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Munir Shivji

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The Effects of Movement Interventions on Focus and Concentration in Toddler Montessori Classrooms

An Action Research Report
By Munir Shivji
The Effects of Movement Interventions on Focus and Concentration in Toddler Montessori Classrooms

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Munir Shivji
Saint Catherine University
St. Paul, Minnesota
Abstract

The purpose of this action research was to determine the effects of movement activities on focus and concentration in toddler Montessori classrooms. Evidence supports the connection between purposeful movement and levels of concentration. Both quantitative and qualitative data of three toddler-aged classes was collected through the use of a pre and post questionnaires, checklists and observational record keeping. The intervention took place over a period of six weeks at an independent school setting with 24 students ages 21 months to 3 years. The results showed the students focus and concentration levels increased during the Montessori uninterrupted morning work cycle when intentional movement lessons or activities were introduced. Based on the data, there is a correlation between movement intervention activities and concentration levels. Additional research should be conducted over an extended period of time to better study the effects of movement on focus, concentration, and behavior in the classroom.
When I started directing an early childhood Montessori program in a Northeast, New England state, not-for-profit independent Montessori school, I spent a great deal of time observing the three established toddler classrooms. My goal was to understand the toddler program curriculum in place and recognize student engagement. Essential goals in early childhood Montessori classrooms are for students to develop independence and concentration, therefore Montessori educators provide students with long periods of uninterrupted work time to explore, concentrate and discover.

Through my observations, I noticed the classrooms lacked what Dr. Montessori termed normalization. Normalization is a unique process that takes place in a child’s development. When children are allowed to have freedom within a carefully prepared environment, they blossom. Dr. Montessori’s definition of normalization is the description of self-regulation. Self-regulation is a child’s ability to take the steps to meet a goal, control their emotions, plan strategies, monitor progress, persist in tasks, and self-correct errors. The prepared environment guides children to reach normalization by supporting the development of concentration, allowing children to move and work with constant effort, bringing order to the mind, respecting each other and the environment, fostering peace and achieving internal contentment with work.

In order for a child to be free to move into normalization, the environment must cater to a child’s sensitive periods for growth and learning. According to Dr. Montessori, sensitive periods are essential times during early human development when a child is naturally ready and receptive to acquire a specific skill, concept or ability – such as a sense of order, language or movement – and is therefore particularly sensitive to stimuli in the environment that promote the development of that particular skill or concept. Modern research calls this critical periods or windows of opportunity for learning. Through my observations, I noticed students were not easily able to
concentrate on work or complete a work-cycle, transition to a large-group circle time or change an activity, without adult intervention. Concentration during the uninterrupted work cycle is defined as choosing work, staying focused to complete the work, achieving some internal satisfaction, and restoring the work or activity followed by selection of the next lesson or activity throughout the work period. Montessori educators call all of the children’s purposeful activities “work”. Teachers are able to give both individual and small group lessons during this time while other students are engaged in the environment accordingly.

Distractions, noise, hunger and change in routine can all affect the Montessori classroom uninterrupted work cycle. To some extent, students cannot control these environmental factors that make it difficult to concentrate. However, Montessori educators can carefully prepare environments that foster children’s natural sensitive periods to help maintain concentration in the classroom. According to Dr. Maria Montessori’s Planes of Development theory, children in the first plane (birth-3) have sensitive periods for language, movement, and order (Lillard, 2005). If the environment is prepared to recognize these sensitive periods, the classroom could influence concentration and independence.

Children do not move enough. For children to learn, they need to be able to pay attention. To pay attention, they need to move (Strauss, 2014). During the Montessori work period, students engage in activities and movements in their prepared classroom environments. The focus is placed on the work that the students choose and complete. Each material is carefully placed on shelves, so children are free to move, explore, interact, and follow their own natural desire to discover and learn. Movement helps stimulate various parts of the brain so that a child can do the things they like while concentrating when performing the tasks. During the formative
years to around age three years, a child cannot understand or learn from their environment through listening, rather from being engaged in movements (Crain, 2015).

The toddler classrooms are small and the environment lacked a flow for movement. Through further discovery, I noticed the children were not moving around enough as many lessons did not incorporate intentional movements. The class schedule also did not allow students to work for long periods of uninterrupted time. I was motivated to reexamine the schedule, reconfigure classroom set-up and provide movement in the classroom by expanding Practical Life lessons and movement activities as well as offering a space for gross-motor movement to enhance student concentration. I hypothesized if more appropriate opportunities for movement were introduced to students, they would be able to concentrate for longer periods of time and complete an uninterrupted cycle of work. The goal was for the students to acquire improved focus and the classroom as a whole would become “normalized” according to Dr. Montessori’s definition. The plan to introduce intentional movements for toddlers in my school introduced the idea for my action research. I created a scope and sequence outline for developmentally appropriate Practical Life lessons that incorporated movement, offered movement activities and provided students with the opportunity to visit a gross-motor classroom specifically designed for toddlers when a movement break was needed.

**Review of Literature**

Concentration is a major characteristic of Montessori education. According to Montessori (1995), “The first essential of the child’s development is ‘concentration’” (p. 222). Montessori wrote that concentration lays the basis for character development and social behavior. To help children concentrate, Montessori (1995) designed an educational environment with manipulative materials to discover and concentrate on. Montessori saw a relationship between the brain,
senses and muscles. She clearly understood movement was necessary for concentration and intellectual development.


Till now, almost all educators have thought of movement and the muscular system as aids to respiration, or to circulation, or as a means for building up physical strength. But in our new conception the view is taken that movement has great importance in mental development itself, provided that the action which occurs is connected with the mental activity going on. (p. 142)

Concentration in the Montessori classroom is whereby the child focuses on particular aspects of the learning environment that are essential for their development (Montessori, 1995). Montessori students partake in a lesson or perform an activity on some set external object while the movement associated with the hands is guided by the receptors of the brain. At this developmental stage, the toddler’s brain is wired for acquiring knowledge. The brain is still malleable, and the neural networks are laid during these first years as at this time the learning acquired will help in healthy development of the child (Medina, 2010). This type of learning helps the child to control their choices, activities, and movements (Lillard, 2005). Since Montessori students are independent and have freedom of choice within limits to discover learning concepts, they must learn to focus and concentrate.

Concentration, in this context, is defined as the ability for a child to be able to engage in work by choice during the Montessori work cycle (Lillard, 2005). This includes choosing activities to engage in, completing those activities without distracting others, restoring material after completion and independently choosing a new work. Children who are observing or
thinking without distracting others are also concentrating (Haines, Baker & Kahn, 2003; Lillard, 2005; Sylwester & Cho, 1992; Wells, 2012).

Toddlers have short attention spans so they must be kept engaged (Gellens, 2013). Montessori’s theory of planes of development suggested toddler aged children are in a sensitive period for refinement of movement (Lillard, 2005; Haines, Baker & Kahn, 2003). Children who are not able to concentrate routinely during the Montessori work cycle need more movement. To help toddlers during this sensitive period for movement, it is important to provide optimal movement inspired prepared environments (Lillard, 2005). In the book, Calm and Compassionate Children (2007), Dermond suggested, “Quite often when children are having trouble concentrating, they just need to move – to exert some physical energy… Lots of movement is essential for a child’s emotional health and physical and mental calmness” (p. 110). Researchers have suggested there is a correlation between movement and concentration (Akkerman, 2014; Schwartz, 2013). Providing movement based activities in the classroom has improved student concentration and engagement in learning (Akkerman, 2014; McCabe & Dana, 2016; Nalder & Northcote, 2015).

**Importance of Movement**

The benefits of movement and exercise on learning and concentration are well-documented (Akkerman, 2014; McCabe & Dana 2016; Nalder & Northcote, 2015). Physical activity promotes biological changes in the brain that enhance adaptability and connections between brain cells. The cerebellum is a two-hemisphere structure that coordinates movement. Researchers believe the cerebellum supports cognitive processing because it is connected to regions of the brain that perform mental and sensory tasks (Jensen, 2005; Sousa, 2011).
enlarges the cognitive scope because it allows the conscious part of the brain the opportunity to attend to other mental activities (Van, 2012; Jensen 2005; Sousa 2011).

Studies have found that the cerebellum plays a major role in attention, long-term memory, impulse control, spatial perception, and the frontal lobe’s cognitive functions (Van, 2012; Jensen 2005; Sousa 2011). These are the same areas that are stimulated during learning (Bower & Parsons, 2003; Hautzel, Mottaghy, Specht, Muller, & Krause, 2009 as cited in Sousa, 2011). The cerebellum’s role is to coordinate movement as well as support limbic functions such as attention, control and cognitive processes in the frontal lobe (Jensen, 2005; Sousa, 2011).

Current research suggests getting the children up and doing something active releases some of the energy and helps them integrate the mind and body (Akkerman, 2014; Diamond & Lee, 2011; Skoning, 2008). The human body is designed to move (Nalder & Northcote, 2015; Van, 2012; Jensen 2005; Sousa 2011). An incredible amount of activity and physical exertion is needed for the child’s body to develop to its potential. Children use their bodies to learn about their world, gain knowledge, strength, and skills (Dermond, 2007). Regular movement and physical activity, requires coordination of the brain, the use of muscles and senses. It is through movement that children develop intelligence and independence (Shortridge, 2006). Creating a meaningful classroom that supports the movement for growth is a fundamental component in designing a developmentally appropriate environment (Durrett & Torelli, 2007). Movement can increase the amount of learning retained (Reilly, Buskist & K. Gross, 2012).

Experts say, depending on motivation or movement, children can sit and absorb new information for a period of minutes about equal to their age (Dermond, 2007). Despite the realization that movement enhances concentration and learning, students don’t move enough (Jensen, 2005; McCabe, 2016). Offering movement inspired learning environments and
providing regular movement experiences including gross-motor activities can result in improved focus and concentration (Epstein, 2012; McCabe 2016). Research shows movement is crucial for social, emotional and physical health (Diamond & Lee, 2011; McCabe, 2016). Teachers can increase toddler student motivation, engagement, and attention by providing regular movement experiences during the day (Akkerman, 2014; Marzano, Pickering, & Heflebower, 2011; Nalder, & Northcote, 2015).

As toddlers are refining their small and large motor skills, they are capable of exploring and moving freely around the prepared classroom environment. Through movement, the child will learn to become independent and develop their intelligence through discovery by concentrating on tasks. The benefit of proving long periods of uninterrupted work time in Montessori classrooms aid in the development of sustained concentration (Lillard, 2005).

**Impact of Movement on Development**

Movement enhances the mind, body and brain connection. According to Medina (2010), for brains to function optimally children need to take part in regular activity periods in addition to physical education classes. A recent study by Akkerman (2014) found that more negative behaviors occurred in the classroom when fewer movement lessons were chosen from the movement shelf. The researcher wanted to see if the 19 students in her Montessori classroom varying in ages from 4 – 6 years would become normalized by adding more movement activities in the classroom. The activity shelf included many individualized movement activities including walking the line with objects, yoga cards, brain gym cards and movement command cards (Akkerman, 2014). Research shows that a child’s brain is mostly able to function properly and retain information if the body is active (Akkerman, 2014; Nalder, & Northcote, 2015). Children need activities in their environment that they can interact with socially, cognitively or
emotionally (Van, 2012). After a child has undergone many periods of focused concentration, their bodies and brain require action to rejuvenate so that they can move on to the next cognitive activity (Jensen, 2005).

By including movements within lessons and in between their normal work cycle, educators can increase a child’s concentration (Akkerman, 2014; McCabe & Dana 2016; Nalder, & Northcote, 2015). Movement has great importance in a child’s mental development which determines if there will be an increase or decrease in their concentration (Jensen, 2005). The Montessori method reinforces the development of independence, concentration, order and coordination. The lessons in the classroom support the development of gross and fine motor development. Provided the activities that the child is undertaking are connected to the mental activity going on in the brain, the child’s brain function will expand and improve concentration. The activities in Practical Life for example; pouring, spooning, sweeping, transferring, carrying, zipping, cutting and cooking are designed to support these connections. When a child takes part in an activity, that particular action will absorb their energy and whole attention. As a result, the concentration of the child will be so deep that the child can ignore and be oblivious to all the distractions in their environment (Sousa, 2011).

When engaged in meaningful activity in the prepared Montessori environment a toddler’s concentration can become so intense that they can lose track of time resulting in increased enjoyment in the chosen activities and lessons. The movements are done routinely which increases their mastery resulting in improved concentration (Lillard, 2005). Allowing the children to conduct activities without any interruptions from their teachers or any obstacles is paramount for this development. Independence and freedom are vital for effecting concentration among toddlers. To ensure the concentration is maintained, the children learn to self-regulate
their attention. Research indicates that students who can self-regulate cognitive, motivational, and behavioral aspects of their academic functioning are more effective as learners (Nota, Soresi & Zimmerman, 2004). Self-regulation is a person’s ability to control his or her own behavior, emotions and attention. One of the key areas involved in self-regulation is cognitive regulation. Cognitive regulation process is necessary to demonstration attention and persistence to lessons and activities. When they pursue an activity, students complete the lesson and switch tasks to another different activity that requires their continued attention and focus. They, therefore, learn to master the environment and stay engaged. Normalization is then warranted in such situations where the repeated activities become routines to the children, therefore, being habitual and are considered as their new normal (Slywester & Cho, 1992). The students will, therefore, develop these habits of concentration into their later stages in life and challenges of indiscipline and distractions will be avoided.

**Movement in Montessori Classrooms**

Movement is part of the Montessori classroom. In Montessori classrooms, children move around in their prepared classrooms with purpose. Every activity in the classroom is presented as a lesson with a focus on coordination and control of movement. Montessori (1995) has said, “Work is inseparable from movement” (p. 146). Montessori recorded the need for movement as she noticed a link between movement and the child’s learning process. Montessori integrated movement into every classroom lesson. Since the student’s work in a Montessori classroom is to learn, teachers must routinely incorporate purposeful and meaningful movement into the learning process (Haines, Baker, & Kahn, 2003). Dressing, for example, is a Montessori Practical Life lesson presented to toddlers. Dressing incorporates movement and encourages independence as dressing oneself takes motor control and eye-hand coordination. The tiniest activity from pulling
up pants, pushing down pants, pulling velcro, pushing off shoes, pulling a shirt over your head—all takes movement, practice and development. Purposeful and meaningful movement also has anything to do with the entire body. Movement activities like multi-steps, a balance beam, climbing ladders or a rock wall, swinging, sliding, riding a bike, even learning to run and jump with stability all support this development.

Routine is another factor that determines focus and concentration in toddlers (Haines, Baker, & Kahn, 2003; Lillard, 2005). Providing children with a routine schedule gives them predictability and enables them to carry out activities and tasks that aid in the development of focus and concentration. For example, hand washing is a practical life exercise in toddler Montessori classrooms. This activity requires concentration, carefully following a sequence of steps and precise movements. For a toddler, carrying a pitcher of water requires attention and many careful movements around the classroom. The child begins the activity by taking the pitcher to the sink to be filled with water. With much precision, the student takes the pitcher to the hand-washing table and pours it into the bowl. This step is repeated until the bowl is filled with water. The child then immerses his or her hands in the water until they are wet. The child then takes the hand soap to clean every finger to the best of their ability. Once clean the bucket is taken back to the sink to empty the contents. The child is then responsible for cleaning any spills and restoring the environment. For adults, this activity would take only a few minutes, however for a toddler, if done correctly, this activity including many movement steps can take 20-45 minutes to complete. With this meaningful lesson, toddlers learn control of error as they spill water and adopt new movement to successfully complete this work.

When students perform an activity like hand washing, the movement associated with the hands is guided by the receptors of the brain. This type of learning helps the child control their
choices, activities, and movements (Lillard, 2005). While participating in lessons and activities, children learn to coordinate their movements and determine activities they choose to take part in (Woods, 2000). The activities are purposeful as the child learns early cognitive skills, develop eye-hand coordination, and also learn to move their body parts in a precise manner. The materials in the environment have an isolated purpose that each seeks to fulfill. The child, therefore, learns to focus on some specific attributes of the materials, for example, the way that it has to be grasped which then helps develop the muscles of the toddler's hands. This type of focus aids in the development of concentration. Such structured activities within the environment in the Montessori morning classroom work cycle thus helps in the development of concentration in the toddlers.

In Montessori classrooms, activities are done for a specific duration of time, and the child chooses the activity to engage in. During this period, the child is not interrupted, as it would interfere with their concentration when working on completing these lessons. During the work cycle, the child chooses one activity, completes the activity and restores the activity before moving on to determine the next activity or lesson. They move from simple lessons to more complex lessons as they master skills in the environment. Purposeful movement or gross-motor activity is an essential factor in intellectual growth, which depends on the impressions received from the environment (Lillard, 2005). Through movement, children come in contact with external reality, and it is through these contacts that they acquire abstract ideas (Montessori, 1966). For most children, concentration occurs routinely during some of the activities that make up the work period situation (Epstein, 2012).

**Ways to Incorporate Movement in the Montessori Classroom**
Incorporating movement throughout the school day makes students more focused on learning (Furmanek, 2014; Helgeson, 2011; Woods, 2000). Researchers continue to explore movement strategies to use with students in classrooms. Integrating movement activities and opportunities like slap counting, running in place, jumping jacks, squats, stretches, and crunches in the classroom have seen positive results (Reilly, Buskist & K. Gross 2012; Sousa, 2011). Some have suggested including a movement shelf in the classroom that provides activities like yoga, brain gym, movement dice and movement activities (Akkerman, 2014). Another way people have tried to solve this problem is by offering time for physical and mental activity including exercise. Exercise – especially aerobic exercise is fantastic for the brain, increasing executive function scores anywhere from 50 percent to 100 percent (Medina, 2010). Others have found ways to weave movement into lessons and offering students opportunities to be up and moving around and talking about the new learning (Akkerman, 2014, McCabe & Dana 2016; Nalder, & Northcote, 2015; Sousa, 2011).

A child-focused movement environment ensures a wide range of movement experiences that children can work and learn at their own individual developmental levels (Marzano, Pickering, & Heflebower, 2011). There are numerous ways to enhance concentration during the Montessori work cycle. Providing intentional opportunities to move during lesson presentations during the morning work cycle and providing opportunities for gross-motor movements during the work cycle might yield effective concentration and focus results for toddler students.

Beyond the research supporting the importance of providing movement inspired classrooms, there is literature describing various ways to incorporate movement activities to develop student engagement and concentration (Akkerman, 2014; Marzano, Pickering, & Heflebower, 2011; Nalder, & Northcote, 2015). Once educators bring movement inspired
activities and experiences into the classroom, the outcomes seem endless. The research clearly suggests providing movement in classrooms can increase focus and concentration.

The purpose of this action research project is to determine whether or not providing a variety of movement opportunities including gross-motor movement activities and incorporating intentional movement within Montessori lesson presentations during the Montessori classroom uninterrupted two-hour work period will increase toddler student focus and concentration. One of the fundamental characteristics of Montessori education is to provide students with long periods of uninterrupted time and for toddlers to create a personal two-hour cycle of work to develop independence and concentration.

**Description of Research Process**

The purpose of this action research project was to determine whether or not the provision of movement activities, providing developmentally appropriate Montessori Practical Life lessons that incorporate intentional movements, and visiting a gross-motor room would contribute to the development of concentration and overall classroom normalization during the uninterrupted work cycle in a toddler classroom. The implementation of my research took place over the course of a six-week period starting in September 2016 and ending in October.

First, it was essential for me to outline a scope and sequence of developmentally appropriate gross motor lessons and activities as well as Montessori Practical Life lessons for the three toddler classrooms. Next, I met with the toddler teachers over a three-day retreat to introduce the outline and present the formal Practical Life lesson presentations. I gave the teachers an opportunity to practice with the lessons and materials. This session also provided the team an opportunity to collaborate, streamline the curriculum and build consistency among the toddler program. A movement teacher for the gross motor room was hired and sent to a local
two-day movement and mindfulness curriculum training hosted by Move with Me (Appendix H). The training covered their comprehensive program to nurture children’s natural tendency to move that provided the teacher with instructional manuals and lesson plans. The gross-motor movement teacher learned over 200 movement activities and developed the skills to implement the curriculum and lesson plans for a toddler gross motor room.

The teachers from all three classrooms and the gross-motor movement teacher agreed to participate and signed active consent forms. First, the classroom teachers were asked to complete a pre-intervention checklist to evaluate the current classroom picture (Appendix A). This form asked the participants to evaluate concentration themed questions on a scale from 1 being never to 4 meaning always. Next, the classroom teachers were invited to complete a questionnaire to measure the current classroom climate and student concentration levels (Appendix B). In addition to the two items the teachers compiled, I also observed and collected the necessary data needed to create a profile of the classroom environment. I observed each classroom for about 30-minutes three times a week and collected observational data using a specific form (Appendix D).

Before the process began, I explained the action research project to the parents of the children at back to school night and provided the specific details on a passive consent form, and 24 families agreed to have their children participate. Twenty-four children age 21 months to 3 years, from three toddler classrooms, participated in this study. The classrooms were prepared with ample Practical Life lessons and activities as well as movement activities (Appendix F).

The Practical Life lessons included:

- Putting on and taking off clothing
- Hanging up clothing and belongings
- Slippers on/off
• Toilet Learning (process and procedure)
  o Pulling pants up and down
• Dressing frames
• Handwashing at sink
• Tooth brushing
• Hair brushing/combing
• Handwashing at stand
• Mittens on/off
• Boots on/off
• Use of utensils
  o Whole hand scooping, Whole hand treasure hunt (exploration), Whole hand 1-to-1 transfer, 1-to-1 transfer with a tool (large tool/large material to small tool/fine material), 1-to-2+ transfer with a tool, Fetching water, 1-to-1 pouring water (wide-mouthed easy to pour to smaller more difficult to pour), 1-to-2+ pouring water, Spooning, Tonging
• Window & Mirror washing
• Grinding with mortar and pestle
• Flower arranging
• Recycling
• Plant watering
• Leaf washing
• Pet Care
• Cleaning
Dusting, Sweeping, Mopping, Cloth washing, Folding, Dishwashing, Handwashing at stand, Polishing (Wood and Metal), Table washing

- Movement of Furniture Within the Classroom
  - Sitting in a chair
    - Pulling out a chair, Sitting down, Pushing in a chair
  - Use of rug
    - Carrying, Unrolling, Rolling
  - Carrying a stool
  - Carrying a chair
  - Carrying a table

- Food and Snack
  - Food Preparation
    - Washing, Hand peeling, Mashing, Scrubbing, Grinding, Spreading,
      Cutting (crinkle cutter, circular cutter), Juicing, Tool peeling (carrot)
  - Setting a table
  - Crumbing

The day began at 8:30 am and students were given the opportunity to work until 10:30 am. In a Montessori classroom environment, students work and learn through sensory-motor purposeful activities to develop their cognitive powers through direct experiences. Montessori environments call these purposeful activities “work.” During the uninterrupted work time, students received individualized lessons and presentations on how to use the materials or perform the activities. Students were encouraged to complete activities and repeat lessons accordingly.
The gross motor lessons and activities included: carrying a tray, walking around an object, pushing an object, pulling an object, balancing on one foot and walking up steps. During the morning work cycle, if an additional movement break was needed, the child was invited to participate in the activities available in the gross-motor room. The gross-motor teacher prepared the room daily and made a bridge, slide, tunnel, balance beam and hula hoops for free exploration available. The teacher also provided students with gross-motor lessons including marching, jumping, catching a ball, throwing a ball, carrying objects with two hands, climbing a ladder, push bikes, tricycles, walking backward and walking on tip toes as well as presented various gross-motor activities (Appendix G).

The teachers documented and completed daily individualized observational tracking forms for each student (Appendix C). These tracking forms recorded if the students were able to complete a two-hour cycle of work. In addition, we tracked to see if the child was presented with Practical Life lessons, engaged in movement activities in the classroom and the number of works (activities) initiated and completed. The gross-motor movement teacher also tracked which students attended and participated in the gross-motor room each day. Each week, the students were introduced to more Practical Life lessons and movement activities, expanding the opportunities for more movement through repetition of known lessons and activities.

During the intervention period, I encouraged the teachers to document the overall levels of classroom concentration. At the end of the six-week period, the gross-motor movement teacher facilitated a focus group discussion with all the participants regarding the process and observations from the activities (Appendix E). Finally, classroom teachers were asked to complete a post-intervention checklist, which was the same checklist used for pre-intervention
(Appendix A). I started reflecting on how to determine which specific activities or interventions promoted classroom normalization and enhanced student concentration.

**Analysis of Data**

To examine the effects movement has on focus and concentration in toddler Montessori classrooms, I collected both quantitative and qualitative data. Before the research project and at the conclusion of the study, the six teachers involved in my research were given the same pre and post survey to complete (Appendix A). The teachers were asked to consider the following:

1. Toddler students in my classroom can independently complete a two-hour cycle of work without adult intervention.
2. Toddler students in my classroom stay on task and complete work independently chosen from shelves.
3. Toddler students in my classroom restore completed activities back to its original place and choose a new activity to work with independently.
4. Toddler students in my classroom are calm and independent.
5. Toddler students in my classroom generally focus and concentrate during the morning work cycle.

My goal was to evaluate and understand how focus and concentration, as well as student independence levels, might change with the introduction of movement lessons and activities. I also wanted to see if teachers observed change in the levels of frequency as time passed and more movement lessons and activities were introduced. According to Figure 1, teachers recorded a substantial increase post-intervention in focus and concentration, student independence and their ability to complete a two-hour cycle of work (see Figures 3). The graph
below shows the self-rating scale generated by teachers before and after the introduction of movement activities and the gross motor room to establish a baseline.

![Pre & Post Interview Question Response](image)

**Figure 1. Pre & Post Interview Question Responses**

The study took place at the start of a new academic school year. Even with a prescribed phase-in plan for new students to get acclimated to the Montessori toddler program, toddlers still needed sufficient time to adjust to classroom routines and to establish good work habits. The students arrived between 8:30 am and 9:00 am and were invited to choose work after changing shoes and putting belongings away. The schedule allowed for children to work until 10:30 am. During the morning work cycle, lead teachers presented individualized Practical Life lessons, reinforced ground rules, demonstrated how to prepare snack and encouraged children to choose work accordingly. Throughout the data collection, teachers were asked to document and record observations and lesson presentations accordingly.

Practical Life lessons that incorporated movement were presented to students daily. As time passed more lessons were presented. Children began to regularly choose and repeat
Practical Life lessons. At some point in week five, food preparation lessons were presented in the Practical Life area. The number of Practical Life lessons given to students for a three-week period were recorded. The number of Practical Life lessons that were presented to students during that three-week period are illustrated in Figure 2.

**Figure 2. Number of Practical Life Lessons Presented**

During the first two weeks of the study, most students were not able to complete a two-hour uninterrupted cycle of work. During week five and six of the study, student capability to complete a two-hour cycle of work was substantially increased. One observation was that the new students who struggled to focus or complete the work cycle during the first few weeks of school increased their focus substantially and independently completed a work cycle by week five and six of the study. Figure 3 charts the average work-cycle completion over the six-week period.
One of the greatest influences on the focus and concentration was the implementation of student visits to the gross-motor classroom. The teachers had influence over the visits to the room with a gradual increase. At the end of the six students were going to the gross-motor classroom almost every day. The three measures are compiled to see the growth comparison (see Figure 4).

**Figure 3. Average Two Hour Work Cycles Completed**

**Figure 4. Average Gross Motor Skill Room Visits**
During the study, I also observed each classroom three times a week to collect and record observational data using a different observation form from the one used by the teachers (Appendix D). The purpose was to compare the data from what the teachers were observing and recording daily. I wanted to compile data from a standardized perspective. The results in Figure 5 helped verify the data collected by the teachers.

**Figure 5.** Positive Independent Behaviors I Observed

According to Figure 6, children were focused during the uninterrupted work cycle and focus increased as weeks progressed, which suggest that the movement interventions made a difference in focus levels over the course of the study. Figure 6 illustrates the mean, median and mode of times focused during the uninterrupted work cycle.
The common themes from the focus group discussion with teachers at the end of the study emerged from an analysis of the coded data are identified are below.

1. Purposeful Practical Life lessons for toddlers should incorporate intentional movement into each lesson.
2. Adding movement within Practical Life lesson presentations assisted in student focus and concentration levels.
3. Integrating movement into lessons supported normalization levels.
4. The gross-motor classroom improved student concentration and helped students complete a work cycle.

The data suggests that it is possible that the movement interventions led to an overall increase of focus and concentration in the classroom during the Montessori uninterrupted work
cycle. Based on the data, there is a correlation between movement intervention activities and concentration levels. The focus and concentration levels were consistent when students had adjusted to the classroom environment, had ample Practical Life lessons to work with and had the opportunity to visit the gross motor classroom. The positive effects of the intervention were recorded by each teacher in the post-intervention survey and reflection.

Figure 7. Correlation Between Gross Motor Room Visits, Times Focused and Completed Two Hour Work Cycle

Action Plan

The action research project as implemented was a positive experience for the students. The results of this study indicate that movement interventions possibly contribute to student concentration levels. I observed many benefits and positive changes in the students as well as in the classroom environment by providing a comprehensive Practical Life area with a full scope and sequence of lesson presentations. I also observed the positive benefits of offering students the opportunity to visit a gross-motor room during the morning work cycle and implementing movement activities throughout the day.
Providing age-appropriate movement activities when children are in a sensitive period for movement following Montessori’s theory of human development support the belief that early childhood aged students can successfully develop independence, focus, and concentration. The findings of this study also support the outcomes of other gross-motor movement-based programs. Providing specific movement activities and integrating physical activities during the Montessori uninterrupted work cycle can improve focus and support students to complete a two-hour cycle of work successfully. The practical recommendations from this study will reinforce the fundamental goals of Montessori early childhood education; to develop independence and concentration.

As a Montessori school program director, the results of the research will change my expectations for the prepared Montessori classroom environments. It will be essential for teachers under my directorship to provide opportunities for movement including lessons and activities that promote movement during the uninterrupted work cycle in classrooms. The gross-motor classroom will become part of the toddler program and student curriculum experience at school.

One goal I have for the next academic school year is to discuss with my primary early childhood 3 – 6 teachers ways we can provide gross motor and movement activities during the school day. I believe the results of this research will help start a conversation on the importance of focus and concentration during the Montessori work cycle as well as create opportunities for collaboration and discussion. I would like both toddler and primary Montessori teachers to brainstorm ways to add more meaningful and developmentally appropriate movement activities that won’t cause a distraction in the classroom environment. The goal for this request would be to improve and increase student focus and concentration levels in the classroom.
As a Montessori teacher educator, the results of this research will help me better prepare Montessori teachers by advocating the importance movement plays on student focus and concentration. I will share the strategies from this action research project and give the toddler Montessori Practical Life curriculum scope and sequence outline and lesson presentation write-ups. I believe this will better prepare Montessori teachers to be successful in increasing student focus and concentration.

More research should be conducted over an extended period of time to better understand the effects of movement on focus, concentration, and behavior. A longer study would give time for students to get acclimated to the program and time to observe changes that may be slow to take effect. Potential future action research could include defining appropriate curriculum, lessons, and materials for Montessori toddler classrooms that promote independence and develop concentration. Given the findings of this study, as well as results of previous studies, more movement and concentration research should be conducted on early childhood three to six years aged students, particularly merging gross-motor movement opportunities within the Montessori uninterrupted work cycle to enhance student focus and concentration. Future research could additionally investigate incorporating movement lessons and activities beyond what was used in this study. With more movement topic research, training and specific recommendations, strategies and guidelines, Montessori teachers will be able to use movement within Montessori lesson presentations as well as other movement lessons and activities to increase student focus and concentration.
References


distraction-why-its-crucial-for-students-to-learn-to-focus.


Appendix A

*Anonymous teacher-generated artifacts pre/post intervention to evaluate what effect movement interventions had on student concentration.*

**Confidential Pre-Intervention**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Always 4</th>
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<th>2</th>
<th>Never 1</th>
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<tr>
<td>Toddler students in my classroom can independently complete a two-hour cycle of work without adult intervention.</td>
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<tr>
<td>Toddler students in my classroom stay on task and complete work independently chosen from shelves.</td>
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<tr>
<td>Toddler students in my classroom restore completed activities back to its original place and choose a new activity to work with independently.</td>
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<tr>
<td>Toddler students in my classroom are calm and independent.</td>
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<tr>
<td>Toddler students in my classroom generally focus and concentrate during the morning work-cycle.</td>
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</table>

Please share the first three letters of your mother’s maiden name plus the date of the month of your birth, i.e. HAY12. This data will be confidential. __________________________________________

**Confidential Post-Intervention**

<table>
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<tr>
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Please share the first three letters of your mother’s maiden name plus the date of the month of your birth, i.e. HAY12. This data will be confidential. __________________________________________
Appendix B

Inquiry Data - Pre and Post anonymous feedback questionnaires for teachers to measure student attention.

*follow-up questions might be asked for clarification.

1. What does normalization in a Montessori classroom look and feel like?

2. Describe your morning work-cycle routines and student experiences.

3. What does concentration look like in your classroom? Generally, how long can your students concentrate on work?

4. Describe ways you keep students focused during the morning work-cycle.

5. Describe the activities in your classroom that keep your students attention.

Please share the first three letters of your mother’s maiden name plus the date of the month of your birth, i.e. HAY12. This data will be confidential.
Appendix C

Observational Data - Checklist to track focus/concentration and frequency. Tally sheet to track the number of times children were distracted throughout the day, number of works initiated and completed and to monitor changes in concentration and track if the student participated in the gross-motor room that day.

Weekly Tally Sheet

Student ____________________________________

<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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<tbody>
<tr>
<td>Presented a Practical Life lesson</td>
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<tr>
<td>Engaged in movement activity in the classroom</td>
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<tr>
<td>Number of works initiated</td>
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<tr>
<td>Number of works completed</td>
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<tr>
<td>Stayed on task</td>
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<table>
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<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
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</thead>
<tbody>
<tr>
<td>Focused</td>
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<td></td>
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<td></td>
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<tr>
<td>Distracted</td>
<td>Y or N</td>
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<tr>
<td>Visited the Gross-Motor Room?</td>
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<tr>
<td>Completed a 2-hour Work-cycle?</td>
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<tr>
<td>Distracted</td>
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<tr>
<td>Completed a 2-hour Work-cycle?</td>
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Daily Notes / Reflection

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Teacher Assessment

Yes or No: This student was engaged in various movement activities throughout the week.

Yes or No: This student was more focused in the classroom and was able to complete the work-cycle compared to the previous week.

Yes or No: Have you seen change in student concentration levels?
Appendix D

Observational Data – Once a week narratives to document observations by researcher

Observations: 20 – 30 minutes

Classroom: ____________________

Date: _________________________

Observation: Frequency of Focus and Concentration

Observation: Occurrences of Movement Activities

Observation: General

Student independently working and concentrating

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Yes</th>
<th>No</th>
<th>Comments</th>
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</thead>
<tbody>
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Appendix E

Focus Group with teachers facilitated by a colleague at the end of the study.

Questions:

1. Providing movement activities in the classroom helped students focus and complete a Montessori work-cycle?
2. Does adding movement within Practical Life lesson presentations benefit children? Did the students seem calmer?
3. Does adding movement activities in the classroom benefit children or distract them?
4. How can movement be incorporated into each lesson?
5. When students had trouble focusing in the classroom the gross-motor room helped students get back on task?
6. By integrating movement into the classroom, did your students appear more normalized?
7. Did you notice any changes in student behavior?
8. Tell me what worked with the movement interventions.
9. Describe the activities students did that helped focus and concentration in your classroom.
10. Additional feedback or observations?

Please share the first three letters of your mother’s maiden name plus the date of the month of your birth, i.e. HAY12. This data will be confidential.
Appendix F

Sample Lesson Plan Activities

**Flower Arranging**

*Age:* 2 – 3 years

*Aims:* Developmental
- Concentration, coordination, order, and independence

Practical
- To arrange flowers for the classroom tables

*Curricular Area:* Practical Life (Care of Environment)

*Materials:* Vase with individual flowers, one pitcher, one funnel, one sponge, three small glass vases, and three small doilies, tray

*Presentation:*
1. Invite the child to come with you to the flower vase for a flower-arranging lesson.
2. Put on a smock.
3. Carry the tray with vases, pitcher, funnel, and sponge to the table.
4. Carry the pitcher to the sink and fill it with water, then carry the pitcher back to the table.
5. Place the funnel into and pour the water into one of the vases, stopping when the vase is halfway filled.
6. Use sponge to wipe up any spills.
7. Repeat steps 4 – 6 until all three vases are filled.
8. Walk to the shelf holding the flower vase. Choose one stem. Bring it back to the table. Place the stem into one of the vases
9. Repeat step 8 until each vase is holding at least one flower.
10. Got to the basket of doilies. Choose one, and bring it to a table. Choose one vase and place it on the doily, carrying it with one hand gripping the neck and one hand supporting it underneath.
11. Repeat step 10 until all vases are sitting on doilies on the tables.
12. Return the tray to the shelf.
13. Take off your smock and hang it up.
14. Invite the child to do the work.

*Points of Interest:*
- The smell and feel of the flowers
- Holding the flower carefully by its stem
- Pouring the water into the funnel
- Finding a place for the vases to go
- Carefully wiping up any water drips

*Variations:*
• Different varieties and quantities of flowers

Extensions:
• N/A

Language:
Flower, vase, doily, sponge, funnel, pitcher, smock.

Matching – Distance Game

Age: 2 – 3 years

Aims: Developmental
Concentration, order, coordination, independence, and movement
Practical
To match items from a distance

Curricular Area: Gross Motor, Language/Sensorial
Materials: Two rugs, and any matching work

Presentation:
1. Invite the child to come with you to the shelf to choose a matching work (this work could be a sensorial work, or language matching cards.)
2. Ask the child to find you a rug. Place the work on the rug.
3. Then ask the child to find another rug. Walk with the child to a spot in the classroom that is out of sight of the first rug.
4. With the child, place the first set of objects or cards in a row, left to right.
5. Ask the child to carry the tray/bag/box to the second rug. Set up the second set of items at the second rug, making sure the items are in a different order than they were on the first rug.
6. Walk with the child back to the first rug (bring the tray/box/bag with you.)
7. Look at the rug. Point to the first item in the row. Name it. Walk with the child to the second rug. Look closely at the row. Choose the correct object. Bring it back to the first rug. Place the matching item underneath the first.
8. Invite the child to try on their own with the second item.
9. Repeat until all of the items have been matched.
10. Name all of the objects with the child.
11. Put the first row of items away. Then put the second row away.
12. Ask the child to return the tray/bag/box to the shelf.
13. Roll your first rug and put it away.
14. Ask the child to roll the second rug and put it away.

Points of Interest:
- Lining each item up in a row
- Walking from rug to rug
- Placing each matched item carefully below the first

Variations:
- Putting the rugs closer, or farther apart depending on the child’s ability

Extensions:
- If there is a third component to the matching activity, a third rug could be set up in another part of the classroom.

Language:
Match, distance, far, below, above

Comments:
The child should master this matching work before doing it with the distance game.
**Lug Jugs**

**Age:** 18 months – 3 years

**Aims:**

- Developmental
  - Coordination of movement, maximum effort
- Practical
  - To carry heavy jugs around the room

**Curricular Area:** Gross Motor

**Materials:** Two 1 gallon jugs (one filled to the brim with blue water, one filled half way with yellow water), two sets of laminated tiles for the jugs to sit on (two blue and two yellow.)

**Presentation:**

1. Invite the child to come with you to find the lug jugs.
2. Lift one up, gripping the handle with two hands. Show that it is heavy. Point out the matching color tile underneath the jug.
3. Tell the child that there is another tile of the same color somewhere in the room. Walk with the child holding the jug to find it. If the child is interested, they can hold the jug as they walk around the room.
4. When you find the matching tile, place the jug on top of it.
5. Then return to the second jug and repeat the process.

**Points of Interest:**

- The weight of each jug
- The color of the water
- Finding the matching tile

**Variations:**

- Change the color of the water
- Change the type of jug

**Extensions:**

- Add more lug jugs
- Add several different tiles for the jugs around the room for them to find
- Increase the size of the jug or the amount of water as the children get older
- The child can try to hold one jug in each hand

**Language:**

Jug, water, yellow, blue, heavy
Appendix G

Gross-motor Room Pictures
Appendix H

Move with Me Information


This comprehensive 30-week program has *everything* parents, teachers, and therapeutic professionals need to nurture children’s physical fitness, emotional stability, and learning readiness.

**Learn to…**

- Implement the 30-week Movement & Mindfulness Curriculum with children PreK – G2
- Effectively help children grow physical fit, emotional stable, and learning able
- Enhance your support of parents, teachers, and therapeutic professionals in nurturing children’s well-being & self-regulation
- Integrate stories, yoga, music, creative movement, and Brain Gym® adapted self-care into progressive activities that fulfill standards and improve outcomes
- Present the benefits of movement & mindfulness to parents, teachers, and therapeutic professionals
- Provide staff training & professional development (when qualified Trainer)

Syllabus/Outline available: http://move-with-me.com