribed by the researcher. All audiotapes and transcriptions will be kept with the researcher in a password-protected program on the researcher’s home computer and will be destroyed after the research is complete. No data will be stored at the school in which the researcher is employed. Signed consent documents will be retained for 3 years following the end of the study and will be maintained with the researcher in a locked file cabinet in her home.

The participants of this qualitative study did not experience any physical or psychological harm. However, participants may have experienced some discomfort when speaking in front of a group within the focus groups. Participants may have felt uncomfortable providing their opinion in the presence of other teachers. Therefore, the researcher tried her best to make participants feel comfortable during the focus groups and interviews. Icebreakers and warm up activities helped participants feel more comfortable. Icebreakers included small talk and going around the group for each participant to introduce him/herself. The participants were all colleagues and most have worked together in the past, therefore, this may have helped to make them feel more comfortable speaking in front of each other. Participants were informed that all interview and focus group responses would remain anonymous and current teaching or leadership positions would not be affected in any way. The researcher also reminded participants that they may choose to quit or not participate in the interview or focus group at any time.
Chapter IV: Report of Research Findings

Introduction

This chapter will present the findings from interviews and focus groups with kindergarten teachers, first grade teachers, and administrators. During interviews and focus groups, open-ended questions were used. The researcher did not ask participants direct questions related to specific opinions or strategies used within the classroom and therefore the use of open-ended questions may have impacted the final results and percentages within this study. Also, the kindergarten teachers within this study were involved in a pilot study for the *Tools* program for two years. Therefore, these teachers received two years of training and mentoring from the *Tools* program. Their training may have impacted their responses and knowledge regarding strategies used within the classroom to promote executive functioning.

The research findings will be presented in relation to each of the research questions of this study and will be provided in five different tables. Table 1 focuses on the central research question: What are the perceptions of kindergarten teachers, first grade teachers and administrators of the impact of the *Tools of the Mind* program on the development of executive functioning skills among students within the classroom? It presents the common themes found within the interviews and focus groups for the impressions of the *Tools* program. Following Table 1 is a detailed description of participants’ responses to each theme.

Tables 2 and 3 present specifically which teachers and administrators discussed each theme during the interview/focus groups, including total percentages for each theme.

Table 4 presents common themes from the two sub questions of this study, as follows:

1. Based on kindergarten and first grade teachers’ experiences, what are the perceptions
of best practices to promote the development of executive functioning skills including self-regulation, impulse control and working memory?

2. Based on administrators’ experiences and observations, what are the perceptions of best practices to promote the development of executive functioning skills, including self-regulation, impulse control and working memory within the classroom?

Table 4 includes the common themes found within the interviews and focus groups among kindergarten teachers, first grade teachers and administrators for strategies used for promoting executive functioning within the classroom. Following Table 4 is a detailed description of participants’ responses to each theme.

Table 5 identifies specifically which teachers/administrators discussed each strategy or activity during the interview/focus groups, including total percentages for each theme.

Findings and Analysis

Table 1 displays common themes found in relation to the central research question: What are the perceptions of kindergarten teachers, first grade teachers and administrators of the impact of the Tools of the Mind program on the development of executive functioning skills among students within the classroom? Following Table 1 is a detailed description of participants’ responses to each theme.

Table 1

Common Themes for Impressions of the Tools Program

- Overall positive impressions from teachers and administrators
- Academically, the program has strong literacy components in writing and reading comprehension
• Program needs stronger math curriculum and phonics/sight word instruction
• Interest in continuing the program next year

**Overall positive impressions from teachers and administrators**

From interviews and focus groups it was shown that the majority of both administrators and teachers have an overall positive impression of the *Tools* program. Specifically, ninety percent of participants expressed a positive opinion of the *Tools* program. One administrator discussed,

I have really been impressed with certainly the results of what I see happening in the *Tools* classrooms with the kids. What I like about the curriculum… is that is seems to be developmentally in tune with where kids are as 5 year olds. And by that I mean it really honors their need to talk all the time. And uses that natural tendency to build their knowledge and their ability to wait their turn (Administrator A).

A teacher who teaches a mixed classroom, including kindergarten and first grade students, commented as follows,

I love..like you’re saying..these kids are so engaged and excited about the curriculum. And I would want to do Magic Tree House kind of thing with whatever grade I taught. Just the way they are embracing every new theme they adopted the spider web on the playground.. was the rainforest when we were doing the rainforest. And everyday when we go out ..they are the rainforest animals. And then it became the tar pit for the ice age animals (Grade K/1 #9).
Also, a first grade teacher explained,

I have a very positive impression of the *Tools* program I think it sort of surpassed my expectations for sure. I love the units of study and the themed units that they’re doing. I think its great and the kids still use the language of the *Tools* program (Grade One #16).

Teachers and administrators also believe that the program is developmentally appropriate for kindergarten students. Forty-eight percent of participants mentioned that the *Tools* program meets the social needs of a kindergarten curriculum. “The social clearly is on the front burner but with the assumption that the academic will be all the more powerful or more powerful gains will be there if you put the social on the front burner” (Administrator C). One kindergarten teacher stated,

This is the part where I think I am a better teacher where I’ve always understood that kindergarten was about the social piece but I feel like I am a better teacher with that part where in September and October you are forcing kids to be buddies who don’t want to be buddies or girls be with boys or things like that but then now at this point in the year ..most of them..you still got the kids that are nudges..but like are fine with budding up with whatever..having a conversation with whomever (Grade K #2).

During the focus group a kindergarten teacher explained her opinion on the *Tools* program,

It’s just a huge social curriculum..its just how your community is. I know you guys did *Open Circle* but I found it was really hard for kindergarteners to sit in a circle and talk about things and then when they go to recess and they forget what you did at *Open Circle*. So this is more like built in..well the rule is..xyz (Grade K #7).
A specific social aspect that was commented on during interviews and focus groups was children’s ability to problem solve. Fifty-two percent of participants mentioned how the Tools program teaches children how to solve conflict and work well with their peers, which in turn develops independence. One kindergarten teacher explained,

you’ve given them the rules and mediation so that they can do it on their own so that their confident to problem solve… And right from the beginning I noticed how much less they would come to me as they would in the past if the classroom is set up in a more traditional way (Grade K #5).

Administrators were also seeing more independent conflict resolution and problem solving among students. The following quote is illustrative of one administrator’s opinion,

What I see is children who are able to resolve conflict with much less teacher intervention. And the teachers notice that too. From the gecko... kids are figuring out how to organize a board game and keep each other on track with the rules. I see children who are collaborative… they are willingly to help each other learn. They are used to talking with each other about their learning (Administrator B).

A first grade teacher noticed a change in her students’ ability to solve conflict compared to previous years,

They’re really good at that whole problem solving piece..If they’re struggling with something or they’re trying to figure out what to do..they’ll seek out help they might come to me or they might go to another student but then they go right back and they attack what they are doing..they revise..they fix I’ve never seen sort of that self starting in such a large majority in
my classroom at this point in time in the school year (Grade One, #16).

Overall, teachers and administrators expressed a positive opinion on the *Tools* program, specifically mentioning the program’s ability to meet the social emotional needs of a kindergarten curriculum.

**Strong literacy components in writing and reading comprehension**

Data gathered through interviews and focus groups determined that fifty-two percent of participants stated that the writing program has improved with the *Tools* program. One kindergarten teacher explained her opinion towards the writing program,

I like the writing piece. We write chapter summaries and we write background knowledge. So like we will show a slideshow or we will read a non fiction book and the kids write facts about what we learned or they write chapter summaries on what we’ve read. So everyone has an idea about what to write. Before we go off they share an idea with their buddy and then some kids share it off with the group so everyone goes to write with something they are going to write about. And then I also like the lines that you’ve probably seen. So they think of their message and they draw a line to represent each word and then go back and put the letters on. So every kid can do something (Grade K #3).

The following quote illustrates another kindergarten teacher’s opinion about the writing program,

I really like the writing piece. You know we’ve all seen kids that write about video games every writers workshop or TV or they don’t have the life experiences to really pull out the Lucy Calkins writing. So this is..you know we learn about space..they write a couple of sentences about space. We read a chapter..they write about the chapter. So everyone had
something to write about. It’s rare that a kid is like “I don’t know what to write” but we are also giving them tools they can ask a buddy…they can look at pictures so there’s a lot of ways to get them writing so I feel that writing is not so laborious this year..I really like that (Grade K#2).

Along with the writing program, many teachers and administrators have been impressed with the growth they have seen in the reading comprehension abilities of the students. Thirty-three percent of participants mentioned the improvement in reading comprehension compared to previous years. One administrator described her opinion,

I find that the curriculum that focuses around the Magic Tree House books is so rich…. there’s so much background knowledge. In typical kindergartens they are not learning words like “hieroglyphics” and “saber tooth tiger” or “prehistoric” and these terms are entered into the vocabulary in a very sort of normal conversation about building background knowledge so there’s a lot of rich resources being used from the internet you know… videos of knight jousting that really engage kids and feed their really natural interests their thirst to know (Administrator B).

A first grade teacher also noticed the difference and stated,

I noticed that their comprehension for the DRAs is fabulous. That they were able to retell, they had great details, they could connect that had all these great skills and I was like whoa its never been like this in September and I was thrilled (Grade One #11).

Teachers and administrators expressed that the Tools program provides a solid foundation
for the beginning instruction of writing and reading comprehension skills. Kindergarten teachers are noticing that their students are less anxious with writing than in previous years, and first grade teachers are noticing that students are beginning the year with more confidence in writing and sounding out words independently.

**Program needs stronger math curriculum and phonics/sight word instruction**

Although many of the participants had a positive impression of the *Tools* program overall, forty-three percent mentioned the need to improve the phonics and sight word instruction and forty-eight percent of participants mentioned the need to improve math instruction. One first grade teacher stated, “I think it was the biggest weakness of them coming in was their phonics..their sight words..and their ability for reading…the strategies that they had and their fluency ..” (Grade One #18). An administrator discussed what her teachers have been doing with the academic piece of the *Tools* program and explained, “In the area of math they also are feeding in a lot of other stuff..some of the Terc and some of the “Richardson” stuff because they realized last year right away that the math wasn’t strong enough “ (Administrator A). During the first grade focus group a first grade teacher’s opinion on phonics and math instruction was described,

The sight words was big and they weren’t as strong in their AMC where in years past they came in with all that AMC type language I felt …this was obviously just my room..but they hadn’t done a lot of AMC either and didn’t have the language and the vocabulary that went along with the AMC (Grade One #11).

During the kindergarten focus group one kindergarten teacher explained her opinion on improvements to be made to the program,
Math and handwriting are the two parts that I found...after graphics practice which I feel like I need more solid...write numbers and letters. And I love the math games but I feel like we need more so I’ve been using AMC which is very similar I just feel like those two areas were the two that I needed a little bit more (Grade K#1).

Both administrators and teachers expressed their concerns with the phonics instruction and math instruction within the Tools program. Supplemental materials have been added to the curriculum these past two years, and kindergarten teachers plan to look closer at how they enhance the literacy and math curriculum for future instruction.

**Interest in continuing the program next year**

Data gathered through interviews and focus groups also concluded that seventy-six percent of participants stated that they want to continue the program next year and eighty-six percent want to bridge the Tools program to first grade. One administrator stated,

> What I think is interesting is the conversation that will need to be had for what does this mean for the way we run first grades? I had some teachers say they’re concerned because kids aren’t raising their hands they’re just speaking out or they’re turning and talking. In my opinion is that is not a bad thing. You know how can we build on that …what does that tell us about learning at this age…I don’t want kids squashed back into raising their hand…. losing interest (Administrator B).

The following quote is illustrative of a kindergarten teacher’s frustration with the difference in programs from kindergarten to first grade,

> I think that if I had the biggest thing I wish that it could be more similar. Because they are
still only six and I think that they could really benefit from that. And really be able to grow those skills even more if they were given more of an opportunity (Grade K#8).

Also during the kindergarten focus group, a teacher explained the importance of connecting with the first grade teachers,

I think it’s an important conversation to have with teachers of the next grade and with where education is going now and the common core and how important it is to be reflective learners and work collaborate with people that this program is setting them up for that. So in order to share the experiences that we’ve had with the next grade level and see how they’re interested in continuing any of it. Because as a first grade teacher in the past I feel like there’s a lot of connection to a lot of things that I did anyway and having some support and structure to what exactly was happening in kindergarten would help me to bridge it in a better way….in a productive way that aligns with where we want education to go (Grade K#5).

First grade teachers have expressed their concern that they do not know enough about the Tools program in order to bridge it in first grade. The following quote is indicative of a first grade teacher’s concern about her lack of knowledge with the program, “I think there needs to be more of a bridge between kindergarten and first grade because as you can tell I know very little about the program …” (Grade One # 1). Teachers and administrators seemed interested in connecting the Tools program to first grade and bridging the activities and curriculum, however, teachers need more support and information in order to bridge the program successfully.
Table 2 and Table 3 display specifically which teacher/administrator mentioned each opinion/impression of the *Tools* program. It should be noted that teachers/administrators were only marked if he/she directly mentioned the specific opinion or impression.

Table 2

Impressions of the *Tools* program

<table>
<thead>
<tr>
<th>Teacher/Administrator</th>
<th>Positive Impressions</th>
<th>Developmentally Appropriate</th>
<th>Meets the social needs</th>
<th>Develops independence</th>
<th>Develops reflective thinkers (learning goals)</th>
<th>Able to solve conflict and work with peers</th>
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<tr>
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**Table 3**

Impressions of the *Tools* program continued

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<thead>
<tr>
<th>Teacher/Administrator</th>
<th>Develops Writing Skills</th>
<th>Develops reading comprehension</th>
<th>Need to improve Math instruction</th>
<th>Need to improve vowels and sight words</th>
<th>Should continue next year</th>
<th>Want to bridge to first grade</th>
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<td>48%</td>
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The following tables, Table 4 and Table 5, focus on the sub questions:

1. Based on kindergarten and first grade teachers’ experiences, what are the perceptions of best practices to promote the development of executive functioning skills including self-regulation, impulse control and working memory?

2. Based on administrators’ experiences and observations, what are the perceptions of best practices to promote the development of executive functioning skills, including self-regulation, impulse control and working memory within the classroom?

Table 4 illustrates common themes found among kindergarten teachers, first grade teachers and administrators when asked about which strategies are used within the classroom for promoting executive functioning skills. Following Table 4 are descriptive responses from participants, including specific examples of each theme. Table 5 illustrates specifically which teachers/administrators discussed each strategy, including total percentages for each theme.
Table 4

*Common themes for the strategies used to promote executive functioning skills within the classroom*

- Partner activities and role playing
- Playing memory games
- Repetition and self-talk
- Visual mediators

**Partner activities and role-playing**

When asked what strategies are used within the classroom to promote the development of executive functioning skills, fifty-two percent of participants mentioned that partner activities can promote executive functioning skills. Partner work includes the children engaging in a variety of games and activities with one or more classmates. One administrator stated,

> I think the program (*Tools*) is very good at getting children to regulate their behavior so that they are able to work in pairs and groups. Its really good at..really good at that. You see children in a group of four gently reminding another person in the group (Administrator A).

Many kindergarten teachers were able to explain specific activities and games played within their classroom for promoting partner work and executive functioning. A kindergarten teacher explained the details of a particular game played frequently in the classroom,

> I think all the games kind of promote self-regulation. Like we were doing the text messaging game today. Where you have the kids line in a row and have one person thinks of a number and they tap it on the next person. And the next person immediately wants to shout out what the number is ..but they have to feel it..think about it..and then do it on the next
person. And then all of those games kind of build self-control and self regulation (Grade K#7).

Another kindergarten teacher described the many partner games that promote the development of self-regulation,

And there’s just a lot of games and activities that where they really have to be paying attention to their buddies or the whole group. There’s different chants and we also do a lot of the finger play..well not finger play..but the Miss Mary Mack games where you have to be in same beat and rhythm with your buddy so you have to have that regulation of your body. So that’s been interesting because I’ve never thought about the psychical self-regulation you just kind of expect them to sit and learn and you’re not really teaching them how to be able to control themselves like that (Grade K#2).

One first grade teacher described her opinion on the partner activities within the Tools program,

I like that the kids are taught how to work together and learn how to master that before they start certain learning activities. That the rules and procedures are set out and laid the ground work is laid down before they start the big curriculum..the big academic piece (Grade One #12).

Data gathered also showed that thirty-three percent of participants mentioned that role-play and a social curriculum such as Open Circle helps to develop executive functioning skills as well. The following quote illustrates one administrator’s impressions on role-play,

It puts a lot of value and emphasis on play and role-play but with intent. So it’s not just kind of free form its role-play that builds I think it’s that whole working memory. If you’re
going to act out that part of the magic tree house chapter what do you have to remember
about your role what do you say how long do you have to wait before your part comes up.
But it’s all done again within children’s natural desire to be playful and to play
(Administrator B).

Another Administrator discussed the importance of role switching,

You know in the beginning of kindergarten there’s a lot of dramatic play. But that’s highly
organized. And everybody has a role and the roles switch and they do it over and over and
over again in a rich curriculum…then they have it (Administrator A).

The *Open Circle* social curriculum was discussed a few times in regards to role-playing and its
impact on the development of self-regulation and impulse control. One first grade teacher
explained,

I think you could do a lot of..like in *Open Circle* you can do a lot of role playing and
playing out different situations physically ..you know getting up and acting out different
situations with the kids and having them talk about what they see..talk about how they
could solve the problem… (Grade One#15).

Administrators and teachers both mentioned the importance of partner and group activities
along with role-playing to promote the development of executive functioning skills such as self-
regulation and impulse control.

**Playing memory games**

When asked which strategies best promote the development of working memory, many
kindergarten teachers described specific memory games played within their classrooms. One
kindergarten teacher explained a memory game,

We do one game called “look and remember” So they have to talk about this picture with their buddy…. “Oh I see a snakes…I see socks”…and then hide it and they have to draw or write three things that they remember. And then when they’re done they look it out and they tell their buddy what they remembered. So it’s working on the working memory and visual (Grade K#2).

Another kindergarten teacher described the same memory game,

So there’s a game called “Look and Remember” The picture is a scene of like different things they are reading from Mummy in the Morning..some different things from that scattered around. The kids will look at if for how ever long the sand timer takes and talk about it with their buddies about what they see. So they say “ I see a spaceship in the left corner, I see whatever in the middle..so they’ve learned to memorize by saying it out loud and then they’ll flip it over and draw everything that they remember..read it to their buddies to see if that helps them to remember anything else and then check (Grade K#3).

Freeze dance was another example of a whole class activity, mentioned by teachers, that promotes working memory and self-regulation. One kindergarten teacher described how complex the freeze dance game can become by the end of the year,

And it gets really complicated so first we play the song and we hold up a pose and they have to think about the pose but they cant do the pose until the music stops. So that’s practicing impulse control. Then it gets more complicated so now we are doing a two-step freeze. Well first we do a buddy freeze so they have to figure out how to coordinate with
their buddy. So now how do I explain it…there’s the cover of one book that we’ve read that goes with one pose and the cover of another book that goes with another pose. And then I hold up a character from one of the books. So they have to think about what character is from which book and which pose goes with that book cover. And still all not doing it until the music stops (Grade K #3).

Another kindergarten teacher described the same freeze dance activity,

So we do different things like the freeze obviously that’s regulating their body to the music but then it kind of steps up like right now I am doing the color freeze so I hold up a color so they a have to freeze with that pose so that’s pushing their mind a little bit (Grade K #2).

Memory games and freeze dance activities focus specifically on building a child’s working memory and self-regulation while promoting partner cooperation.

**Repetition and visual mediators**

Data concluded that forty-three percent of participants stated that repetition is a strategy used within the classroom to promote the development of executive functioning. Repetition examples included repeating directions to an activity aloud and playing a game or activity more than once throughout the year. During the kindergarten focus group a teacher explained,

…we are doing a lot of the same games a lot so that the higher kids they’re gaining something different from the lower level kids. But I think the repetition of it is very good and I can always give one more thing to do for the higher level kids to do after and the lower level kids that’s it (Grade K#1).

Another kindergarten teacher described the importance of repeating directions aloud and
stated, “…the whole idea of having them repeat…if its more than one direction ..like if it’s a multi step thing I know sometimes I’ll say..what are you going to do first ..next….“(Grade K/1 #9).

Along with repetition, many participants discussed the use of self-talk in relation to repetition. Administrator B observed a classroom lesson where the teacher had her students repeat over and over again the sentence she wanted them to write. The following quote illustrates Administrator B’s explanation of the importance of self-talk,

I think teaching children that self-talk where you have them repeating to themselves….it was like internalized… So yah I think that’s a way to build in a child’s working memory so that they are able to hold on to the riddle while they are doing the lines and then going back and you could see the children re-reading the lines. (Administrator B).

One first grade teacher explains her teaching strategy as “…my hope is that eventually that will be something they’ll do and I guess my words can be less and less…I guess its a lot of self-talk that I want them to have eventually on their own….” (Grade One #14).

In addition to repetition, data concluded that fifty-two percent of teachers and administrators mentioned the use of visual mediators as a successful tool for promoting executive functioning. Visual mediators included pictures, visual examples, and role assignment cards used during partner activities. One administrator described what she saw in a kindergarten classroom,

And I like the mediators the visual mediators of the lips and ear. So that once you teach the children this is what this means and this is what you do if you are holding the lip versus the ear and then giving those out and really staying with the kids and monitoring and making sure that they are using those mediators as their reminders not the teacher as
their reminder. It just builds independence into the way they work and I think that in turn develops self-regulation (Administrator B).

A kindergarten teacher also mentioned the importance of visual mediators in helping the children remember their specific job or role within an activity and stated, “and the specific mediators when you have a rule like one person has a specific job and they know that have the mediator so that gives them a chance to control their body and behavior” (Grade K #4). The use of repetition and visual mediators are tools both used by kindergarten and first grade teachers when helping students develop working memory and impulse control.

Table 5 displays specifically which teachers/administrators discussed each of the themes. It should be noted that teachers/administrators were only marked if he/she directly mentioned the specific strategy or activity.

Table 5

*Strategies for promoting executive functioning skills within the classroom*

<table>
<thead>
<tr>
<th>Teacher/Administrator</th>
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<th>Memory Games</th>
<th>Repetition</th>
<th>Visuals</th>
<th>Role Play and Open Circle</th>
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50
| Grade One #15 | X | X | X | X | X |
| Grade One #16 | | | | | |
| Grade One #17 | | | | | |
| Grade One #18 | | | | | |
| Administrator A | X | X | X | X | X |
| Administrator B | | | X | X | |
| Administrator C | X | X | X | | |
| Total Percentages | 52% | 29% | 43% | 52% | 33% |

**Conclusion**

Data gathered from interviews and focus groups with teachers and administrators provided detailed information regarding specific strategies used within the classroom for promoting executive functioning skills. Teachers and administrators mentioned a variety of activities including, memory games, partner activities, self-talk, role-play, freeze dance and repetition. Kindergarten teachers were able to provide examples of specific activities and games used to promote skills such as working memory, self-regulation, impulse control, and scaffolding. Administrators were also able to provide examples of activities observed within the kindergarten classroom to promote these types of social-emotional skills.

Although first grade teachers believe that the development of executive functioning skills is important, it was more difficult for them to answer questions that were asking for examples and specific activities. Unlike kindergarten teachers, first grade teachers have not been trained in a program, such as the *Tools*, that promotes the development of executive functioning skills and...
therefore it was challenging for them to describe how they promote these types of skills within their own classrooms. For example when asked how she promotes working memory in the classroom, one first grade teacher stated, “I would say that I probably don’t do enough to keep working on that..” (Grade K/1 #9).

Data displayed in Table 1 showed common themes related to teacher and administrators’ impressions of the Tools program. Teachers and administrators expressed a positive impression with the Tools writing program and reading comprehension instruction. An overwhelming majority of participants want to continue the Tools program next year and would like to see the program bridge to first grade. Many of the first grade teachers were interested in connecting first grade curriculum to align with the Tools philosophy, yet, they are not being provided with enough support or training in order to bridge successfully. One first grade teacher stated,

I think one thing that was overlooked with kids is that you can teach them when their five or six it doesn’t mean that its going to be carried on if its not continuously practiced. I felt like maybe they had those skills back in kindergarten and it kinda dropped off to the wayside (Grade One #15).

Similarly, a kindergarten teacher mentioned her concern with the transition from kindergarten to first grade,

I feel like I worry a little bit that’s its like totally different culture when they get to first grade that its back to this like ..where the teacher is so much more in charge. I’ve heard from a few of my students last year that they don’t like first grade ..that its just like not the same..I don’t know that it’s been like a really hard transition (Grade K#4).

Although teachers and administrators want to continue the Tools program, data from Table
3 also shows strong opinions to adjust and supplement specific parts of the Tools curriculum in order to meet state and district learning standards. Teachers and administrators feel that math, sight words, and phonics instruction need to be looked at carefully when moving forward with the program.

Chapter V: Discussion of Research Findings

Overview

This chapter will revisit the problem of practice, research goals and methodology of the study. Major findings from the research will be presented in relation to the theoretical framework and literature review discussed in previous chapters. This chapter will conclude with the significance of this study and recommendations for future research.

Problem of Practice Revisited

The goal of this qualitative study was to look at the impressions and opinions of teachers and administrators regarding the Tools of the Mind program and best strategies for promoting the development of executive functioning skills within the classroom.

Classroom strategies for promoting skills such as impulse control, self-regulation, and working memory were discussed through interviews and focus groups with kindergarten teachers, first grade teachers and administrators. Opinions and impressions of the Tools of the Mind program were also discussed in relation to providing a developmentally appropriate curriculum, which promotes the academic and social growth of a child. This study was designed to address the following research question:
1. What are the perceptions of kindergarten teachers, first grade teachers and administrators of the impact of the *Tools of the Mind* program on the development of executive functioning skills among students within the classroom?

**Sub-Questions:**

1. Based on kindergarten and first grade teachers’ experiences, what are the perceptions of best practices to promote the development of executive functioning skills including self-regulation, impulse control and working memory?

2. Based on administrators’ experiences and observations, what are the perceptions of best practices to promote the development of executive functioning skills, including self-regulation, impulse control and working memory within the classroom?

**Discussion of Major Findings**

The following section will discuss the major findings of this study in relation to teachers’ and administrators’ impressions of the *Tools* program and their opinion on best practices for the development of executive functioning skills within the classroom.

**Impressions of the *Tools* program**

All participants in this study had been exposed in some way to the *Tools of the Mind* program. All kindergarten teachers were trained and implementing the *Tools* program in their classrooms. All administrators were working in a school with the kindergarten teachers who were implementing the *Tools* program and therefore they have been learning about the program through classroom observations. Also, all first grade teachers in this study had many children in their class who came from a *Tools* kindergarten classroom. The following section is a description of the major findings regarding impressions of the *Tools* program from teachers and administrators.
Through interviews and focus groups it was clear that kindergarten teachers and administrators have a positive impression of the *Tools* program. Some kindergarten teachers may have been skeptical at first but after being trained and implementing the curriculum they are completely on board with the program and its philosophy. Some kindergarten teachers mentioned that they can’t imagine teaching any other way and would not be happy going back to their previous kindergarten program.

The data concluded that participants agreed that the *Tools* program meets the social needs of a kindergarten classroom. Participants were pleased with how the program promotes partner work and teaches the children how to solve conflicts and work with peers appropriately. They felt that the *Tools* program is more developmentally appropriate for kindergarten and better suits the needs for children at the young age of five and six years old.

Academically, participants agreed that the scaffold writing process helps to develop a child’s independence with writing and builds their confidence so they are not hesitant to begin writing on their own. Teachers and administrators were also pleased with the rich context of the *Magic Tree House* thematic units of study and the improvement in the children’s reading comprehension skills.

However, participants were also in agreement that some academic pieces of the *Tools* program need to be looked at more carefully. The math instruction is lacking in some areas and many kindergarten teachers needed to supplement in this area with various games and activities. Along with the math, sight word and vowel instruction were also in need of improvement. First grade teachers noticed that many students were unable to read or spell many of the kindergarten sight words upon entering first grade as well as they had in previous years. Also, first grade teachers were noticing more confusion in vowel sounds than in previous years. Teachers and
administrators agreed that if the *Tools* program was to continue next year, the areas of math and phonics instruction would have to be looked at more carefully.

Data from interviews and focus groups also concluded that first grade teachers had mixed feelings about the *Tools* program stemming from the fact that many first grade teachers did not know enough about the program. First grade teachers mentioned that they were interested in getting more training and support to help bridge the *Tools* program into first grade. It is clear that more support needs to be provided to ensure that skills developed in kindergarten transfer into the first grade classroom so students can continue to grow and develop their executive function abilities.

**Strategies for promoting executive functioning skills**

Through interviews and focus groups a variety of activities and strategies were discussed for promoting the development of executive functioning skills such as impulse control, self-regulation and working memory within the classroom. Kindergarten teachers in this study were all trained in the *Tools* program, which focuses directly on developing executive functioning skills among children. Therefore, kindergarten teachers were able to provide specific examples of games and activities that they frequently use within their classrooms, without hesitation. The games mentioned by the kindergarten teachers specifically focused on the development of skills such as working memory and impulse control. Administrators and first grade teachers who were not trained in the *Tools* program had a more difficult time discussing specific activities used within the classroom for promoting executive functioning skills. First grade teachers’ responses were more vague and less specific than kindergarten teachers’ responses.

One major finding within the study was the importance of partner activities to help develop impulse control and self-regulation. During partner activities children are able to talk
with each other and help each other when needed. Partner games and activities help to promote
the development of communication and the ability to problem solve and work on conflict
resolution between peers. Teachers and administrators also noticed that assigning roles during
partner games and structured dramatic play helps to keep children focused and develop impulse
control. Providing students with visual mediators and cue cards contributes to their success with
impulse control during partner games and dramatic play with peers.

The repetition of classroom routines, role-playing and the modeling of behavior were also
discussed in helping to promote self-regulation and impulse control. Teachers and administrators
agreed that students benefit from role-playing and modeling to show students appropriate ways
to interact with one another and problem solve. The repetition and predictability of classroom
routines help students self-regulate and control impulses throughout the day as they become
aware of classroom expectations.

One specific activity to promote impulse control as well as working memory is freeze
dance. Teachers described the different ways to engage children in the game of freeze dance. The
freeze dance game helps to promote impulse control as the children need to stop when the music
stops and remember which “freeze pose” they were instructed to show. To further enhance
working memory, teachers add other elements to the “freeze pose” which connect directly to a
book they read, or a specific color. The children need to remember an element of the book or
specific color in order to remember which freeze pose they should demonstrate when the music
stops.

Educators and administrators also discussed the importance of teaching the skill of self-
talk and repeating directions aloud to promote working memory. Repetition of the directions to
an activity and specifically having the students repeat aloud the steps to an activity helps to
develop the students’ working memory. One specific example of self-talk includes having the students say aloud the instructions for handwriting or fine motor activities as they practice on a whiteboard or piece of paper. Teaching self-talk and repetition of directions helps to promote working memory as children gain independence and a sense of autonomy with the activity.

**Connection to Theoretical Framework**

Lev Vygotsky’s Cultural-Historical Theory is based on the idea that culture influences cognition and therefore a child’s entire social world is shaped not just by what he know but how he thinks (Bodrova & Leong, 2007). Vygotsky believed in the value of structured play, the importance of language and self-talk, shared activities, and the development of a scaffold learning process (Bodrova & Leong, 2007). Vygotsky’s philosophy can be seen as a common thread throughout the interviews and focus groups in this study. The *Tools of the Mind* program was created based on Vygotsky’s social learning theory and therefore the elements of the program and the training for educators focus specifically on strategies that can be used within the classroom to promote the social and academic development of young children.

Vygotsky’s belief in the importance of scaffold learning was mentioned throughout many interviews and focus groups. One administrator described the scaffold learning process when he stated, “Well my understanding when I hear scaffolding and I think of Vygotsky’s use of it…. I think its such a powerful metaphor because scaffolding in a building is meant to be taken away and the only reason you are putting it up is to eventually remove it and I know that he meant that and I think that gets away from us sometimes is that you always have an end in mind of not having the scaffolding there” (Administrator C). The kindergarten teachers also mentioned how successful the scaffold writing program has been within their classrooms. Vygotsky believed, “we must consider the child’s developmental level and also present information at a level that
will lead the child into development” (Bodrova & Leong, 2007, p 13). One kindergarten teacher explained the scaffold process when she stated, “And with writing we always scaffold them one level higher. As we used to do in the past ..instead of having them write every sound of every word which I don’t really know why we used to do that ..but some kids are only writing the lines of the message and then you’d say “OK what’s the beginning sound of bat” and just add that and you just scaffold them one level higher than where they should be” (Grade K #7).

Vygotsky’s beliefs are centered largely on the importance of shared activities and children working in pairs to develop language and self-regulation skills. Vygotsky believed that mental functions can be shared and a mental function exists between two people before it is appropriated and internalized (Bodrova & Leong, 2007). The success of partner work was a common theme among participants in this study. One kindergarten teacher stated, “They are almost always working with somebody else and that person always changes so you don’t have any of those cliques of kids they just kind of all mesh together. Even kids that really struggle ..other kids still work with them. It’s not like they don’t want to work with that kid because they can’t do it. Which I feel like happened in the past. Its just how it is” (Grade K #8). The Tools program promotes partner activities along with “pair share” talks and encourages teachers to incorporate these activities throughout the day. One administrator noticed the success of partner work during her observations and stated, “I think…the emphasis on allowing children to turn and talk to each other rather than having to sit and wait until three or four children are called on helps children stay focused. So engaging them actively in their learning helps them to control their impulses” (Administrator B).

Within the Tools program, children participate in various partner activities and are encouraged to collaborate and assist one another when needed. “Vygotskians coined the term
“other regulation” to describe a situation in which a person is regulating another person or being regulated by someone else” (Bodrova & Leong, 2007). When children are paired together for activities, other regulation can be used as part of the learning process as children are given the opportunity to help each other and fix each other’s mistakes. During the kindergarten focus group, teachers were discussing this process and one teacher explained, “a lot of them will regulate others and they don’t seem to mind it because I think they get the idea ..others will say well that’s not your job or your role and they will listen to each other..” (Grade K #6). Another teacher stated, “Before when we were teaching the other program they were ratting each other out but they’re not…they are regulating each other. It’s just a different mentality now” (Grade K #1). The Tools program promotes many partner games and activities, which in turn allows children the chance to explore the process of self-regulation and “other regulation.”

According to Vygotsky, play is both a symbolic and social activity that is an important part of a child’s cognitive, emotional and social development (Bodrova & Leong, 2007). The Tools program is centered on the importance of structured play with children taking on different roles and acting out specific story lines with peers. A common theme throughout the interviews and focus groups was the importance of play, including structured play and role-playing. One first grade teacher explained how role-playing can help with the development of executive functioning skills,

I think you could do a lot…in Open Circle you can do a lot of role playing and playing out different situations physically ..you know getting up and acting out different situations with the kids and having them talk about what they see..talk about how they could solve the problem…you know that could definitely help with the executive
functioning so that when someone struggles in that area is in that kind of situation its like OK I’ve seen this before and this is what I can do to help it (Grade One # 15).

When acting out a specific role within a structured play scenario, children are exhibiting self-regulated behavior and restraint as they are controlling their actions and staying within their assigned role (Bodrova & Leong, 2007). It is clear from data gathered through interviews and focus groups in this study that teachers and administrators agree that structured play with assigned roles can help promote the development of executive functioning skills.

**Connection to Literature Review**

As part of the No Child Left Behind regulations, states across the country have adopted learning standards to guide instructional practice in public schools. However, many children enter kindergarten with insufficient social skills to participate in activities necessary for academic achievement (Logue, 2007). “Despite differences in children’s skills and knowledge entering kindergarten, students are held on the same level of academic expectations at the end of the year” (Logue, 2007, p 37). Early childhood educators are feeling pressured to keep pace with curriculum standards, yet they are also struggling to find the time to support students’ social emotional development as well. Teachers within the interviews and focus groups of this study discussed this daily struggle between balancing academic learning and social emotional learning. One first grade teacher stated, “I feel like we need additional time to do justice to the social emotional part” (Grade One #17). Another first grade teacher added, “And academic..I don’t think we are doing justice to either because one always trumps the other…” (Grade One #18). One first grade teacher explained her desire for more social support,

I wish there was another body in the room ….kindergarten has their assistants because I know that helped to facilitate a lot of the Tools social emotional piece because there was
always another adult to help model or when the teacher modeled and the assistant could kind of walk around and see who was having trouble. (Grade One #11).

Upon entering kindergarten, children encounter many first time expectations including the ability to “complete independent work,. adhere to strict time schedules, and to acquire basic literacy and math skills” (Li-Grining, Votruba-Drzal, Maldonado-Carreno, Haas, 2010, p 1062). Therefore providing a balanced curriculum that supports both social and academic development is crucial in providing young children with quality early childhood education. Most participants in this study believe that the Tools program provides a developmentally appropriate curriculum for kindergarten students. The Tools program, based on the Vygotskian approach, aims to foster the cognitive development of young children while promoting early learning skills (Bodrova & Leong, 2001). Within this study one kindergarten teacher described the Tools program,

I think we are doing things that are more appropriate for this age group and personally I don’t think that its appropriate to them wait their turn for an entire whatever your doing opening group or whatever to not be able to share your answer and call on one kid so I feel like it’s a shift in that way (Grade K #7).

Bodrova & Leong (2001), state specifically the areas that the Tools program aims to address including: the need for a developmentally appropriate teaching techniques, the need for instruments that allow for authentic classroom assessments, the ability to monitor children’s progress, and the need for training teachers and transferring expert knowledge. Most participants within this study agree that the Tools program successfully meets the academic and social needs of a kindergarten curriculum and they hope to continue the program in the future. When asked if the Tools program should be continued next year, one administrator stated,
I think the time has come for us to really be looking at programs like *Tools* that integrate good solid brain research. We have been researching the brain..we have been able to image brains for 30 years..and we understand now what that means for how kids learn and the impact it should have on the way we teach. This is a program that really pays homage to that. So I think its time (Administrator B).

“Executive function is an umbrella term that refers to a wide range of cognitive abilities-including attentional control, cognitive flexibility, goal setting, and specific aspects of information processing, including fluency and processing speed..” (Wiloughby, Blair, Writh, & Greenberg, 2012, p 226). Research has shown that the development of executive functioning skills, such as working memory, inhibitory control, attention shifting and cognitive flexibility, are key factors in a child’s academic and social success (Center on Developing Child, 2011; Biederman et. al, 2004; Rimm-Kraufman, 2009). Within this study participants discussed the importance of developing executive functioning skills at an early age and describe specific activities used within the classroom for promoting this development. One administrator explained what she observed in the classroom as she stated, “…… engaging them actively in their learning helps them to control their impulses. I also like the very explicit way that children are taught how to take on a role as a learner” (Administrator B). Also, during the kindergarten focus group many teachers agreed that partner games and activities help to promote the development of self-regulation, one kindergarten teacher stated,

…and even a lot of the math games …there’s a lot of waiting involved where they have to be regulated and they have to wait. And if they aren’t on task and waiting appropriately then they are not going to be able to play that game. So it’s built into all
of that. I think that was a big question for us …there’s so much waiting but they have to learn how to… (Grade K #8).

Ciccantelli & Vakil (n.d.) explain that the early and middle childhood years are when the most rapid development of executive functions occurs. “Executive function skills are crucial building blocks for the early development of both cognitive and social capacities” (Center on Developing Child, 2011, p 3). Therefore, activities that promote the development of executive functioning skills, such as the ones described in this study, should be an integral part of a developmentally appropriate early childhood curriculum.

**Limitations**

There are a few limitations to this research study that need to be acknowledged. One limitation was the small sample size. This study was conducted in only one school district, with a small sample size of twenty-one participants. The sample limits the ability to generalize results within a larger population. Another limitation to this study included threats to validity. The threats included: data collection bias and attitude of subjects. Fraenkel & Wallen (2006) explained that there is a possibility that during interviews the researcher may ask “leading” questions based on an opinion already formed about the topic beforehand. Also, there is the possibility that participants answered questions in way that would please the researcher or were not completely honest for fear that their answers would affect their career. However, it should be noted that the researcher addressed these threats to validity by ensuring all participants that their responses would remain anonymous and their responses would not affect their current teaching or administrative position in any way.
Recommendations for Practice

The findings from this study can support educators in developing an early childhood program that promotes both the academic and social development of young children. Data gathered through interviews and focus groups can be used guide teachers in creating a classroom environment that promotes the development of executive functioning skills and gives educators a brief overview of the Tools program, including teachers’ and administrators’ opinions on the strengths and weakness of the program. Data from this study provided specific classroom activities and practices that can be used within an early childhood classroom to promote the development of self-regulation, impulse control, working memory and scaffold learning.

School administrators can use data gathered through this study to guide their professional development planning and goals. It was clear that more bridging between the kindergarten and first grade is needed in order to continue the progress made in regards to the students’ executive functioning development. First grade teachers clearly stated the need for more support and training in the area of executive functioning development and many first grade teachers were interested in learning specific activities that they can implement to continue the work of the Tools program in first grade. School administrators and curriculum leaders can use this data when planning professional development for the upcoming school year and when planning how to better support their teachers in regards to the development of their students’ social emotional needs.

Future Studies

For future studies, researchers can evaluate the Tools program and investigate the impact of the Tools program on the academic and social development of young children. Studies could be conducted using a Tools classroom and a control classroom to compare the academic and
social development of the children over an extended period of time. Executive functioning assessment tools and academic assessments could be used to provide more concrete data on the effectiveness of the *Tools* program as an example of a balanced early childhood curriculum.

Also, to further expand on this current study, more specific data collection tools could be used such as surveys and questionnaires to provide the researcher with quantitative data regarding teacher’s perspectives on the program and strategies used to promote executive functioning within the classroom.

**Conclusion**

As state and national standards continue to influence curriculum instruction, early childhood teachers have begun to search for developmentally appropriate programs that balance both social and academic learning (Bodrova & Leong, 2001). Researchers are now focusing on the topic of executive functioning and the importance of child’s ability to control impulsive behavior and self-regulate emotions while attending to academic activities (Biederman et. al, 2004; Bodrova, 2008). This qualitative study focused on the perspectives of kindergarten teachers, first grade teachers and administrators, from three suburban public schools, on their opinion of best practices within a classroom for promoting the development of executive functioning skills. Interviews and focus groups were used to gather data on how teachers are promoting skills such as self-regulation and impulse control, as well as their opinion on the implementation of the *Tools* program within a kindergarten classroom. The results of this study can guide educators into understanding best practices for implementing a curriculum that focuses on development of executive functioning skills. This study can also guide administrators in understanding how to best support teachers in creating a classroom environment that successfully balances both social and academic learning.
References


can teachers and schools do?. *Mental Capital and Wellbeing*, 377.


43-53. doi:10.1037/a0016738


doi:10.1080/87565641.2010.549979
Appendix A

NOTIFICATION OF IRB ACTION

Date: January 16, 2013  IRB #: 12-12-26
Principal Investigator(s): Sara Ewell
                        Alessandra Magalhaes
Department: Doctor of Education Program
            College of Professional Studies
Address: 20 Belvidere
        Northeastern University
Title of Project: Exploring Effective Strategies for Developing Executive
                 Functioning Skills within an Early Childhood Classroom
Participating Sites: School District Superintendent’s Permission Letter on file
                   Stratton, Thompson and Hardy Elementary Schools
DHHS Review Category: Expedited #6, #7
Informed Consents: Three (3) signed consent form
Monitoring Interval: 12 months

APPROVAL EXPIRATION DATE: JANUARY 15, 2014

Investigator’s Responsibilities:
1. The informed consent form bearing the IRB approval stamp must be used when
   recruiting participants into the study.
2. The investigator must notify IRB immediately of unexpected adverse reactions, or new
   information that may alter our perception of the benefit-risk ratio.
3. Study procedures and files are subject to audit any time.
4. Any modifications of the protocol or the informed consent as the study progresses must
   be reviewed and approved by this committee prior to being instituted.
5. Continuing Review Approval for the proposal should be requested at least one month
   prior to the expiration date above.
6. This approval applies to the protection of human subjects only. It does not apply to any
   other university approvals that may be necessary.

Coleen Pantalone, Ph.D., Vice Chair
Northeastern University Institutional Review Board

Nan C. Regina, Director
Human Subject Research Protection

Northeastern University FWA #4630
Appendix B

Researcher Name: Alessandra Magalhaes Principal Investigator: Dr. Sara Ewell
Title of Project: Exploring Effective Strategies for Developing Executive Functioning Skills within an Early Childhood Classroom

Email for Recruitment

Dear Administrator,

My name is Alessandra Magalhaes and I am currently a student in Northeastern Doctor of Education program. I would like to conduct a general qualitative study, focusing on the Tools of the Mind (Tools) program. I am currently first grade teacher at one of the elementary schools in this study. I am writing this email to request your participation in this study.

The research question that I will be examining is: What are the perceptions of kindergarten teachers, first grade teachers and administrators of the impact of the Tools of the Mind program on the development of executive functioning among students within the classroom?

I am asking you to participate in this study because you are an administrator at a public elementary school where the kindergarten teachers have been trained in the Tools of the Mind curriculum and are currently implementing the curriculum within their classrooms.

If you decide to take part in this study, you will be asked to participate in an interview with me. The interview questions will focus on your opinion of the Tools of the Mind curriculum and successful strategies used within the classroom to promote the development of executive functioning skills.

The interview will take place at a convenient time and location for you and will take approximately 45-60 minutes.

There are no foreseeable risks or discomforts to you for taking part in this study.

There will be no direct benefit to you for taking part in this study. However, the results of this study will provide other educators and administrators with your professional opinion regarding the impact of the Tools of the Mind curriculum on the development of executive functioning skills. Also, the results of this study may guide administrators in understanding how to improve professional development and what types of supports teachers may need in this specific area of teaching.

Your part in this study will be confidential. Only the researcher on this study will see your responses. No reports or publications will use information that can identify you in any way. Your responses will be coded using a number/letter system (for example, Administrator A, Administrator B). Interviews will be audio recorded for transcription.

APPROVED
NU IRB 1-16-14
VALID THROUGH 7-15-2014
and analysis purposes only. The researcher will transcribe the interviews and will also destroy all audio recordings, after the research is complete.

Your participation in this research is completely voluntary. You do not have to participate if you do not want to. Even if you begin the study, you may quit at any time. If you do not participate or if you decide to quit, you will not lose any rights, benefits, or services that you would otherwise have as an administrator.

You will be given a $5 gift card to Dunkin Donuts at the conclusion of your participation in the interview.

If you have any questions regarding this study please feel free to contact me, Alessandra Magalhaes, at 781.789.8573, or via email at magalhaes.a@husky.neu.edu, as I am the person responsible for the research. You can also contact Sara Ewell, the Principal Investigator, via email at s.ewell@neu.edu.

If you are willing to participate in this study, please email me at magalhaes.a@husky.neu.edu, and I will be in contact with you regarding the details of scheduling the interview.

Thank you,

Alessandra Magalhaes
Appendix C

Researcher Name: Alessandra Magalhaes
Principal Investigator: Dr. Sara Ewell
Title of Project: Exploring Effective Strategies for Developing Executive Functioning Skills within an Early Childhood Classroom

Email for Recruitment

Dear Teacher,

My name is Alessandra Magalhaes, and I am currently a student in Northeastern Doctor of Education program. I would like to conduct a general qualitative study, focusing on the Tools of the Mind (Tools) program. I am currently first grade teacher at one of the elementary schools in this study. I am writing this email to request your participation in this study.

The research question that I will be examining is: What are the perceptions of kindergarten teachers, first grade teachers and administrators of the impact of the Tools of the Mind program on the development of executive functioning among students within the classroom?

I am asking for your participation because you are either currently trained in the Tools program and are implementing the curriculum within your classroom, or have students in your classroom who have experienced the Tools program last year in kindergarten.

If you decide to take part in this study, I will ask you to join a focus group with other kindergarten/first grade teachers from your district. If you are unable to commit to the focus group meeting, I will ask to schedule a one-on-one interview with you at a more convenient time. The focus group or interview questions will focus on your opinion of the Tools of the Mind curriculum and successful strategies used within the classroom to promote the development of executive functioning skills.

The focus groups or interview will meet one time only at a convenient location. The focus group or interview will take approximately 45 – 60 minutes.

There are no foreseeable risks or discomforts to you for taking part in this study.

There will be no direct benefit to you for taking part in this study. However, you may benefit from the focus groups by having group discussions with your colleagues regarding the implementation and impact of the Tools of the Mind curriculum. During the focus groups, you may benefit from sharing strategies, activities, and personal experiences with promoting executive functioning skills within the classroom. The results of this study will provide other educators and administrators with your professional opinion regarding the impact of the Tools of the Mind curriculum on the development of executive functioning skills.
Your part in this study will be confidential. Only the researcher on this study will see your responses. No reports or publications will use information that can identify you in any way. Your responses will be coded using a number/letter system (for example Teacher A, Teacher B). Interviews and focus groups will be audio recorded for transcription and analysis purposes only. The researcher will transcribe the interviews and will also destroy all audio recordings, after the research is complete.

Your participation in this research is completely voluntary. You do not have to participate if you do not want to. Even if you begin the study, you may quit at any time. If you do not participate or if you decide to quit, you will not lose any rights, benefits, or services that you would otherwise have as a teacher.

You will be given a $5 gift card to Dunkin Donuts at the conclusion of your participation in the focus group or interview.

If you have any questions regarding this study please feel free to contact me, Alessandra Magalhaes, at 781.789.8573, or via email at magalhaes.a@husky.neu.edu, as I am the person responsible for the research. You can also contact Sara Ewell, the Principal Investigator, via email at s.ewell@neu.edu.

If you are willing to participate in this study, please email me at magalhaes.a@husky.neu.edu, and I will be in contact with you regarding the details of scheduling the focus group/interview.

Thank you,

Alessandra Magalhaes
Appendix D

Signed Informed Consent Document for Kindergarten Teachers

Northeastern University, College of Professional Studies
Researcher Name: Alessandra Magalhaes
Principal Investigator: Dr. Sara Ewell
Title of Project: Exploring Effective Strategies for Developing Executive Functioning Skills within an Early Childhood Classroom

I am inviting you to take part in a research study. I am currently a first grade teacher at one of the elementary schools in this study. This form will tell you about this study, but I will explain it to you first. You may ask me any questions that you have. When you are ready to make a decision, you may tell me if you want to participate or not. You do not have to participate if you do not want to. If you decide to participate, I will ask you to sign this statement and will give you a copy to keep.

I have asked you to participate in this study because you are a kindergarten teacher who has been trained in the Tools of the Mind curriculum. You have also been implementing the Tools of the Mind curriculum for the past two years (2011-2013).

The purpose of this general qualitative study is to examine teacher and administrator perspectives on the Tools of the Mind curriculum and strategies used for promoting the development of executive functioning skills within an early childhood classroom. Interviews and focus groups with kindergarten, first grade teachers and administrators will examine specific strategies being implemented to help develop executive functioning skills, such as impulse control and self-regulation in students.

The focus group or interview questions will focus on your opinion of the Tools of the Mind curriculum and successful strategies used within the classroom to promote the development of executive functioning skills.

There are no foreseeable risks or discomforts to you for taking part in this study.

There will be no direct benefit to you for taking part in this study. However, you may benefit from the focus groups by having group discussions with your colleagues regarding the implementation and impact of the Tools of the Mind curriculum. During the focus groups, you may benefit from sharing strategies, activities, and personal experiences with promoting executive functioning skills within the classroom. The results of this study will provide other educators and administrators with your professional opinion regarding the impact of the Tools of the Mind curriculum on the development of executive functioning skills.

Your part in this study will be confidential. Only the researcher on this study will see your responses. No reports or publications will use information that can identify you in any way. Your responses will be coded using a number/letter system (for example Teacher A, Teacher B). Interviews and focus groups will be audio recorded for

Approved
NU IRB
11-12-24
Valid
1-18-13
Through
1-15-17
transcription and analysis purposes only. The researcher will transcribe the interviews and will also destroy all audio recordings, after the research is complete.

Your participation in this research is completely voluntary. You do not have to participate if you do not want to. Even if you begin the study, you may quit at any time. If you do not participate or if you decide to quit, you will not lose any rights, benefits, or services that you would otherwise have as a teacher.

You will be given a $5 gift card to Dunkin Donuts at the conclusion of your participation in the focus group or interview.

If you have any questions regarding this study please feel free to contact me, Alessandra Magalhaes, at 781.789.8573, or via email at magalhaes.a@husky.neu.edu, as I am the person responsible for the research. You can also contact Sara Ewell, the Principal Investigator, via email at s.ewell@neu.edu.

If you have any questions about your rights in this research, you may contact Nan C. Regina, Director, Human Subject Research Protection, 960 Renaissance Park, Northeastern University, Boston, MA 02155. Tel: 617.373.4588, Email: irb@neu.edu. You may call anonymously if you wish.

Signature of person agreeing to take part

Date

Printed name of person above

Signature of person who explained the study to the participant above and obtained consent

Date

Printed name of person above

APPROVED

NU IRB

12-12-28

VALID THROUGH

1.16.19
Appendix E

Signed Informed Consent Document for First Grade Teachers

Northeastern University, College of Professional Studies
Researcher Name: Alessandra Magalhaes
Principal Investigator: Dr. Sara Ewell
Title of Project: Exploring Effective Strategies for Developing Executive Functioning Skills within an Early Childhood Classroom

I am inviting you to take part in a research study. I am currently a first grade teacher at one of the elementary schools in this study. This form will tell you about this study, but I will explain it to you first. You may ask me any questions that you have. When you are ready to make a decision, you may tell me if you want to participate or not. You do not have to participate if you do not want to. If you decide to participate, I will ask you to sign this statement and will give you a copy to keep.

I have asked you to participate in this study because you are a first grade teacher who currently has students in your class who have experienced the Tools of the Mind curriculum during their kindergarten academic year (2011-2012).

The purpose of this general qualitative study is to examine teacher and administrator perspectives on the Tools of the Mind curriculum and strategies used for promoting the development of executive functioning skills within an early childhood classroom. Interviews and focus groups with kindergarten, first grade teachers and administrators will examine specific strategies being implemented to help develop executive functioning skills, such as impulse control and self-regulation in students.

The focus group or interview questions will focus on your opinion of the Tools of the Mind curriculum and successful strategies used within the classroom to promote the development of executive functioning skills.

There are no foreseeable risks or discomforts to you for taking part in this study.

There will be no direct benefit to you for taking part in this study. However, you may benefit from the focus groups by having group discussions with your colleagues regarding the implementation and impact of the Tools of the Mind curriculum. During the focus groups, you may benefit from sharing strategies, activities, and personal experiences with promoting executive functioning skills within the classroom. The results of this study will provide other educators and administrators with your professional opinion regarding the impact of the Tools of the Mind curriculum on the development of executive functioning skills.

Your part in this study will be confidential. Only the researcher on this study will see your responses. No reports or publications will use information that can identify you in any way. Your responses will be coded using a number/letter system (For example, Teacher A, Teacher B). Interviews and focus groups will be audio recorded for

APPROVED
NU IRB# 15-12-24
VALID 1-14-15
THROUGH 1-15-19
transcription and analysis purposes only. The researcher will transcribe the interviews and will also destroy all audio recordings, after the research is complete.

Your participation in this research is completely voluntary. You do not have to participate if you do not want to. Even if you begin the study, you may quit at any time. If you do not participate or if you decide to quit, you will not lose any rights, benefits, or services that you would otherwise have as a teacher.

You will be given a $5 gift card to Dunkin Donuts at the conclusion of your participation in the focus group or interview.

If you have any questions regarding this study please feel free to contact me, Alessandra Magalhaes, at 781.789.8573, or via email at magalhaes.a@husky.neu.edu, as I am the person responsible for the research. You can also contact Sara Ewell, the Principal Investigator, via email at s.ewell@neu.edu.

If you have any questions about your rights in this research, you may contact Nan C. Regina, Director, Human Subject Research Protection, 960 Renaissance Park, Northeastern University, Boston, MA 02155. Tel: 617.373.4588, Email: irb@neu.edu. You may call anonymously if you wish.

_________________________________________    ____________________________
Signature of person agreeing to take part                   Date

_________________________________________
Printed name of person above

_________________________________________    ____________________________
Signature of person who explained the study to the participant above and obtained consent    Date

_________________________________________
Printed name of person above

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NU IRB# 12-10-17
VALID THROUGH 01-12-18

APPROVED
NU IRB# 12-10-17
VALID THROUGH 01-12-18
Appendix F

Signed Informed Consent Document for Administrators

Northeastern University, College of Professional Studies
Researcher Name: Alessandra Magalhaes
Principal Investigator: Dr. Sara Ewell
Title of Project: Exploring Effective Strategies for Developing Executive Functioning Skills within an Early Childhood Classroom

I am inviting you to take part in a research study. I am currently a first grade teacher at one of the elementary schools in this study. This form will tell you about this study, but I will explain it to you first. You may ask me any questions that you have. When you are ready to make a decision, you may tell me if you want to participate or not. You do not have to participate if you do not want to. If you decide to participate, I will ask you to sign this statement and will give you a copy to keep.

I have asked you to participate in this study because you are an administrator at a public elementary school where the kindergarten teachers have been trained in the Tools of the Mind curriculum and are currently implementing the curriculum within their classrooms.

The purpose of this general qualitative study is to examine teacher and administrator perspectives on the Tools of the Mind curriculum and strategies used for promoting the development of executive functioning skills within an early childhood classroom. Interviews and focus groups with kindergarten, first grade teachers and administrators will examine specific strategies being implemented to help develop executive functioning skills, such as impulse control and self-regulation in students.

The interview questions will focus on your opinion of the Tools of the Mind curriculum and successful strategies used within the classroom to promote the development of executive functioning skills.

There are no foreseeable risks or discomforts to you for taking part in this study.

There will be no direct benefit to you for taking part in this study. However, the results of this study will provide other educators and administrators with your professional opinion regarding the impact of the Tools of the Mind curriculum on the development of executive functioning skills. Also, the results of this study may guide administrators in understanding how to improve professional development and what types of supports teachers may need in this specific area of teaching.

Your part in this study will be confidential. Only the researcher on this study will see your responses. No reports or publications will use information that can identify you in any way. Your responses will be coded using a number/letter system (for example, Administrator A, Administrator B). Interviews will be audio recorded for transcription and analysis purposes only. The researcher will transcribe the interviews and will also destroy all audio recordings, after the research is complete.

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NURB# 12-12-21
VALID 1-16-19
THROUGH 10-19-19
Your participation in this research is completely voluntary. You do not have to participate if you do not want to. Even if you begin the study, you may quit at any time. If you do not participate or if you decide to quit, you will not lose any rights, benefits, or services that you would otherwise have as an administrator.

You will be given a $5 gift card to Dunkin Donuts at the conclusion of your participation in the interview.

If you have any questions regarding this study please feel free to contact me, Alessandra Magalhaes, at 781.789.8573, or via email at magalhaes.a@husky.neu.edu, as I am the person responsible for the research. You can also contact Sara Ewell, the Principal Investigator, via email at s.ewell@neu.edu.

If you have any questions about your rights in this research, you may contact Nan C. Regina, Director, Human Subject Research Protection, 960 Renaissance Park, Northeastern University, Boston, MA 02155. Tel: 617.373.4588, Email: irb@neu.edu. You may call anonymously if you wish.

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Signature of person agreeing to take part                     Date

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Printed name of person above

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Signature of person who explained the study to the participant above and obtained consent                     Date

_____________________________
Printed name of person above

APPROVED
NU IRB
VALID 12-12-24
THROUGH 12-12-24
Appendix G

Interview Questions for Administrators

1. What are your impressions of the Tools of the Mind curriculum?
2. What was successful with the program?
3. What were the challenges with the program?
4. Through your observations, what are your impressions on how the Tools of the Mind curriculum promotes the development of executive functioning?
5. Based on your observations, what do you think are best practices within a classroom for promoting self-regulation and impulse control?
6. Based on your observations, what do you think are best practices within a classroom for promoting the development of scaffolding?
7. Based on your observations, what do you think are best practices within a classroom for promoting the development of working memory?
8. Based on your observations, can you provide examples of ways in which the Tools of the Mind curriculum allows for daily differentiation of student learning?
9. What are your impressions on how the Tools of the Mind curriculum meets the social and academic needs of a kindergarten curriculum?
10. What are your impressions on how the Tools of the Mind curriculum impacts the students when entering the first grade?
11. What is your opinion on continuing the Tools of the Mind curriculum next year?
Appendix H

Focus Group/Interview Questions for Kindergarten Teachers

1. What are your impressions of the Tools of the Mind curriculum?
2. What is successful with the program?
3. What are the challenges with the program?
4. Based on your experiences, can you provide some examples of how the Tools of the Mind curriculum promotes the development of self-regulation and impulse control?
5. Based on your experiences, can you provide some examples of how the Tools of the Mind curriculum promotes the development of scaffolding?
6. Based on your experiences, can you provide some examples of how the Tools of the Mind curriculum promotes the development of working memory?
7. Based on your experiences, can you provide examples of ways in which the Tools of the Mind curriculum allows for daily differentiation of student learning?
8. What are your impressions on how the Tools of the Mind curriculum meets the social and academic needs of a kindergarten curriculum?
9. Do you feel that your students are able to attend and focus on academic tasks and whole group activities?
10. What are your impressions on how the Tools of the Mind curriculum impacts the students when entering the first grade?
11. What is your opinion on continuing the Tools of the Mind curriculum next year?
Appendix I

Focus Group/Interview Questions for First Grade Teachers

1. Compared to previous years, do you see a difference among your students this year in their ability to self-regulate and control impulses?
2. Based on your experiences, what do you think are best practices within a classroom for promoting the development of executive functioning skills such as self-regulation and impulse control?
3. Based on your experiences, what do you think are best practices within a classroom for promoting the development of scaffolding?
4. Based on your experiences, what do you think are best practices within a classroom for promoting the development of working memory?
5. Based on your experiences, what do you think are best practices within a classroom for the daily differentiation of student learning?
6. Do you feel that you are currently implementing a curriculum that meets both the academic and social emotional needs of your students? Do you need any additional supports?
7. What are your impressions of the Tools of the Mind curriculum?
8. What are your impressions on how the Tools of the Mind curriculum meets the social and academic needs of an early childhood curriculum?
9. What are your impressions on how the Tools of the Mind curriculum impacts the students when entering the first grade?
10. What is your opinion on continuing Tools of the Mind program for kindergarten next year?