Get Involved: A Program for Kindergarten Students, Parents, & Teachers to Promote the Development of Motor Skills for Daily School Occupations

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GET INVOLVED: A PROGRAM FOR KINDERGARTEN STUDENTS, PARENTS, & TEACHERS TO PROMOTE THE DEVELOPMENT OF MOTOR SKILLS FOR DAILY SCHOOL OCCUPATIONS

By

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This Scholarly Project Paper, submitted by Sarah Neall in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved:

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Get Involved: A Program for Kindergarten Students, Parents, & Teachers to Promote the Development of Motor Skills for Daily School Occupations. Sarah Neall & Deb Byram-Hanson, Department of Occupational Therapy, University of North Dakota School of Medicine & Health Sciences, 501 North Columbia Road, Grand Forks, ND 58202

In the educational setting today, children are asked to acquire advanced academic skills at a faster pace and earlier age. Children entering the first years of school exhibit variances in their physical maturity levels, which affects both fine and gross motor skills and their performance in daily school occupations. Frequently, young children are unable to keep up with their kindergarten curriculum. Currently, the programs available to work on motor development in kindergarten age students focus solely on pre-writing skills and handwriting instruction. These programs lack information on motor skill development, home program activities, and specific occupations that kindergarten students are expected to complete during a typical school day. An extensive literature review was conducted and pertinent information was gathered to help illustrate the need for the product and guide the development of the product. A manual was developed to provide parents and teachers of kindergarten age students with information and resources for motor skills training and to give children opportunities to practice motor skills in the school and home environments. The manual is divided into three appendices. Appendix A is a parent manual on motor skills development. Appendix B is a teacher manual to focus on motor skills development in the school environment. Information in the manual includes the developmental progression of motor skills, a quick motor skills screening tool, resource lists for parents and teachers, background information on motor skills areas, occupations children complete in school, an activity guide for the motor skills areas, and a complete reference list. Appendix C was included in the manual to provide teacher workshop information on how to use the manual in the classroom setting. This manual will be a valuable reference tool for parents and teachers of kindergarten age students to assist with motor skill development for occupations completed in the school environment.
CHAPTER I
INTRODUCTION

Occupational therapy is a service that is available to children with disabilities in early intervention and school based programs. The Individuals with Disabilities Education Act (IDEA 2004) is the key federal law supporting occupational therapy in these settings. The special education team is responsible for determining the need for occupational therapy during the development of a student’s Individualized Education Plan (IEP) (AOTA statement, 2004). Section 504 of the Rehabilitation Act of 1973 and the No Child Left Behind Act of 2001 are also federal laws which promote the involvement of occupational therapy with children in school-based settings (Jackson, 2005).

The profession of occupational therapy focuses on the importance of “supporting function and performance in daily life activities and the factors that influence performance that are addressed during the intervention process” (American Occupational Therapy Association, 2002). Occupational therapists working in the school setting take into account the many types of occupations in which a child might engage during a typical school day. Performance skills needed to complete the occupations are analyzed and categorized as motor skills, process skills, and communication/interaction skills (American Occupational Therapy Association, 2002).

In the educational setting today, children are asked to acquire advanced academic skills at a faster pace and earlier age. Children entering the first years of school exhibit
considerable variance in their physical maturity levels, which affects both fine and gross motor skills and their performance in daily school occupations. Frequently, young children are unable to keep up with the kindergarten curriculum. Teachers have noted a discrepancy between the expectations of children in pre-kindergarten and kindergarten when compared with developmental readiness (Shasby & Schneck, 2005).

Kindergarten students are expected to complete several occupations during a typical school day. Occupations are defined as, “Activities of everyday life, named, organized, and given value and meaning by individuals and a culture. Occupation is everything people do to occupy themselves, including looking after themselves, enjoying life, and contributing to the social and economic fabrics of their communities” (American Occupational Therapy Association, 2002). Students’ occupations involve educationally based outcomes and may include physical, psychosocial, cognitive, social, or sensory motor components (Jewett, 2003). If a deficit is present in one of these components, it may result in decreased performance in an occupation.

Students in kindergarten are asked to perform high-level tasks in the classroom before they have received the necessary pre-writing developmental instruction. Children who have not developed the motor skills necessary to complete these tasks may experience frustration and failure in everyday school occupations.

A higher expectation for children in the educational setting can lead to frustration and stress in parents and teachers. Developmental crisis points of a child’s life such as a transition from preschool to kindergarten and specific developmental milestones are times when parents experience sorrow and stress (Cameron, Dobson, & Day, 1991). The stress parents experience at home likely generalizes to other settings, such as the
classroom environment, causing stress for teachers. An important factor in children’s early school adjustment is a positive, communicative relationship with their teacher. Providing supportive educational programs for families enhances parent and child related outcomes by reducing parenting stress and facilitating child development (Esdaille & Greenwood, 2003).

Parental involvement in children’s education can improve school performance. Teachers have indicated that home participation in activities is a positive predictor for math and reading achievement. Schools can improve children’s performance by increasing parents’ ability to support learning at home (Izzi, Weissberg, Kasprow, & Fendrich, 1999).

In order for children to complete the academic tasks and occupations, certain underlying motor skills must be present and developed. Several developmental skills are required to complete the occupations of a kindergarten student: gross motor coordination, crossing the midline, laterality, bilateral integration, fine motor skills, ocular motor control, and sensory motor skills. If there is a deficit in the area of motor skills, it may result in decreased performance in a functional area of school.

Occupational therapy services to improve or remediate motor skills can include: assessment to determine strengths/needs; collaborating with teachers, families, students, and others on environmental and material adaptations; developing strategies and activities to enhance performance; and providing student specific interventions (Koomar, Kranowitz, & Szklut, 2004).

The Ecological Model of Occupation considers the relationships between person, context, task, and performance and how the dynamic interactions between these three
impact performance (Ideishi, Ideishi, Gandhi, & Yuen, 2006). A fundamental value of this model is that intervention is guided by what the person wants and/or needs. The Ecological Model of Occupation articulates the following strategies to guide intervention: establishing/restoring seeks to remediate a person’s ability; adapting/modifying aims to modify the context for performance or the task features of a selected task; altering seeks to promote changes within the actual context where the tasks occur; preventing and creating interventions seek to promote changes within the person, contexts, or tasks before a problem occurs or when no problem exists (Ideishi, Ideishi, Gandhi, & Yuen, 2006). The ultimate goal of each intervention strategy is to support the performance needs of the individual (Dunn, Brown, & Youngstrom, 2003).

The current programs available for development of motor skills in kindergarten age children focus solely on pre-writing skills and handwriting instruction. These programs lack information on motor skill development, home program activities, and specific occupations that kindergarten students are expected to complete during a typical school day.

Therefore, there is a need for a manual to provide teachers and parents with information and resources for motor skills training and to give children opportunities to practice motor skills in the school and home environments. The motor skills manual will be based on current literature.

Chapter II will focus on the review of literature to generate a better understanding of the role of occupational therapy in the school system, the expectations and occupations of kindergarten students, background information on motor skill development, and the mechanisms recommended for motor skill development. Chapter III will discuss how the
research influenced product development. This chapter addresses the methodology
which was used to organize the research findings. Chapter IV provides an in depth look
at the motor skills training program. The program is divided into three appendices.

Appendix A is a parent manual for motor skill development. Appendix B is a teacher
manual to focus on motor skill development. Appendix C provides teacher workshop
information on how to use the manual in the classroom setting. Chapter V is a
conclusion chapter which provides the strengths and limitations of the program, ideas for
future program development, and recommendations for further research into the program.
Chapter II

REVIEW OF LITERATURE

Occupational therapy is a service that is available to children with disabilities in early intervention and school-based programs. The Individuals With Disabilities Education Act (IDEA 2004) is the key federal law supporting occupational therapy services in these settings. There are two parts to IDEA 2004, Parts C and B (AOTA Statement, 2004). Part C allows for occupational therapy as a primary early intervention service for children up to 3 years of age who are experiencing developmental delays or are at risk of having a delay (AOTA Statement, 2004). Part B mandates occupational therapy as a related service for children with disabilities, ages 3-21 years old, who need it to benefit from their special education program. The special education team determines the need for occupational therapy during the development of a student’s Individualized Education Plan (IEP) (AOTA Statement, 2004).

Section 504 of the Rehabilitation Act of 1973 is a federal law that influences occupational therapy services working in early intervention and school-based settings. This law prohibits discrimination on the basis of a disability by programs receiving federal funds. Children who are not IDEA-eligible may be eligible for services under Section 504. These services are provided in a general education setting with modifications and accommodations. An occupational therapist may contribute to this process (AOTA Statement, 2004).
The No Child Left Behind Act of 2001 (NCLB) is another federal law that promotes the involvement of occupational therapy with children in school-based settings. This is a reauthorization of the Elementary and Secondary Education Act of 1965 (ESEA). The law requires public schools to raise the educational achievement of all students. State and local agencies are held accountable for student achievement and research-based instruction is encouraged with an emphasis on the subject of reading. Students with disabilities are expected to meet the same grade-level achievement standards as non-disabled peers (Jackson, 2005). Occupational therapists play a large role in providing the necessary interventions, accommodations, or modifications for students with disabilities to reach these standards.

Occupational therapists can also participate in pre-referral services and supports under IDEA 2004 as a member of the school resource team. The purpose of pre-referral services is to provide preventative, early intervention strategies to minimize the occurrence of behavior and learning problems and reduce the need for more intensive services later in the educational process (AOTA Statement, 2004).

The profession of occupational therapy focuses on the importance of “supporting function and performance in daily life activities and the factors that influence performance that are addressed during the intervention process” (American Occupational Therapy Association [AOTA], 2002). The primary goal of occupational therapy in public education is to enable children with a disability, age’s birth to 21, to benefit from their special education program. This may be accomplished through direct service to the child or support services on behalf of the child in the form of training parents, staff members, and caregivers regarding educating students with disabilities (AOTA Fact Sheet, 2003).
In the educational setting, occupational therapists are responsible for: providing early intervening services, conducting assessments and collaborating with the special education team during the evaluation process, planning and implementing services, and documenting and monitoring the outcome of interventions.

Occupational therapists working in the educational setting take into account many types of occupations in which a child might engage during a typical school day. Categories of human activities are established and called “areas of occupation”. These areas include: activities of daily living, instrumental activities of daily living, education, work, play, leisure, and social participation (AOTA, 2002).

Typical activities of daily living and instrumental activities of daily living addressed in the educational setting include: dressing, eating, feeding, functional mobility, personal hygiene and grooming, communication device use, and meal preparation and clean up. The areas of education, play, and social participation also have a strong focus in an educational setting. The area of work is addressed with students who are at or above the transition age of 14 (AOTA, 2002).

Occupational therapists address performance issues in all areas of occupation. In order to do this, the performance skills needed to complete the occupations are analyzed. Performance skills are categorized as motor skills, process skills, and communication/interaction skills (AOTA, 2002). All of these skills are important to consider in the educational environment.

Occupational therapists develop an intervention plan individualized for each student. The plan may include different intervention approaches based on theory and evidence. Intervention approaches may include: create/promote (health promotion);
establish/restore (remediation, restoration); maintain (preserve performance capabilities); modify (compensation, adaptation); and prevent (disability prevention) (AOTA, 2002).

The Maryland Voluntary State Curriculum addresses academic skills kindergarten students are expected to master during the school year. The areas addressed in the curriculum include reading, English language arts, science, and social studies. Occupational therapists are responsible for providing support to students to allow them to make annual progress towards curriculum standards (Maryland State Department of Education [MSDE], 2004).

Specific objectives of the kindergarten curriculum that OT’s may contribute to include: identify in isolation all upper and lowercase letters of the alphabet; identify similarities and differences in letters and words; clap words in a sentence; clap syllables in a word; recite finger plays; track print from left to right and return sweep to the next line of text; differentiate numerals, letters, and words; recognize that printed words are separated by spaces; and recognize that letters build words and words build sentences (MSDE, 2004).

The Maryland Model for School Readiness (MMSR) is a framework for teachers to help them instruct and assess young children in the skills they need to be ready for school. MMSR defines school readiness as, “the state of early development that enables a child to engage in and benefit from primary learning experiences”. It is believed that as a result of family nurturing and interactions with others, a young child in this stage has reached certain levels of development in the areas of physical well being, motor skills, social and emotional development, language skills, cognition, and general knowledge (MSDE, 2001).
The Work Sampling System (WSS) is a state-of-the art assessment system for early learning. Seven developmental and curricular domains are addressed: social and personal development, language and literacy, mathematical thinking, scientific thinking, social studies, the arts, and physical development. Indicators are measured and guide instruction by teachers in all 7 areas for kindergarten students.

The following are examples of motor skills expected to be proficient in kindergarten students by spring:

1. Show static and dynamic balance concepts by moving confidently around the room and in the halls, including going up and down stairs while holding an object.

2. Demonstrate fine motor skills and use eye-coordination to perform tasks by putting together 18-25 piece puzzles using pictures as well as shape clues.

3. Perform self-care tasks completely by consistently washing hands after using tissues to wipe nose and throw tissues into the wastebasket.

4. Participate in a group movement experience and suggest ways to move like animals.

5. Execute memorized movement phrases by creating innovative movements in response to a variety of movements introduced by a teacher.

6. Independently use art materials such as clay, paint, markers, colored pencils with purpose in mind and including detail in color and lines (MSDE, 2007).

Kindergarten students are expected to complete several occupations during a typical school day. Occupations are defined as, “Activities of everyday life, named, organized, and given value and meaning by individuals and a culture. Occupation is everything people do to occupy themselves, including looking after themselves, enjoying
life, and contributing to the social and economic fabric of their communities” (AOTA, 2002).

For students, “the activities and occupations of life involve educationally based outcomes and may include physical, psychosocial, cognitive, social, or sensory motor components” (Jewett, 2003). If a deficit is present in one of these components, it may result in decreased performance in a functional area.

Marr, Cermak, Cohn, and Henderson (2003) found that kindergarten students spend an average of 46% of the school day engaged in fine-motor occupations. Landy & Burridge report that young children at school spend approximately 60-70% of their time completing fine-motor work or activities. They also stated that approximately 12% of children experience difficulties in these areas (Landy & Burridge, 1999). Examples of occupations completed during a typical school day include: self-care, paper and pencil tasks, manipulatives, hand washing, toileting, opening containers for snack, donning and doffing a coat, cutting, play dough, legos, puzzles, finger plays, blocks, coloring, and painting.

Perera (2005) assessed the development of 4-5 year-old-children with an aim of investigating their readiness for formal education. Results showed that children with motor problems were more likely to have difficulties with cognitive tasks than children without motor problems. A statistically significant relationship was found between motor skills and competence in selected cognitive skills.

Examples of motor skills considered important for readiness for school include: jumping on one leg; standing on one leg; walking heel to toe; copying a circle, cross,
square, and triangle; completing a drawing of a person; washing and dressing without adult help; and playing co-operatively (Perera, 2005).

In the educational setting today, children are asked to acquire advanced academic skills at a fast pace and earlier age. Kindergarten students are expected to perform high-level tasks in the classroom before receiving the necessary pre-writing developmental instruction. A lack of instruction in pre-writing skills can result in the formation of maladaptive strategies in the areas of written and spoken language. Once these habits are formed, it may be difficult for children to correct them at a later age (Jewett, 2003).

A higher expectation for children in the educational setting also has an effect on parents. Research has shown that developmental crisis points of a child's life such as a transition from preschool to kindergarten and specific developmental milestones are times when parents experience sorrow and stress (Cameron, Dobson, & Day, 1991). Parenting stress has been studied in mothers and fathers of preschool children with and without disabilities. A number of studies suggest that providing supportive educational programs for families of children with special needs enhances parent and child related outcomes by reducing parenting stress and facilitating child development (Esdaile & Greenwood, 2003).

Cameron et al. (1991) investigated and compared measures of stress in parents of preschool children with developmental disabilities (DD) and parents whose children are not exhibiting delays. The results of the study showed that mothers of children with DD report their children place greater demands for care on them and are more distractible with a short attention span, thus increasing parental stress. The results support the fact
that mothers may benefit from counseling in the child’s preschool years and ongoing support from professionals during this time.

Esdaile & Greenwood (2003) evaluated parenting stress in mothers and fathers of preschool children with DD, compared their perceptions of parenting stress with those of parents without DD, and ascertained whether or not mothers and fathers differed in their perceptions of parenting stress.

Results of the study showed that both mothers and fathers of children with DD experience higher levels of child-related parenting stress than parents of children without disabilities. A main cause of the stress is that parents recognize the extra efforts that children with disabilities need to make to be successful at tasks. The outcomes of this study show the importance of addressing the needs of parents as well as their children. Therefore, programs aimed at prevention can be an important investment in the future well-being of families.

The transition to school has been reported as a stressful time for parents (McIntyre, Blacher, & Baker, 2006). The stress parents experience at home likely generalizes to other settings, such as the classroom environment, causing stress for teachers. The successful adaptation to school is influenced by academic, social, emotional, behavioral, and cognitive competencies. An important factor in children’s early school adjustment is a positive, communicative relationship with their teacher.

McIntyre et al. (2006) found that children with intellectual disabilities (ID) had more teacher-reported problem behavior than typically developing (TD) children. Children with ID were rated as having significantly fewer social skills, cooperation skills,
assertion skills, self-control skills and responsibility-related skills than TD children. This lack of skills increases stress for teachers and parents.

The study suggests that as children transition to formal school settings, caregivers can work with school staff as partners in the education of their children. Parents can assist with the transition process by becoming equal partners in decision making and open communication systems across setting. Establishing early family-school partnerships is described as an important component to positive child outcomes. The authors also suggest that without supports in place for developmentally appropriate school activities, children with developmental concerns will not be in a position to be successful in a formalized, educational setting (McIntyre et al., 2006).

Literature indicates that parental involvement in children’s education improves school performance (Izzi, Weissberg, Kasprow, & Fendrich, 1999). “A growing body of research suggests that when parents and school personnel collaborate effectively, students are likely to behave and perform better in school” (Izzi et al. 1999, p. 817). Typical activities that parents of kindergarten students are involved in include: volunteering in the classroom; parent-teacher conferences; parent-teacher organization (PTO); annual open house the week prior to school starting; email correspondence with teachers; annual Christmas bazaar with faculty, parents, & students; assisting children with homework, and a variety of other school functions.

Parental involvement in children’s education changes over time, and their involvement relates to children’s social and academic functioning in school. Teachers of children in kindergarten through third grade rated the following four dimensions of parental involvement: frequency of parent-teacher contact; quality of the parent-teacher
interactions; participation in educational activities at home; and participation in school
activities and most parent-involvement variables correlated positively with school
performance (Izzi et al., 1999).

Teacher perceptions of good relationships with parents and greater participation in
home and school activities all were associated with better scores on all five school
performance indices. Home participation was the strongest positive predictor for math
and reading achievement. Participation in activities at school positively predicted school
engagement, and quality of the parent-teacher interactions positively predicted
socioemotional adjustment. The results were consistent with prior research conducted
and support the notion that schools can improve children's performance by increasing
parents' ability to support learning at home (Izzi et al., 1999).

Occupational therapists also advocate for parental involvement in therapy
programs. Jewett (2003) suggests weekly contact with parents via letters and packets
home with students completing a motor program. He asserts that continued skill
development at home, with sample activities and contact information for the teacher and
therapist, are helpful to facilitate parent empowerment and carry-over of skill
development in the home environment (Jewett, 2003).

In developing a handbook for teachers and parents to utilize with kindergarten
aged students, a model is necessary to guide the process. The Ecological Model of
Occupation will be used to guide development of a motor skills training manual.

The Ecological Model of Occupation is built around the major constructs of
person, context, task, and performance (Dunn, Brown, & Youngstrom, 2003). The model
emphasizes the essential role of context in task performance and states that person and
context factors need to be considered for each particular task performance. Context is defined as, “factors that operate external to the person” (Dunn, Brown, & McGuigan, 1994). The context will be important to consider when creating the manual as interventions will need to be designed around occupations occurring in all contexts in the school environment (i.e. gym, playground, bathrooms, hallways, classroom, cafeteria).

A fundamental value of the Ecological Model of Occupation is that intervention is directed by what the person wants and/or needs. It also consists of an interdisciplinary orientation and is intended to be used to facilitate interdisciplinary collaboration (Dunn et al., 2003). This model will help to facilitate collaboration among teachers, parents, students, and the occupational therapist.

The Ecological Model of Occupation considers the relationships among person, task, context, and how the dynamic interactions between these three impact performance (Ideishi, Ideishi, Gandhi, & Yuen, 2006). Four constructs are associated with this model: person, task, context, and performance.

The person brings variables such as past experiences, personal values/interests, as well as sensorimotor, cognitive, and psychosocial skills to tasks. Kindergarten students bring to school previous experience in motor activities, interest in activities that are motivating to them, and underlying skills they have developed prior to coming to school.

Tasks are defined as, “objective sets of behaviors that are combined to allow an individual to engage in performance that accomplishes a goal”. Ability to access tasks is determined by the person’s variables and the availability of the tasks within the person’s current context. Tasks are the occupations that kindergarten students need to complete during a school day and this manual will focus on the skills needed for the tasks.
Context refers to “the set of interrelated conditions that surround the person” (Dunn et al., 2003). There are two types of context: temporal and environment. Temporal context includes chronological age, developmental stage, life cycle, and health status. All of these factors are important to consider when working with each child on skills in the manual.

Environment consists of physical, social, and cultural dimensions (Dunn et al., 1994). Performance range, the number of types of tasks available to the person, is determined by the interaction between the person’s variables and the context variables (Dunn et al., 2003).

The Ecological Model of Occupation articulates the following strategies to guide intervention: establishing/restoring seeks to remediate a person’s ability; adapting/modifying aims to modify the context for performance or the task features of a selected task; altering seeks to promote changes within the actual context where the tasks occur; preventing and creating interventions seek to promote changes within the person, contexts, or tasks before a problem occurs or when no problem exists (Ideishi et al., 2006). The ultimate goal of each intervention strategy is to support the performance needs of the individual (Dunn et al., 2003).

In order for children to complete high level academic tasks and occupations in the classroom, certain underlying motor skills must be present and developed. The motor component of development concerns the quality of movement. Several developmental skills are required to complete the occupations of a kindergarten student.

Gross coordination and body stability lay the foundation for later skill, and begins with the head and neck, and proceeds to the shoulders, trunk, and extremities. Small
muscle groups such as the hands and fingers are the last to develop strength and control. Coordinated movements should be smooth, accurate, and seemingly effortless.

Automatic balance responses and maintenance of posture are also prerequisites for skilled hand use (Neistadt & Crepeau, 1998).

Crossing the midline, which is the ability to move limbs and eyes across the midline of the body to engage in activities on the opposite side of the body, is necessary for occupations such as putting on a jacket or buttoning long sleeves (Neistadt & Crepeau, 1998).

Laterality, or using a preferred unilateral body part for activities requiring a high level of skill, is important as it refers to kindergarten students using either the right or left hand for writing and eating. Most children develop laterality for tasks requiring precise fine motor movements by 3-4 years of age (Henderson & Pehoski, 1995).

Bilateral integration, or coordinating both sides of the body during an activity, should be evident by two years of age. Children should have competence in two-hand tool use and cooperation of the two hands at that time (Henderson & Pehoski, 1995).

Fine motor skills evolve last, and include movements of dexterity, finger isolation, efficient grasp, and voluntary release. These aspects of fine motor development are directly related to using writing implements and other classroom tools (Jewett, 2003). Children typically progress through a series of grasp patterns ranging from palmar, incomplete tripod, static tripod, and dynamic tripod grasp. The dynamic tripod grasp is the most efficient grasp for precision control, but not all children use this grasp and variations of the grasp, such as a quadrupod grasp, may be adequate for a child. By the age of two, children demonstrate the ability to grasp objects with a mature grasp and
perform functional skills such as scribbling with a crayon, building a tower of three cubes, and turning the pages of a book. Developmentally immature grasps, such as the thumb wrap or interdigital brace, have been linked to poorly established laterality or insufficient prerequisite experience with hand tools. Also by age two, controlled release is developed, allowing a child to fit puzzle pieces together, place small objects in a container, and manage a cup. By kindergarten, grasp and release skills should demonstrate steadiness, precision, good dexterity, and an adequate speed (Henderson & Pehoski, 1995).

Ocular motor control, or the ability of the eyes to work together to follow and hold an object in the line of vision, influences eye-hand coordination, which includes accuracy in placement, direction, and spatial awareness. The eyes and hand develop skills separately and begin to integrate as a child participates in occupations and play activities. To engage in occupations, a child needs to know what position the body is in, the direction in which to move, the distance between the hand and an object, and the adaptation the hand must make to grasp an object (Jewett, 2003).

Sensory motor skills are the skills required for the brain to organize input from all of the senses simultaneously and come up with a response to the demands of the environment. The sensory system includes the senses that are typically addressed: sight, hearing, touch, taste, and smell. There are other sensations that are not as well known that are also essential to survival. These include the vestibular sense, which is the knowledge of the position of one’s head in relation to gravity and movement, and the proprioceptive sense, the internal awareness of the position of one’s joints and muscles in space. The human brain needs to be able to organize all of the sensory information so
that function in everyday situations, such as the classroom and the playground can be realized (Koomar, Kranowitz, & Szklut, 2004).

Occupational therapists are trained to facilitate meaningful and purposeful participation in occupations in the least restrictive environment for a person. For students, the occupations of life involve educationally based outcomes. Occupational therapists are trained in the assessment and treatment of motor skills, including physical, psychosocial, cognitive, social, and sensory motor components. Occupational therapists take into account the person, environment, and the occupation to be completed. The goal is to allow for the "best fit" between person, environment, and occupation (Jewett, 2003).

If there is a deficit in the area of motor skills, it may result in decreased performance in a functional area of school. Occupational therapy services to improve or remediate motor skills can include: assessment to determine strengths/needs; collaborating with teachers, families, students, and others on environmental and material adaptations; developing strategies and activities to enhance performance; and providing student specific interventions (Koomar et al., 2004).

Motor learning theory has been researched by Baker (1999) to maximize the potential benefits of intervention on motor skill acquisition and retention. The definition of motor learning is, "a set of processes associated with practice or experience leading to relatively permanent changes in the capabilities of responding". Specific motor variables, such as feedback and practice, can be manipulated in order to enhance motor learning.
Research has found that verbal feedback and physical guidance should be kept to a minimum when working on a motor skill. This encourages problem solving by the child. It is important that teachers and parents realize that children not only need to learn a skill, but they need to work on retention of skills. Random practice of skills, as compared to block practice, was found to be more effective in carryover of skills learned to different environments (Baker, 1999).

Due to the fact that all children have different learning styles, it is important to provide motor skills training activities through a variety of methods. Research supports several different methods to utilize for motor skills training.

The use of sensorimotor theme groups (SMTG) to enhance developmental skills in kindergarten students has an overall goal of promoting children's occupations through the development of sensory, perceptual, and motor skills. SMTG have many advantages, including providing opportunities to build a sensorimotor foundation in the child's early years; accommodating multiple levels of functioning through adaptations to group activities; children learn in the environment that is meaningful to them and generalize skills in the classroom environment; and teacher are given resources to meet the needs of students with difficulties in the motor areas (Shasby & Schneck, 2005).

Sensorimotor programs have also been developed which are designed to improve writing readiness skills in elementary-aged children. Research has indicated that programs are successful in remediation of deficits in writing readiness skills when they utilize direct services from an occupational therapist and a supplemental program provided to teachers, aides, and parents to be completed a minimum of three times a week for 10 minutes at a time (Oliver, 1990). The rationale for the use of multisensory
modalities and activities in handwriting remediation among school-based occupational therapists includes: making learning fun; tapping into as many senses as possible; and stressing the importance of exploring and finding ways that students learn best (Woodward & Swinth, 2002).

Gross motor tasks are important to provide children with sensory motor experiences to develop strong trunk muscles and upper extremity strength and stability for seated posture and handwriting skills. Suggested activities include organized games, running, crawling on the ground and through tunnels, completing chores in the home environment such as washing the table, baking activities, and folding clothes (Berry, 2006). The author of the article referenced states that, “Children who receive and participate in more sensory experiences and physical activity have more refined fine-motor skills than children with a sedentary lifestyle”.

Play is defined as, “any spontaneous or organized activity that provides enjoyment, entertainment, amusement, or diversion” (AOTA, 2002). Play is one of the most important occupations that children participate in daily during the school day. It has been stated earlier that activities should be utilized that make learning fun and maintain a child’s interest in the activity. It is important to incorporate motor skills development activities into play activities to make learning motor skills meaningful to a child. A lack of attention in a child has been found to be a stress factor with parents. Providing activities that incorporate a sensory-motor and play based method can help improve attention and processing skills in children (Cameron et al., 1991).

Kinesthetic awareness activities have been found to be effective in the development of motor skills. Kinesthetic awareness is a necessary pre-requisite skill for
development and refinement of motor actions (Landy & Burridge, 1999). Kinesthesia is defined as, "the sense of position and movements of limbs and body, the continuous information source generated by the kinesthetic receptors located in the muscles, joints, and tendons" (Bairstow & Laszlo, 1984). Training of kinesthetic awareness has been done on experimental groups. The training was done in 10-12 minute sessions for five days. Five months after this training, teachers reported an improvement in writing skills in the majority of children (Bairstow & Laszlo, 1984).

There are a few programs currently used in kindergarten classrooms to address motor skills. The following two programs have been used or are currently used by kindergarten teachers.

Dr. Jean has been actively involved in education for over 35 years as a classroom teacher, instructor of adults, author, and consultant. She has designed a program called, "Dr. Jean CDs". Her CD's are often used during circle time in pre-kindergarten and kindergarten classrooms. They offer songs for children to sing and learn, as well as gross motor movement suggestions with several of the songs. They also provide ideas to use music with art projects, writing, cooking, and games (Dr. Jean, 2007). A benefit of the CD’s for the development of motor skills is that they encourage large movements which address sensory motor skills that are important for learning. The disadvantage of the CD’s is that they focus more on academic skills than motor skills and do not provide information on motor development.

The Handwriting Without Tears (HWT) program is used periodically as an individualized program with children who need assistance with handwriting skills. It includes workbooks that teach letters to children in specific developmental sequences.
The easiest strokes are learned first, allowing a child to build on what has previously been learned. The HWT program also includes slate boards, wooden letters, and a stamp and see screen for children to practice forming letters (Handwriting Without Tears, 2007).

The benefit of this program for kindergarten students is that it provides different types of media to practice development of handwriting skills and provides a multisensory approach to learning handwriting (visual, auditory, motor, tactile, and kinesthetic). It also addresses letter formation skills in a developmental sequence that makes sense to children. Handwriting is an occupation that kindergarten students complete, but this program is lacking more information on activities to develop other motor skills which are necessary for handwriting. The program is designed to focus on letter formations and handwriting skills, and attention is not paid directly to motor skill development.

There is not currently a universal program in place focusing on the development of motor skills in kindergarten students. The current programs have a strong focus on the occupation of writing, but kindergarten students complete several other occupations during the school day requiring the use of motor skills. These programs do not provide a home component or activities to complete in the home environment to encourage the development of motor skills. The literature has shown that schools can improve children's performance by increasing parents’ ability to support learning at home (Izzi et al., 1999).

In addition, the literature suggests that a strong collaborative partnership between teachers and occupational therapists is important to a successful motor skills program. Literature shows that teachers appreciate training sessions on motor skill development,
activity analysis, and specific developmental activities to complete with children in the Pre-Kindergarten and Kindergarten grade levels (Mesquiti & Schoenfeld, 2002).

Specific methods have been researched for communicating knowledge of skill development to teachers and parents. Hanft & Knippenberg (2004) explored ways for an occupational therapist to contribute to the team process in an educational setting. They recommended that occupational therapists should provide direct, “hands-on” intervention with consultation and coaching for educational personnel who work every day with a child.

The recommended methods of translating knowledge of skill development to teachers include: modeling, instruction, demonstration, print, audio or video resources, and observations of peers implementing the recommendations (Hanft & Knippenberg, 2004). Borthwick-Duffy, Lane, & Mahdavi (2003) found that more than 50% of teachers rated in-class demonstrations and follow-up assistance for support in implementation of pre-referral strategies as highly desirable.

There is a need for a program designed to provide teachers and parents with information on motor skill development for specific occupations that kindergarten students are expected to complete during a typical school day. There is also a need for parents and teachers to be provided with creative activities to complete with the whole family or the entire kindergarten class to assist with the development of motor skills.

The literature review process has demonstrated a need for a motor skills training manual for kindergarten age students, parents, and teachers to address skills needed for occupations completed in the educational setting. The following chapter will introduce the process of developing the motor skills manual for kindergarten age students. The
reader will also be informed of the methodology which relates to the manual development.
CHAPTER III
METHODOLOGY

In reviewing the literature, it has been determined that there is a need for a motor skills training manual for kindergarten age students, parents, and teachers to address motor skills needed for occupations completed in the educational setting. The following information illustrates how the literature helped to guide the process and development of the final product.

The literature review focused on four main areas that were utilized to design the product: expectations and occupations of kindergarten students, stressors for parents and teachers of kindergarten students, involvement of parents in education, and the motor skills necessary to complete the occupations of a kindergarten age child.

According to the literature, kindergarten students spend an average of 46% of the school day engaged in fine-motor occupations. (Marr, Cermak, Cohn, & Henderson, 2003). Approximately 12% of children experience difficulties in these areas. (Landy & Burridge, 1999). The specific objectives of the Maryland Voluntary State Curriculum were reviewed and an emphasis was found on tasks which require motor skills. (Maryland State Department of Education, 2007).

The fine motor occupations found in the literature to be completed daily by kindergarten students were used to guide the process of establishing a manual for motor skill development. Activities to develop motor skills were incorporated into the everyday
occupations of kindergarten students in the classroom and home environments. (Marr et al., 2003).

As found in the literature, the transition from preschool to kindergarten and specific developmental milestones in a child’s life are times when parents may experience sorrow and stress. (Cameron, Dobson, & Day, 1991). A number of studies suggested the importance of providing supportive educational programs for families to reduce parenting stress and facilitate child development. (Esdaile & Greenwood, 2003).

The literature also indicated that parental involvement in children’s education improves school performance. Teachers have found that home participation is the strongest predictor for math and reading achievement in children. Schools can improve children’s performance by increasing parents’ ability to support learning at home. (Izzi, Weissberg, Kasprow, & Fendrich, 1999).

As a result of the above, the parent appendix was included in the manual. It was designed specifically for parents in a manner that is easily to understand and follow the activities to develop motor skills in the home environment. Resources were also provided for parents to utilize if they have further concerns with motor development in their child.

Prevention was stressed in the literature in regards to educating families and considering the future well-being of families. (Esdaile & Greenwood, 2003). This fact was used to guide the development of the parents’ appendix. The “activities for the whole family to practice motor skills” section of the manual was designed as a way to prevent future motor problems in young children.
Neistadt & Crepeau (1998) discussed the motor skills necessary for children to complete occupations in the classroom. These motor skills include: gross motor coordination, fine motor coordination, crossing the midline, laterality, bilateral integration, ocular motor control, and sensory motor skills. These are the main motor skills areas that guided the development of the motor skills manual. Background information on these motor skills areas was provided for both parents and teachers to develop a better understanding of all the areas in order to complete the activities provided.

A review of motor learning theory provided guidelines for execution of motor activities. Baker (1999) suggests that verbal feedback and physical guidance should be kept to a minimum when working on a motor skill in order to encourage problem solving by the child. Random practice of skills, compared to block practice, was found to be more effective in carryover of skills learned to different environments. Information about motor learning theory was included in the parents’ appendix and teachers’ appendix to explain the best way to work on motor skills with a child and to encourage retention of skills learned.

Mesquiti & Schoenfeld (2002) found that teachers appreciate training sessions on motor skill development, activity analysis, and specific developmental activities to complete with children in pre-kindergarten and kindergarten grade levels. The recommended methods of translating knowledge of skill development to teachers include: modeling, instruction, demonstration, print, audio or video resources, and observations of peers implementing the recommendations. (Hanft & Knippenberg, 2004).
Therefore, an appendix was added to the product titled, “Teachers’ Workshop Information”. The previous recommendations from the literature were utilized to guide the development of a teachers’ workshop on how to utilize the motor skills training manual.

The Ecological Model of Occupation was used to facilitate the development of the product because it emphasizes the relationships among person, task, context, and how the dynamic interactions between these three impact performance. A fundamental value of the model is that intervention is directed by what the person wants and/or needs. It also consists of an interdisciplinary orientation and is intended to be used to facilitate interdisciplinary collaboration. These aspects of the model were utilized to design the final product. The product was designed to facilitate involvement of the child, parent, and teacher in the process of developing motor skills.

The Ecological Model of Occupation proposes that the following strategies can be used to guide intervention. The “establish/restore” strategy seeks to remediate a person’s ability. The “adapt/modify” strategy aims to modify the context for performance or the task features of a selected task. The “alter” strategy seeks to promote changes within the actual context where the tasks occur. The “prevent/create” strategy seeks to promote changes within the person, context, or tasks before a problem occurs or when no problem exists.

The “establish/restore” and “prevent/create” interventions were utilized to guide the process of developing the activities section of the parents’ and teachers’ manuals. The “establish/restore” intervention is aimed at the person’s variables and to improve the
person’s skills. The activities section of the product incorporated activities to establish and support motor skill development in the home and school environments.

The “prevent/create” intervention strategy is designed to create opportunities to work on skills in the natural environment of a person before a problem is evident. The product was designed to include motor skills activities for the whole family or whole classroom to participate in to practice motor skills.

The literature review guided the development of the main concepts of the product and the manner in which the product was presented to parents and teachers. The program which follows in the next chapter will address the developmental progression of motor skills, a quick screening tool for motor skills, resources for parents and teachers, background on the motor skills areas, occupations of children, an activity guide, reference list, and teachers’ workshop information.
CHAPTER IV

PRODUCT

In the educational setting today, children are asked to acquire advanced academic skills at a faster pace and earlier age. Students in kindergarten are asked to perform high-level tasks in the classroom before they receive the necessary pre-writing developmental instruction. Children entering kindergarten often exhibit considerable variance in their physical maturity levels, which affects both fine and gross motor skills and their performance in daily school occupations.

Motor activities are currently completed in kindergarten classrooms with all children on a daily basis. Children need increased opportunities throughout the day to establish motor skills necessary for school occupations and practice completing motor tasks through the creation of fun, motor group activities. The product of this project, A Parent Guide: Motor Skills Training for All Kindergarten Students & A Teacher Guide: Motor Skills Training for All Kindergarten Students, is a manual which provides teachers and parents with information and resources for motor skills training and gives children opportunities to practice motor skills in the school and home environment.

The Ecological Model of Occupation guided the process of developing the manual. This manual aims to target individuals who may have difficulties completing motor skill activities throughout a school day and providing activities to establish new
skills in the area of motor development. Some children may be at risk for difficulty in one or more areas of motor skills. It is important to identify children at risk early to prevent motor issues in future grades.

It is important to create opportunities for all kindergarten age children to be involved in motor skill activities throughout the day. The manual is divided into three appendices. Appendix A is designed for parents and provides information about motor development and fun activity ideas for the home environment to involve children in motor tasks. Appendix B is designed for use by teachers. Teachers are provided with motor activities the whole class can be involved in to practice motor skills. Both appendices also provide a screening tool to identify at risk children and activity ideas to address the motor skills areas at risk.

Appendix C is provided as a Teachers’ Workshop Information Section. This includes information for an occupational therapist to conduct a workshop to educate kindergarten teachers, special education teachers, and teaching assistants working with kindergarten age students on the use of the manual in the classroom environment.
APPENDIX A:

PARENTS INFORMATION
A PARENT GUIDE: MOTOR SKILLS TRAINING FOR ALL KINDERGARTEN STUDENTS

Developed By:
Sarah Neall, OTR/L

Advisor:
Deb Byram-Hanson, M.A., OTR/L
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WHY WORK ON MOTOR SKILLS?

Kindergarten age children are asked to perform high-level tasks in the classroom everyday and acquire academic skills at a fast pace. Not all children develop motor skills at the same rate and there is a variance in physical maturity levels among children. Children who have not developed the motor skills necessary to complete tasks required of them in the classroom may experience frustration and failure in everyday school occupations.

Therefore, it is important to identify children who are at risk for difficulty in one or more areas of motor skills at an early age. This may prevent motor issues in the future. Children in kindergarten are still developing critical motor skills that will be used for tasks later in life. They need to be provided with lots of opportunities throughout the day in the school and home environments to work on motor skills in a fun, creative way.
DEVELOPMENTAL PROGRESSION OF MOTOR SKILLS

There is a progression to the development of motor skills. The following motor skills lay the foundation for a child to complete occupations in the classroom on a daily basis. These skills will be described in more detail later in the manual.

- Gross motor skills
- Fine motor skills
- Sensory motor skills
- Bilateral integration
- Ocular motor control
- Crossing the midline

The six skills named are the foundation for higher level learning in the classroom and the ability to perform critical occupations during a school day. The following are examples of occupations that children are able to complete when all of these motor skills are developed.

- Handwriting is a major occupation of the school age child.

It is an essential part of a large number of school related
activities. All of these foundation skills need to be
developed to provide a base for learning handwriting skills.

- **Copying from the chalk or white board.** This is an
  occupation that is a complex handwriting skill. It requires
  the integration of all of the foundation skills to be
  successful at copying. This occupation is completed
  throughout the school years and becomes more difficult,
  with more material, as a child gets older.

- **Putting manipulatives together.** Teachers often require
  children to manipulate objects called C-rods for math work.
  Children are required to line these rods up and also put
  together interlocking blocks to find answers to math
  problems. Children need ocular motor control, bilateral
  integration, and fine motor control to work with a large
  number of manipulatives in the classroom.

- **Activities of daily living,** such as handwashing, putting on
  and taking off a coat, opening containers, eating lunch, and
  toileting are occupations that a child must complete every
  day at school. Without the underlying foundational motor
skills, children may not be independent in one or more of these occupations.

- Scissors skills are an important part of school activities. It takes good ocular motor control to follow the pattern, fine motor control to manipulate the scissors, bilateral integration to hold the paper and cut, and the ability to cross the midline to cut all parts of the paper.

- Circle time is an important start to the day for several kindergarten students. It requires all of the foundational motor skills to sit in the circle, participate in sensory motor activities, clap to music or words, answer questions, and participate in any other activities during circle time.

- Participation in gym activities and playing at recess or during free time are important occupations for a kindergarten student. All of the motor skills need to be developed to allow a child to fully participate in all of these activities with their peers.
VALUE OF A SCREENING TOOL

A screening tool is provided in this manual as a way for you as a parent to look at how your child performs certain motor activities. You know your child the best and spend the largest amount of time with your child. This gives you a unique ability to complete this screening tool as accurately as possible.

If your child scores in the area of concern with this tool, it does not mean that your child has a disability or that your child will have problems with motor skill activities in the classroom. This tool should simply be used as a quick screen to determine if some intervention may potentially be necessary for your child.

You have the power to self-refer your child to the learning support team in the school if you are concerned with any area of development. Early intervention is very beneficial to a child if it is determined that a child needs some help developing motor skills. The earlier a problem area is recognized, the better the outcome of intervention will be for a child.
A resource list is included in the manual after the screening tool to help you decide who you need to talk to if you are concerned with development in your child.
Quick Motor Skills Screening Tool for the “K” Child

Name: ___________________________  Sex: M____  F____
Date of Birth: _____________________  Age:____________

Answer the following questions by checking the box for “yes” or “no”. There is a space for comments at the end of the form.

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Runs 10 ft. without falling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Walks forward 2 or more steps on a line on the floor, alternating feet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Hops forward on one foot without support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Stands on one leg for 3 seconds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Stacks 8 cubes vertically after a demonstration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Folds a sheet of paper in half after a demonstration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Holds paper with one hand while drawing or writing with the other hand.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Strings 4 medium sized beads on a string</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Takes coat on and off without assistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Imitates a vertical and horizontal line on paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Copies a circle on paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Draws a person with distinguishable body features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Washes and dries hands without assistance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
14. Holds a crayon or pencil with thumb and first two digits

15. Cuts along a straight line by holding the scissors in one hand and paper in the other hand

Comments:

*If you have answered “No” to more than 4 questions on this form, talk to your child’s teacher. There is a possibility that your child may be at risk for motor skills difficulty in one or more areas.

*Adapted from: Battelle Developmental Inventory 2nd Edition: Screening Record Form. (2005).
RESOURCES FOR PARENTS

If you feel your child is at risk for difficulty with motor skills, you can contact the following people in the school building:

1. **Your child’s teacher**: He/she will know your child the best and be able to answer some of your questions regarding performance of motor activities in the classroom. You should call or stop in to see the teacher to set up a good time to talk about your concerns. It may be helpful to tell the teacher why you would like to meet in advance so they may be able to provide work samples or specific details about occupations your child may be having difficulty with in the classroom.

2. **Occupational Therapist (OT)**: Your child’s teacher may refer your questions to a certified occupational therapist. Occupational therapists work with children to develop the necessary developmental skills to participate in all occupations required of them during a school day. OT’s are trained to take into account the child, the environment, and the occupation to be completed. The OT may be able to provide you or the classroom teacher with ideas to help your child succeed in a particular motor skill or occupation.

3. **The school counselor or learning support team specialist**: Many schools have a committee that includes these two individuals to address concerns regarding performance in the classroom. They may set up a meeting with members of the committee and the parents to determine if a child needs help in any way for him/her to be successful in school.
BACKGROUND INFORMATION
ON
MOTOR SKILLS DEVELOPMENT
In order for children to complete tasks in the classroom and home environments, certain motor skills must be present and developed. The motor part of development in a child refers to the quality of movements.

The following is a list of motor skills that need to be developed in a kindergarten age student in order for him/her to be able to complete classroom tasks:

- **Gross motor coordination**: This refers to the ability of the body to be stable with its surroundings. The head and neck are where stability begins and then the shoulders, back, arms, and legs develop stability. For example, a child should be able to sit upright in a chair for an extended period of time without fatiguing or falling to the right or left side. A child should also be able to hold his/her neck upright to look at the chalkboard without fatiguing. It is important for a child to be able to walk and run while maintaining balance to be able to navigate the classroom and halls of the school.

- **Fine motor coordination**: This involves movements of the hands and fingers. It relates directly to using writing tools in the classroom and home. By the age of 2, children should demonstrate the ability to grasp objects, scribble with a crayon, tower blocks, and turn the pages of a book, release objects into a container, and fit puzzle pieces together. Children progress developmentally through a series of grasp patterns. A dynamic tripod grasp is the most efficient grasp but children may use a variation of this grasp. Refer to appendix C for pictures of mature and immature grasp patterns. By kindergarten, children should be demonstrating steadiness and control with holding and releasing objects such as crayons.

- **Sensory motor skills**: These skills are required for our brain to organize input from all of our senses at the same time and come up with a response to the environment. The sensory system includes sight, hearing, touch, taste, and smell. There are two other sensations that are not as well known but are necessary for our survival. They are
the vestibular sense and the proprioceptive sense. The vestibular sense is the knowing where our head is in relation to gravity and movement. The proprioceptive sense is our awareness of where our muscles and joints are in space. It is important for our brain to be able to organize all of the sensory information we get from the environment so that we can function in the world.

- **Bilateral integration**: This is our ability to use both sides of our body to complete an activity. By the age of 2, children should be able to use both hands cooperatively. This is important for school tasks such as cutting, coloring, and buttoning a coat.

- **Laterality**: This refers to kindergarten students using either the right or left hand for tasks such as writing or eating. Most children develop this skill by 3-4 years of age.

- **Ocular motor control**: This is the ability of the eyes to work together to hold an object in the line of vision. It involves visual attention, which is concentrating and keeping the eyes focused on a job. Eye-hand coordination also falls under this category and involves the accuracy in placement, direction, and awareness of where you are in space. The eyes and hands develop skills separately and begin to work together as a child plays and participates in tasks at school and home. In order to complete classroom tasks, a child needs to know where his/her body is (proprioception), the distance between his/her hand and an object, and how to grasp the object.

- **Crossing the midline**: This is the ability to move your arms, legs, and eyes across the midline of your body to complete an activity on the opposite side of your body. For example, children need to cross midline to put on a jacket or button a long sleeve shirt.
CHILDRENS’ OCCUPATIONS
The motor skills discussed lay the foundation for your child to complete activities called occupations in the classroom environment. Occupations are defined as, “Activities of everyday life, named, organized, and given value and meaning to individuals and a culture.” (AOTA, 2002). Occupations may also be called “tasks”. Kindergarten students are expected to complete several occupations during a typical school day. It may be difficult to complete some of these occupations if the foundational motor skills are not developed.

The following are examples of occupations your child may need the foundational motor skills to complete during a typical school day:

- Paper and pencil tasks
- Manipulatives
- Hand-washing
- Toileting
- Putting on and taking off a coat, hat, gloves
- Opening containers
- Eating lunch
- Cutting
- Play Dough tasks
- Lego’s
- Puzzles
- Finger Plays
- Blocks
- Coloring
- Painting
- Playing at recess
- Walking in the hallway to the cafeteria
- Circle time tasks
- Participation in gym class
- Participation in art & music class
ACTIVITIES TO ESTABLISH MOTOR SKILLS IN YOUR CHILD & ACTIVITIES FOR THE WHOLE FAMILY TO PRACTICE MOTOR SKILLS
This section of the manual will provide activities to establish motor skills in children & expand the motor skill experience by providing activities for the whole family to complete. These are activities that can be incorporated into your daily routine with all of your children. These activities will help to further development in children in each specific motor area discussed.

There are important things to remember when working on motor skill activities with your child. Research has shown that for your child to learn the most during an activity, it is important to keep verbal feedback from you to a minimum. The more your child has to problem solve on his/her own, the more motor skills information he/she will retain after the activity is completed. Let your child make mistakes during an activity and attempt to complete the activity as independently as possible. However, it is okay to provide some feedback and reassurance if you child becomes frustrated.
Research was also completed to determine if it is better for children to learn and practice a motor skill at random or during a scheduled block of time during the day. The results showed that with random practice, children are forced to re-solve motor problems and cannot rely simply on rote memory for completion of an activity. The activities provided for the whole family offer opportunities to complete activities randomly throughout the day to improve motor learning.
GROSS MOTOR COORDINATION

Activities to ESTABLISH gross motor skills:

- If your child has difficulty holding his/her head upright, have the child sit with a small beanbag on the head for a few minutes before and after a seated occupation, such as watching TV or coloring a picture. You can also have your child sit in your lap while watching TV or reading. You will slowly sit up straighter, requiring your child to use more head control to remain sitting upright.
- To improve trunk control, have your child sit cross-legged on an uneven surface, such as a balance board, and throw a light ball back and forth.
- To improve trunk control, have your child lie on his/her stomach on a soft or net swing and run forward. The child should lift the feet off the ground and swing. The child may also put his/her arms out in front to strengthen trunk muscles.
- To improve balance, call out body parts and encourage your child to balance on those body parts for as long as possible. For example, one leg; the right knee and left hand; both hand and one foot; etc.)
- Have your child swing while sitting in a swing without a back to improve sitting balance.
- Encourage your child to use both hands to hold a book for reading at eye level. This will encourage him/her to sit upright.

Activities for the WHOLE FAMILY to practice gross motor skills:

- Set up an obstacle course in the house
- Have a potato sack race outside on the uneven ground
- Play a game of baseball on the grass
- Make a tunnel in the house, requiring your child to crawl on all fours across the carpet or wood floor
- Play “London Bridges Falling Down”
• Play a game of tag or freeze tag outside
• “Horsey rides” work well to improve sitting balance and trunk control
• Purchase a Hippity Hop Ball or Pogo Ball to work on balance
FINE MOTOR COORDINATION

Activities to ESTABLISH fine motor skills:

- Use playdoh with your child. Make people, animals, objects, etc. by rolling and manipulating the playdoh. It is also good to use “playdoh tools” which you can purchase at the dollar store.
- Animal walks help to improve arm and hand strength. The crab walk, bear walk, wheelbarrow walk, and army crawl are just a few to practice with your child!
- Fingerpainting works on finger isolation and strengthening. Crayola now makes finger paints that only paint on special crayola paper to avoid the mess!
- Use tongs or tweezers to pick up small objects such as beans or cotton balls and place them in a container.
- Use a medicine dropper to place a few drops of food coloring into water. Repeat to make several colors. Then place a coffee filter on newspaper and “drop” the new colors onto it.
- Have your child work on peeling stickers with the thumb and pointer finger and placing them in a sticker book.
- Balloon play builds strength in the arms and hands.
- Have your child play on all fours: Color a rainbow on large paper on the floor or play cars under the kitchen table where the child pushes the car with one hand.
- Set up a clothesline and have your child practice hanging doll clothes, pictures, leaves, etc. with a clothespin.

Activities for the WHOLE FAMILY to practice fine motor coordination:

- Make necklaces or bracelets by stringing beads or edible items such as cheerios and fruit loops.
- Play wrestle: pushing game where two people lock hands facing each other and try to see who can push and make the other person step back first. Use other body parts also, but make sure to have rules (no hitting, biting, scratching).
- Play cards game and have your child shuffle, deal, & hold cards.
• Bake! Making cookies requires a child to roll dough, form small balls of dough, or sprinkle salt or sugar on the dough using the tips of your thumb and pointer finger.
• Water play: Use a squirt bottle with or without a lever to water plants or have a water fight.
• Have your child help you place window clings on the windows for holidays. This works on finger strength. You can also work on arm strength by reaching to all areas of the window to place the clings.
• The following are commercial games that work on fine motor skills:
  Tinkertoys  Hi Ho Cheerio  Jenga
  Legos  Ants in the Pants  Operation
  Dominos  Perfection  Card games
  Jacks  Marbles  Etch A Sketch
  Pick Up Stix  Connect Four  Lite Brite
SENSORY MOTOR SKILLS

Activities to ESTABLISH sensory motor skills:

- Swinging in a net swing or tire swing can be organizing to a child’s system that has difficulty processing sensory input.
- To stimulate the sense of smell, light scented candles in various rooms of the house.
- You can purchase a large exercise ball at Walmart or Target. Have your child sit on the ball and bounce as you supervise. You can also have your child lie on his/her stomach and roll forward and backward on the ball.
- Scooter boards and sit n’ spines are good tools for establishing sensory motor skills.
- To stimulate the sensation of taste, your child may benefit from eating crunchy foods such as pretzels or Cheetos. It is also good to trial different food textures and tastes, such as spicy, salty, sour, and sweet. To desensitize the mouth, try chewy foods such as Twizzlers or gum.
- Deep pressure hugs are good to provide your child several times a day.
- Blowing bubbles is a fun sensory motor activity.
- Provide several different sensory modalities for your child to complete writing activities. Examples are: chalk, magic markers, felt pens, vibrating pens, writing in salt or sand on a cookie sheet, forming letters in playdoh or putty.

Activities for the WHOLE FAMILY to practice sensory motor skills:

- Dance with your child. Turn up the music and dance around the room!
- Use sidewalk chalk outside to draw objects, form letters or numbers, make a hop scotch game, etc.
- Have scheduled or spontaneous “pillow fights” with your child. If you child has difficulty with processing proprioceptive input, he/she may crave this activity and ask to do it more often!
- Go outside and garden with your child. Digging holes in the dirt and patting the dirt down provide excellent sensory input to your child.
• “Hot Dog Roll” with your child. Roll your child up in a regular or weighted blanket. You then apply “condiments” such as ketchup, mustard, relish, etc. by patting down the blanket and rubbing the blanket.
BILATERAL INTEGRATION

Activities to ESTABLISH bilateral integration skills:

- Use a rolling pin to roll out playdoh or clay. You can also encourage your child to make a playdoh “snake” using both hands to roll the snake.
- Practice cutting with a scissors. Have your child hold the paper with one hand and cut with the other hand. You can cut non-paper items such as playdoh, straws, etc.
- Complete coloring activities with your child using non-dominant hand to stabilize the paper while coloring with the dominant hand.
- Tear paper to make a collage.
- Clap hands together to a song or rhythm.
- Finger painting is a good activity to encourage your child to scribble freely, using both hands at the same time to make lines and circles.
- Encourage your child to complete occupations such as buttoning a shirt or pants and zipping a coat as independently as possible to practice bilateral hand use.
- Encourage and assist your child to open and close jars and containers using both hands. This can be incorporated into mealtime or bathtime.

Activities for the WHOLE FAMILY to use bilateral skills:

- Play ball games, such as basketball and football, which require the use of both hands to catch and throw the ball.
- Play in the sandbox. Use both hands with sand toys, to fill up pails and draw objects in sand.
OCULAR MOTOR CONTROL

Activities to ESTABLISH ocular motor control in children:
• Work with your child on coloring pictures within the lines.
• Mazes are a wonderful activity to develop these skills. You can use a cookie sheet with sand, salt, or shaving cream in it. Have your child run his/her finger through a maze of popsicle sticks or drive a car through a road.
• Have your child work on tracing over shapes or lines with his/her finger. You can then progress to using a crayon or pencil.
• Work on cutting on lines with scissors. Use very wide lines initially and progress to narrow lines.
• Finger paints and paint by number pictures.
• Place magnetic letters and numbers on the refrigerator in a line.

Activities for the WHOLE FAMILY to practice ocular motor skills:
• Games that work on these skills include:
  Lite Brite       Pick-Up Sticks
  Jacks            Puzzles
  Bowling          Frisbee
• Take your child outside in the sandbox. Have your child use his/her finger to make roads and drive cars or trucks through the road, staying on the road.
• Have your child help you clip coupons, encouraging him/her to cut along the outside of the coupon.
CROSSING THE MIDLINE

Activities to ESTABLISH crossing the midline in children:

- Make a rainbow on a large piece of paper. Place the paper directly in front of your child and encourage him/her to reach across the body to start the rainbow. You can also do this to draw mazes or any picture on a large sheet of paper.
- Play a card game and position all cards slightly to the right or left side of your child. Tell your child that the rule is you have to use the opposite hand to pick up a card or the card will not count.
- Play Twister. This game will require your child to reach across midline to touch the right color.
- Always encourage your child to be as independent as possible with dressing. Your child has to cross the midline to complete several dressing tasks, such as putting on a jacket, buttoning a long-sleeved shirt, and putting a belt through the pant loops.

Activities for the WHOLE FAMILY to practice crossing the midline:

- Go to the playground. Look for a steering wheel for children to pretend they are driving. Have your child place both hands on the wheel and turn it in both directions.
- Play wrestle with your child by interlocking your hands with your child’s hands. Purposely bring opposite arms to the left and right to cross midline.
- Play sports such as tennis, baseball, and golf. These require your child to cross midline to swing the racquet, bat, or club.
References


APPENDIX B:

TEACHERS

INFORMATION
A Teacher GUIDE: MOTOR SKILLS TRAINING FOR ALL KINDERGARTEN STUDENTS

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Sarah Neall, OTR/L

Advisor:
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WHY WORK ON MOTOR SKILLS?

Kindergarten age children are asked to perform high-level tasks in the classroom everyday and acquire academic skills at a fast pace. Not all children develop motor skills at the same rate and there is a variance in physical maturity levels among children. Children who have not developed the motor skills necessary to complete tasks required of them in the classroom may experience frustration and failure in everyday school occupations.

Therefore, it is important to identify children who are at risk for difficulty in one or more areas of motor skills at an early age. This may prevent motor issues in the future. Children in kindergarten are still developing critical motor skills that will be used for tasks later in life. They need to be provided with lots of opportunities throughout the day in the school and home environments to work on motor skills in a fun, creative way.
DEVELOPMENTAL PROGRESSION OF MOTOR SKILLS

There is a progression to the development of motor skills. The following motor skills lay the foundation for a child to complete occupations in the classroom on a daily basis. These skills will be described in more detail later in the manual.

- Gross motor skills
- Fine motor skills
- Sensory motor skills
- Bilateral integration
- Ocular motor control
- Crossing the midline

The six skills named are the foundation for higher level learning in the classroom and the ability to perform critical occupations during a school day. The following are examples of occupations that children are able to complete when all of these motor skills are developed.

- Handwriting is a major occupation of the school age child.

It is an essential part of a large number of school related
activities. All of these foundation skills need to be
developed to provide a base for learning handwriting skills.

- Copying from the chalk or white board. This is an
occupation that is a complex handwriting skill. It requires
the integration of all of the foundation skills to be
successful at copying. This occupation is completed
throughout the school years and becomes more difficult,
with more material, as a child gets older.

- Putting manipulatives together. Children use many
different manipulatives in your classroom for math or
reading assignments. Examples are C-rods and interlocking
blocks. Children need ocular motor control, bilateral
integration, and fine motor control to work with a large
number of manipulatives in the classroom.

- Activities of daily living (ADLs), such as handwashing,
putting on and taking off a coat, opening containers, eating
lunch, and toileting are occupations that a child must
complete every day at school. Without the underlying
foundational motor skills, children may not be independent
in one or more of these occupations. It is difficult for teachers to find time to work with children one to one for ADL activities.

- Scissors skills are an important part of school activities. It takes good ocular motor control to follow the pattern, fine motor control to manipulate the scissors, bilateral integration to hold the paper and cut, and the ability to cross the midline to cut all parts of the paper.

- Circle time is an important start to the day for several kindergarten students. It requires all of the foundational motor skills to sit in the circle, participate in sensory motor activities, clap to music or words, answer questions, and participate in any other activities during circle time.

- Participation in gym activities and playing at recess or during free time are important occupations for a kindergarten student. All of the motor skills need to be developed to allow a child to fully participate in all of these activities with their peers.
VALUE OF A SCREENING TOOL

A screening tool is provided in this manual as a way for you as a teacher to look at how children in your class perform certain motor activities. You get to know the children well and spend a large amount of time with each child. This gives you the ability to answer the questions with a large amount of accuracy.

If a child in your class scores in the area of concern with this tool, it does not mean that the child has a disability or that the child will have problems with motor skill activities in the classroom. This tool should simply be used as a quick screen to determine if some intervention may potentially be necessary for a child.

You have the power to refer a child to the learning support team in the school if you are concerned with any area of development. Contact the learning support team specialist in your school for the appropriate forms to fill out. Early intervention is very beneficial to a child if it is determined that a child needs some help developing motor skills. The earlier
problem area is recognized, the better the outcome of intervention will be for a child.

A resource list is included in the manual after the screening tool to help you decide who you need to talk to if you are concerned with the development of a child in your classroom.
Quick Motor Skills Screening Tool for the “K” Child

Name: ____________________________  Sex: M   F

Date of Birth: ____________________________  Age: __________

Teacher: ____________________________  School: __________

Answer the following questions by checking the box for “yes” or “no”. There is a space for comments at the end of the form.

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Runs 10 ft. without falling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Walks forward 2 or more steps on a line on the floor, alternating feet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Hops forward on one foot without support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Stands on one leg for 3 seconds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Stacks 8 cubes vertically after a demonstration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Folds a sheet of paper in half after a demonstration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Holds paper with one hand while drawing or writing with the other hand.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Strings 4 medium sized beads on a string</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Takes coat on and off without assistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Imitates a vertical and horizontal line on paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Copies a circle on paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Draws a person with distinguishable body features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Washes and dries hands without assistance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
14. Holds a crayon or pencil with thumb and first two digits
15. Cuts along a straight line by holding the scissors in one hand and paper in the other hand

Comments: ___________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

*If you have answered “No” to more than 4 questions on this form, talk to the child’s parents about your concerns. Determine if they have similar concerns with motor skills. Consult an occupational therapist to provide more information on motor development in kindergarten students. You can also talk to the learning support specialist in your school about referrals to the learning support team.

*Adapted from: Battelle Developmental Inventory 2nd Edition: Screening Record Form. (2005).
RESOURCES FOR TEACHERS

If you feel a child in your class is at risk for difficulty with motor skills, you can contact the following people in the school building:

1. **Occupational Therapist (OT):** A certified occupational therapist is available within the school system to work with children who receive special education services and have an Individualized Education Plan (IEP) or a 504 plan. Occupational therapists also participate in the prereferral process and can provide you with ideas to help children in your class succeed in a particular motor skill or occupation. Occupational therapists work with children to develop the necessary developmental skills to participate in all occupations required of them during a school day. OT’s are trained to take into account the child, the environment, and the occupation to be completed. Consult with your school OT if you have questions on completion of any activities provided in this manual.

2. **The school counselor or learning support team specialist:** Many schools have a committee that includes these two individuals to address concerns regarding performance in the classroom. They may set up a meeting with members of the committee, the teacher, and the parents to determine if a child needs help in any way for him/her to be successful in school.
BACKGROUND INFORMATION ON MOTOR SKILLS DEVELOPMENT
In order for children to complete tasks in the classroom and home environments, certain motor skills must be present and developed. The motor part of development in a child refers to the quality of movements.

The following is a list of motor skills that need to be developed in a kindergarten age student in order for him/her to be able to complete classroom tasks:

- **Gross motor coordination**: This refers to the ability of the body to be stable with its surroundings. The head and neck are where stability begins and then the shoulders, back, arms, and legs develop stability. For example, a child should be able to sit upright in a chair in the classroom for an extended period of time without fatiguing or falling to the right or left side. A child should also be able to hold his/her neck upright to look at the chalkboard without fatiguing. It is important for a child to be able to walk and run while maintaining balance to be able to navigate the classroom and halls of the school.

- **Fine motor coordination**: This involves movements of the hands and fingers. It relates directly to using writing tools in the classroom and home. By the age of 2, children should demonstrate the ability to grasp objects, scribble with a crayon, tower blocks, and turn the pages of a book, release objects into a container, and fit puzzle pieces together. Children progress developmentally through a series of grasp patterns. A dynamic tripod grasp is the most efficient grasp but children may use a variation of this grasp. Refer to appendix C for pictures of mature and immature grasp patterns you may see children use in your classroom. By kindergarten, children should be demonstrating steadiness and control with holding and releasing objects such as crayons.

- **Sensory motor skills**: These skills are required for our brain to organize input from all of our senses at the same time and come up with a response to the environment. The sensory system includes sight, hearing, touch, taste, and smell. There are two other sensations that are not as
well known but are necessary for our survival. They are the vestibular sense and the proprioceptive sense. The vestibular sense is the knowing where our head is in relation to gravity and movement. The proprioceptive sense is our awareness of where our muscles and joints are in space. It is important for our brain to be able to organize all of the sensory information we get from the environment so that we can function in the world.

- **Bilateral integration:** This is our ability to use both sides of our body to complete an activity. By the age of 2, children should be able to use both hands cooperatively. This is important for school tasks such as cutting, coloring, and buttoning a coat.

- **Laterality:** This refers to kindergarten students using either the right or left hand for tasks such as writing or eating. Most children develop this skill by 3-4 years of age.

- **Ocular motor control:** This is the ability of the eyes to work together to hold an object in the line of vision. It involves visual attention, which is concentrating and keeping the eyes focused on a job. Eye-hand coordination also falls under this category and involves the accuracy in placement, direction, and awareness of where you are in space. The eyes and hands develop skills separately and begin to work together as a child plays and participates in tasks at school and home. In order to complete classroom tasks, a child needs to know where his/her body is (proprioception), the distance between his/her hand and an object, and how to grasp the object.

- **Crossing the midline:** This is the ability to move your arms, legs, and eyes across the midline of your body to complete an activity on the opposite side of your body. For example, children need to cross midline to put on a jacket or button a long sleeve shirt.
CHILDREN’S OCCUPATIONS
The motor skills discussed lay the foundation for children to complete activities called occupations in the classroom environment. Occupations are defined as, “Activities of everyday life, named, organized, and given value and meaning to individuals and a culture.” (AOTA, 2002). Occupations may also be called “tasks”. The children in your classroom are expected to complete several occupations during a typical school day.

The following are examples of occupations children in your class may need the foundational motor skills to complete during a typical school day:

- Paper and pencil tasks
- Manipulatives
- Hand-washing
- Toileting
- Putting on and taking off a coat, hat, gloves
- Opening containers
- Eating lunch
- Cutting
- Play Dough tasks
- Lego’s
- Puzzles
- Finger Plays
- Blocks
- Coloring
- Painting
- Playing at recess
- Walking in the hallway to the cafeteria
- Circle time tasks
- Participation in gym class
- Participation in art and music class
CLASSROOM ACTIVITIES TO SUPPORT THE AREAS OF MOTOR SKILL DEVELOPMENT
This section of the manual will provide activities you can use in your classroom to support the areas of motor skills development. These are activities that can be incorporated into your daily routine with all of the children in your class. These activities will help to further development in children in each specific motor area discussed.

There are important things to remember when working on motor skill activities with children. Research has shown that for a child to learn the most during an activity, it is important to keep verbal feedback from you to a minimum. The more a child has to problem solve on his/her own, the more motor skills information he/she will retain after the activity is completed. Let children make mistakes during an activity and attempt to complete the activity as independently as possible. However, it is okay to provide some feedback and reassurance if a child becomes frustrated.
Research was also completed to determine if it is better for children to learn and practice a motor skill at random or during a scheduled block of time during the day. The results showed that with random practice, children are forced to re-solve motor problems and cannot rely simply on rote memory for completion of an activity.

The activities provided are designed to be used with the whole class whenever there is free time during the day. This can be chosen randomly, such as free play time or recess time.
GROSS MOTOR COORDINATION

Classroom activities to SUPPORT gross motor skills:

- Turn on music and have the children stand up to complete actions, such as clapping hands, stomping feet, and marching in place.
- Encourage children in your class to swing on the playground. This is an excellent way to work on these skills.
- Place toys on shelves that are high and require the class to reach above their heads to get them.
- Recite the alphabet with your class while marching in place.
- Throw a small beanbag to the child you call on to answer a question. He/She then has to throw it back to you.
- Take the children outside for recess as much as possible to use their gross motor skills.
- Ask children to sit cross-legged ("criss, cross, applesauce") during floor activities. This is easier for a child who cannot maintain an upright posture.
- Play musical chairs.
- Have a relay race outside.
- Make an obstacle course in the classroom.
- Play Simon Says. Ask children to complete activities such as, "stand on one foot, jump up and down, touch your toes, turn around, etc."
- Have a scooter board race in the gym.
- Turn on the music and form a "conga" line around the room.
FINE MOTOR COORDINATION

Classroom activities to SUPPORT fine motor skills:

- Use playdoh for classroom activities. Form shapes, animals, letters, with it.
- Encourage the children to play with legos during free time.
- Complete stacking activities. Have children take turns stacking napkins, plates, cups during lunch or snack time.
- Fingerpainting is a good way to work on finger isolation and strengthening.
- Work on scissors skills by cutting objects other than paper, such as playdoh and straws.
- Have a “pencil Olympics”. Ask the children to walk the pencil up and down their fingers and twirl it in their hands.
- Use small, golf pencils to work on good finger placement on the pencil.
- Encourage your students to open their own containers at lunchtime. This may include milk cartons, cracker packages, etc.
- Have a bulletin board in the classroom for children to help hang their work they complete.
- Provide Zip-lock bags for children to store their crayons. They can practice sealing and opening the bag daily to use their crayons.
- Incorporate finger plays or puppet plays into circle time activities.
- Make bracelets with the class by stringing edible items such as cheerios and fruit loops. Let the children put them on and eat them!
- Do a class baking activity. Make cookies and have the children take turns using a rolling pin to roll the dough. Let the children form small balls of dough with their hands or sprinkle sugar or salt on the dough using the tips of their thumbs and pointer finger.
- Play a Friday Bingo game. This will let children have fun while working on fine motor skills by manipulating the small game pieces. An added bonus is teaching letters and numbers!
- There are several commercial games that you can keep in your classroom to work on fine motor skills:

<table>
<thead>
<tr>
<th>Game</th>
<th>Game</th>
<th>Game</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tinkertoys</td>
<td>Hi Ho Cheerio</td>
<td>Jenga</td>
</tr>
<tr>
<td>Legos</td>
<td>Ants in the Pants</td>
<td>Operation</td>
</tr>
<tr>
<td>Dominos</td>
<td>Perfection</td>
<td>Card games</td>
</tr>
<tr>
<td>Jacks</td>
<td>Marbles</td>
<td>Etch A Sketch</td>
</tr>
<tr>
<td>Pick Up Stix</td>
<td>Connect Four</td>
<td>Lite Brite</td>
</tr>
</tbody>
</table>
SENSORY MOTOR SKILLS

Classroom activities to SUPPORT sensory motor skills:

- Use scooter boards and sit-n-spins in the gym
- Have children “march” from one activity to the next. The body motion and input to the feet can be organizing to the sensory system.
- Have children “hold the walls up” or “push the walls down” while waiting in line at the bathroom. You can also have the children push the walls in the morning, stating, “The room feels small today. Can you all help me make it bigger?”
- Use different sensory modalities for children to learn writing skills. Examples include: chalk, magic markers, felt pens, vibrating pens, writing in sand or salt on a cookie sheet, writing in shaving cream on the table or on a mirror, forming letters in playdoh or putty, and putting paint in a Ziploc bag and forming letters on the outside of the bag.
- Certain smells can be alerting or calming to children. Use air fresheners or plug ins to explore the sensation of smell with children. Alerting: pine, citrus, & peppermint. Calming: vanilla, banana, & coconut.
- Mouth tools are sensory tools that can help the body work better and pay attention. The following are popular mouth tools:
  - Crunchy (pretzels & cheetos)
  - Chewy (twizzlers)
  - Sucking (water bottles)
  - Biting (apple or carrots)
  - Spicy (cinnamon or salsa)
  - Salty (popcorn)
  - Blowing (through a straw)
  - Sweet (candy or dried fruit)
  - Sour (sour candy or a pickle)
  - Licking (lollipop)
- Take “movement breaks” to stand and stretch between class activities, especially if children are sitting for a long period of time.
- Have children take turns completing “heavy work jobs” in the classroom. For example, handing out books, stacking chairs, wiping off the chalk or white board, sweeping or vacuuming).
- Have “wheelbarrow walk” races in the gym or on the grass.
- Use sidewalk chalk to draw objects, write letters, make a hopscotch game, etc.
- Take children outside on the playground to use the swings, seesaw, and slides.
• Have water relay games outside. Each child takes a turn filling and carrying a small bucket of water a short distance to empty it into a larger bucket. The first team done wins!

• Fill up big toy trucks with heavy blocks. Have children push them with both hands to knock down bowling pins.

• Play “The Popcorn Game”. Have children sit in a chair with their feet on the floor. Put their hands on the chair at their sides. Now tell them to slowly bounce up and down like a piece of popcorn waiting to pop. Have them use their hands and feet to help push them up and down and go faster and faster as the popcorn begins to pop. When it is almost popped, start to slow down and then stop. “The popcorn is ready!” You can also put popcorn in a popcorn maker and start it when the children start the activity. You can then enjoy it!
BILATERAL INTEGRATION

Classroom activities to SUPPORT bilateral integration skills:

• Use a rolling pin to roll out playdoh or clay. You can also have the children make a playdoh “snake” using both hands to roll out the snake.
• Tear tissue paper to make an art project or tear magazine pages to make a collage.
• Clap hands together to circle time songs or to cheer for a classmate who gets the right answer!
• Finger painting encourages children to scribble freely and use both hands at the same time to make lines and circles.
• Practice cutting with scissors. Have the children hold the paper with one hand and cut with the other hand. You can also cut non-paper items such as playdoh or straws.
• Have the children open their own containers at lunch and snack time.
• Encourage children to be as independent as possible with putting their coats on and zipping or buttoning them.
• Provide toys and games that require the use of both hands. Good examples are: construction kits, magnet activities, large balls to play catch, Tinkertoys, jack-in-the-box, wind up toys, dolls or stuffed animals to practice dressing skills.
• Sing songs and complete actions for Itsy-Bitsy-Spider and The Wheels on the Bus.
• Have a classroom band with musical instruments. Play the maracas, cymbals, drums, cans or water bottles filled with beans or rice.
• Fill a box with sand or use a sand table. Have children use both hands with sand toys, to fill containers, or draw in the sand.
• Play basketball. Dribbling and shooting encourage children to use both hands on the ball.
• Have children use water toys. Water bottles need to be opened, filled, closed, and squeezed to squirt water at targets.
OCULAR MOTOR CONTROL

Classroom activities to SUPPORT ocular motor control:

- Have children work on coloring pictures within the lines.
- Mazes are a wonderful activity to develop these skills. You can use a cookie sheet with sand, salt, or shaving cream in it. Have children run their finger through a maze of popsicle sticks or drive a car through a road.
- Have children work on tracing over shapes or lines with their finger.
- Work on cutting on lines with scissors. Use very wide lines initially and progress to narrow lines.
- Finger paints and paint by number pictures.
- Games that you can have in your classroom to work on these skills include:
  - Lite Brite
  - Pick-Up Sticks
  - Jacks
  - Puzzles
- Glue two craft sticks on paper. Have children cut between them. You can also glue two pieces of yarn or string on the paper and have them cut between them.
- Have the children help use a hold punch to make holes in a straight line across strips of paper. Then have the child cut through the holes.
- Dot-to-Dot activities are good for supporting these skills.
- Have a bean bag toss game. Have children throw the beanbags at targets or through holes in a board.
- Use a paintbrush with water and “paint” on the chalkboard.
CROSSING THE MIDLINE

Classroom activities to SUPPORT crossing the midline:

• Make a rainbow on a large piece of paper. Place the paper directly in front of the children and encourage them to reach across the body to start the rainbow. You can also do this to draw mazes or any picture on a large sheet of paper.
• Have children practice drawing large “8’s” and crosses (+) on the chalkboard or at their desk.
• Take the children out to the playground. Encourage them to complete activities such as driving a steering wheel. This requires children to place both hands on the wheel and turn it in both directions. Pretend they are driving you to the store!
• Play games in gym such as tennis, baseball, and golf. These games require children to cross midline by swinging the racquet, bat, or club.
• Have children stand in front of a large cross on the chalkboard. Ask them to first trace the cross with chalk with their dominant hand. You can also have the children draw circles or make “X’s” in each section formed by the cross.
• Play card games with the children. Position the cards slightly to the non-dominant side of the child. (If the child is right handed, place the cards on the left side). Tell the children that the rules are you can only use your dominant hand to pick up a card or it does not count.
References


APPENDIX C:

TEACHERS' WORKSHOP INFORMATION
A TEACHER GUIDE: MOTOR SKILLS TRAINING FOR ALL KINDERGARTEN STUDENTS

This workshop is designed to educate participants about the developmental progression of motor skills in young children and activities to support the development of motor skills in the classroom. Participants in this workshop will gain knowledge and insight into the use of the manual, “A Teacher Guide: Motor Skills Training For All Kindergarten Students”. Learning tasks will be utilized to encourage active participation of the participants in the workshop and any concerns from participants will be addressed throughout the workshop tasks. This is a two hour workshop designed as an afternoon session on a teacher workday during the first week teachers are back to school after summer break.

Who should attend?

• General education kindergarten teachers
• Special education kindergarten teachers
• Teaching assistants in the kindergarten classrooms

Learning objectives:

Upon successful completion of this workshop:

1. Learner will be able to independently name six motor skills that are foundational skills for kindergarten activities.
2. Learner will be able to name five occupations that a kindergarten student completes during a typical school day.
3. Learner will be able to identify one time during the school day when motor skills activities can be incorporated into the schedule.
4. Learner will be able to pick one occupation and name the motor skills needed to compete the occupation.
AGENDA

1:00-1:15  **Learning Task 1:** Welcome Address (Review of Workshop Objectives)

1:15-1:30  **Learning Task 2:** Warm-Up (Occupation Discussion)

1:30-2:10  **Learning Task 3:** Motor Skills Defined (Defining the 6 motor skills areas)

2:10-2:50  **Learning Task 4:** Putting Activities to Use (Hands-on application of learning)

2:50-3:00  **Learning Task 5:** Wrap it Up (Questions/Concerns)
Learning Tasks

Learning Task 1: Welcome Address (Review of Workshop Objectives)
   Task 1A: Listen to the learning objectives for this workshop.
   Task 1B: Look at the agenda of 5 learning tasks. What are your questions?

Learning Task 2: Warm-Up (Occupation Discussion)
   Task 2A: Draw a picture of a person on the piece of paper in front of you.
   Task 2B: In pairs, discuss what motor skills you feel are needed to complete this occupation. Write the motor skills on a post-it note and place it on the board under the title, "Motor skills for occupations". We will listen to all of the ideas.

Learning Task 3: Motor Skills Defined (Defining the 6 motor skills areas)
   Task 3A: Examine the 12 cards you have in front of you on the table. These cards name the six motor areas you will learn about in this course and their definitions. Match each motor area to the definition you think describes it.
   Task 3B: Compare your definitions to the person next to you. Identify any differences.
   Task 3C: Listen to the definitions of the motor skill areas that you will learn about in this workshop. What are your questions about the motor skill areas?

Learning Task 4: Putting Activities to Use (Hands-on application of learning)
   Task 4A: In pairs, choose one activity from the sheet in front of you and complete it.
   Task 4B: Write down on an index card, "What is the value of completing this activity with children in the classroom?" Share with the group the activity and the value of completing it.
   Task 4C: As a group, brainstorm times during a teaching day where motor skills activities would fit. We will write them on the dry erase board.

Learning Task 5: Wrap it Up (Questions/Concerns)
   Task 5A: We have discussed 6 motor skill areas and activities to complete with Kindergarten children in the classroom to address these areas. You have completed hands-on application of these activities. What are your questions?
<table>
<thead>
<tr>
<th>Skill</th>
<th>Description</th>
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<tbody>
<tr>
<td>Gross Motor Skills</td>
<td>This refers to the ability of the body to be stable with its surroundings. The head and neck are where stability begins and then the shoulders, back, arms, and legs develop stability.</td>
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<tr>
<td>Fine Motor Skills</td>
<td>This involves movements of the hands and fingers. These skills relate directly to using writing tools in the classroom.</td>
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<tr>
<td>Sensory Motor Skills</td>
<td>These skills are required for our brain to organize input from all of our senses at the same time and come up with a response to the environment.</td>
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<tr>
<td>Bilateral Integration</td>
<td>This is our ability to use both sides of our body to complete an activity. Most children can use both hands cooperatively by the age of 2.</td>
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<tr>
<td><strong>Ocular Motor Skills</strong></td>
<td>This is the ability of the eyes to work together to hold an object in the line of vision. It involves visual attention and eye-hand coordination.</td>
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<tr>
<td><strong>Crossing the Midline</strong></td>
<td>This is the ability to move your arms, legs, and eyes across the middle of your body to complete an activity on the opposite side of your body.</td>
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</table>
Classroom activities to SUPPORT gross motor skills:

- Turn on music and have the children stand up to complete actions, such as clapping hands, stomping feet, and marching in place.
- Encourage children in your class to swing on the playground. This is an excellent way to work on these skills.
- Place toys on shelves that are high and require the class to reach above their heads to get them.
- Recite the alphabet with your class while marching in place.
- Throw a small beanbag to the child you call on to answer a question. He/She then has to throw it back to you.
- Take the children outside for recess as much as possible to use their gross motor skills.
- Ask children to sit cross-legged ("criss, cross, applesauce") during floor activities. This is easier for a child who cannot maintain an upright posture.
- Play musical chairs
- Have a relay race outside
- Make an obstacle course in the classroom
- Play Simon Says. Ask children to complete activities such as, "stand on one foot, jump up and down, touch your toes, turn around, etc."
- Have a scooter board race in the gym
- Turn on the music and form a "conga" line around the room
Classroom activities to SUPPORT fine motor skills:

- Use playdoh for classroom activities. Form shapes, animals, letters, with it.
- Encourage the children to play with legos during free time.
- Complete stacking activities. Have children take turns stacking napkins, plates, cups during lunch or snack time.
- Fingerpainting is a good way to work on finger isolation and strengthening.
- Work on scissors skills by cutting objects other than paper, such as playdoh and straws.
- Have a “pencil Olympics”. Ask the children to walk the pencil up and down their fingers and twirl it in their hands.
- Use small, golf pencils to work on good finger placement on the pencil.
- Encourage your students to open their own containers at lunchtime. This may include milk cartons, cracker packages, etc.
- Have a bulletin board in the classroom for children to help hang their work they complete.
- Provide Zip-lock bags for children to store their crayons. They can practice sealing and opening the bag daily to use their crayons.
- Incorporate finger plays or puppet plays into circle time activities.
- Make bracelets with the class by stringing edible items such as cheerios and fruit loops. Let the children put them on and eat them!
- Do a class baking activity. Make cookies and have the children take turns using a rolling pin to roll the dough. Let the children form small balls of dough with their hands or sprinkle sugar or salt on the dough using the tips of their thumbs and pointer finger.
- Play a Friday Bingo game. This will let children have fun while working on fine motor skills by manipulating the small game pieces. An added bonus is teaching letters and numbers!
Classroom activities to SUPPORT sensory motor skills:

- Use scooter boards and sit-n-spins in the gym
- Have children "march" from one activity to the next. The body motion and input to the feet can be organizing to the sensory system.
- Have children "hold the walls up" or "push the walls down" while waiting in line at the bathroom. You can also have the children push the walls in the morning, stating, "The room feels small today. Can you all help me make it bigger?"
- Use different sensory modalities for children to learn writing skills. Examples include: chalk, magic markers, felt pens, vibrating pens, writing in sand or salt on a cookie sheet, writing in shaving cream on the table or on a mirror, forming letters in playdoh or putty, and putting paint in a Ziploc bag and forming letters on the outside of the bag.
- Certain smells can be alerting or calming to children. Use air fresheners or plug ins to explore the sensation of smell with children. **Alerting:** pine, citrus, & peppermint. **Calming:** vanilla, banana, & coconut.
- Mouth tools are sensory tools that can help the body work better and pay attention. The following are popular mouth tools:
  - **Crunchy** (pretzels & cheetos)  **Salty** (popcorn)
  - **Chewy** (twizzlers)  **Blowing** (through a straw)
  - **Sucking** (water bottles)  **Sweet** (candy or dried fruit)
  - **Biting** (apple or carrots)  **Sour** (sour candy or a pickle)
  - **Spicy** (cinnamon or salsa)  **Licking** (lollipop)
- Take "movement breaks" to stand and stretch between class activities, especially if children are sitting for a long period of time.
- Have children take turns completing "heavy work jobs" in the classroom. For example, handing out books, stacking chairs, wiping off the chalk or white board, sweeping or vacuuming).
- Have "wheelbarrow walk" races in the gym or on the grass.
- Use sidewalk chalk to draw objects, write letters, make a hopscotch game, etc.
- Take children outside on the playground to use the swings, seesaw, and slides.
• Have water relay games outside. Each child takes a turn filling and carrying a small bucket of water a short distance to empty it into a larger bucket. The first team done wins!
• Fill up big toy trucks with heavy blocks. Have children push them with both hands to knock down bowling pins.
• Play “The Popcorn Game”. Have children sit in a chair with their feet on the floor. Put their hands on the chair at their sides. Now tell them to slowly bounce up and down like a piece of popcorn waiting to pop. Have them use their hands and feet to help push them up and down and go faster and faster as the popcorn begins to pop. When it is almost popped, start to slow down and then stop. “The popcorn is ready!” You can also put popcorn in a popcorn maker and start it when the children start the activity. You can then enjoy it!
Classroom activities to SUPPORT bilateral integration skills:

- Use a rolling pin to roll out playdoh or clay. You can also have the children make a playdoh “snake” using both hands to roll out the snake.
- Tear tissue paper to make an art project or tear magazine pages to make a collage.
- Clap hands together to circle time songs or to cheer for a classmate who gets the right answer!
- Finger painting encourages children to scribble freely and use both hands at the same time to make lines and circles.
- Practice cutting with scissors. Have the children hold the paper with one hand and cut with the other hand. You can also cut non-paper items such as playdoh or straws.
- Have the children open their own containers at lunch and snack time.
- Encourage children to be as independent as possible with putting their coats on and zipping or buttoning them.
- Provide toys and games that require the use of both hands. Good examples are: construction kits, magnet activities, large balls to play catch, Tinkertoys, jack-in-the-box, wind up toys, dolls or stuffed animals to practice dressing skills.
- Sing songs and complete actions for Itsy-Bitsy-Spider and The Wheels on the Bus.
- Have a classroom band with musical instruments. Play the maracas, cymbals, drums, cans or water bottles filled with beans or rice.
- Fill a box with sand or use a sand table. Have children use both hands with sand toys, to fill containers, or draw in the sand.
- Play basketball. Dribbling and shooting encourage children to use both hands on the ball.
- Have children use water toys. Water bottles need to be opened, filled, closed, and squeezed to squirt water at targets.
Classroom activities to SUPPORT ocular motor control:

- Have children work on coloring pictures within the lines.
- Mazes are a wonderful activity to develop these skills. You can use a cookie sheet with sand, salt, or shaving cream in it. Have children run their finger through a maze of popsicle sticks or drive a car through a road.
- Have children work on tracing over shapes or lines with their finger.
- Work on cutting on lines with scissors. Use very wide lines initially and progress to narrow lines.
- Finger paints and paint by number pictures.
- Games that you can have in your classroom to work on these skills include:
  - Lite Brite
  - Pick-Up Sticks
  - Jacks
  - Puzzles
- Glue two craft sticks on paper. Have children cut between them. You can also glue two pieces of yarn or string on the paper and have them cut between them.
- Have the children help use a hold punch to make holes in a straight line across strips of paper. Then have the child cut through the holes.
- Dot-to-Dot activities are good for supporting these skills.
- Have a bean bag toss game. Have children throw the beanbags at targets or through holes in a board.
- Use a paintbrush with water and “paint” on the chalkboard.
Classroom activities to SUPPORT crossing the midline:

- Make a rainbow on a large piece of paper. Place the paper directly in front of the children and encourage them to reach across the body to start the rainbow. You can also do this to draw mazes or any picture on a large sheet of paper.
- Have children practice drawing large "8's" and crosses (+) on the chalkboard or at their desk.
- Take the children out to the playground. Encourage them to complete activities such as driving a steering wheel. This requires children to place both hands on the wheel and turn it in both directions. Pretend they are driving you to the store!
- Play games in gym such as tennis, baseball, and golf. These games require children to cross midline by swinging the racquet, bat, or club.
- Have children stand in front of a large cross on the chalkboard. Ask them to first trace the cross with chalk with their dominant hand. You can also have the children draw circles or make "X's" in each section formed by the cross.
- Play card games with the children. Position the cards slightly to the non-dominant side of the child. (If the child is right handed, place the cards on the left side). Tell the children that the rules are you can only use your dominant hand to pick up a card or it does not count.
References


CHAPTER V

SUMMARY

In conclusion, A Parent Guide: Motor Skills Training for All Kindergarten Students & A Teacher Guide: Motor Skills Training for All Kindergarten Students are designed to be used by parents and teachers of kindergarten age students to assist with the development of motor skills for everyday occupations. This manual is designed to educate both parents and teachers on background information of motor skill development, the definition of occupations children complete during a school day, and resources for motor skills concerns. It also provides activities for children to complete and practice motor skills in their natural home and classroom environments.

An interdisciplinary approach to teaching motor skills was used to design this manual. Parents and teachers work as a team to improve the motor skills of kindergarten age students. Children have the opportunity to practice motor skills in two different environments, the school and home. This has the potential to improve retention of motor skills learned.

The manual provides activities that can be completed with all of the children in a kindergarten classroom. Teachers are not required to design specific instructional material for each child. The activities are designed around occupations that kindergarten children are already completing on a daily basis.

The home activities are designed to be completed with the whole family. This allows parents to spend time with the entire family, instead of finding time to provide 1:1
attention to one child. The activities are fun and creative to sustain the attention of children and can be incorporated easily into the daily routine of the home.

Some children may be at risk for difficulty in one or more areas of motor skills. This project provides a way for parents and teachers to identify children at risk early to utilize the resources provided and prevent motor issues in future grades in school.

The success of the manual is dependent on parents, teachers, and students complying and participating in the activities provided on a regular basis. There is no method at this time designed to track participation by parents or teachers in the program.

Another limitation is that the product has not been implemented and tested for effectiveness. It is a newly designed program and it is difficult to ensure that all motor skills areas are addressed in the most effective manner. It is also difficult to determine if all necessary motor skill areas are addressed.

Although this program was originally written and designed for a school system setting, it could also be used in other settings as well. This motor skills program could be incorporated into any Headstart and Preschool programs which focus on teaching and working with young children ages 3-5. Some modifications would need to be made for the expectations of preschool students in the area of fine motor skills.

This program could also be used in daycare centers which care for kindergarten age children. Daycare centers often complete activity center times in which motor activities could be incorporated into the daily schedule. An occupational therapist would need to educate the daycare staff on the use of the manual. Appendix C, Teachers’ Workshop Information, could be modified and used with the daycare staff during a scheduled in-service.
A follow-up program could be developed in which the occupational therapist would provide training sessions on the use of the manual and further information on motor skill development to parents. The manual is designed to stand alone and be used independently by parents right now, but further training may be beneficial to parents of kindergarten age students. This training has the potential to improve follow through of the use of the activities provided in the manual in the home environment.

It would be beneficial to conduct a trial of this program and design outcome measures to be used with the program. Outcome measures would assist in evaluating the effectiveness of the program and contribute to further research regarding changes needed in the program.

Further research is recommended to determine the effectiveness of the product for kindergarten age students. Another benefit of conducting research is to determine the strengths and weaknesses of the product to determine if any changes should be made to improve the effectiveness of the manual.
References


