

2018

# The Importance of Teaching Young Children Academics Through Multi-Sensory Activities

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## Recommended Citation

Schardt, Tiffany, "The Importance of Teaching Young Children Academics Through Multi-Sensory Activities" (2018). *Senior Theses and Capstone Projects*. 99.  
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# **The Importance of Teaching Young Children Academics** **Through Multi-Sensory Activities**

A senior project submitted to the faculty of Dominican University of California  
in partial fulfillment of the requirements of the Bachelor of Arts in Humanities and  
Cultural Studies

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**Abstract:**

In this project, one will find information regarding the benefits of multi-sensory learning. Multi-sensory learning is a hands-on form of learning. One will find information on how technology is causing children to spend less time learning through their senses. The project is accompanied by information for parents and what they can do to promote multi-sensory learning at home. Along with this information, parents will find a guidebook that incorporates academic concepts with multi-sensory lessons. The project is organized so that one can find information on technology, importance of multi-sensory learning, proof, and guidebook contents. The project is easily laid out to provide readers with the information needed to understand the importances of the guidebook.

**Introduction:**

Children today live in an age of electronics and creativity that exists in a computer. Children are losing their interest in creating with their hands. “With all of this screen time available, children are losing out on so many opportunities to engage in the real world” (Slutsky et al.) The value of creating and working with our hands is an invaluable tool that benefits all people. The research in this paper details the different ways that children can learn through the use of their hands. The paper is accompanied with a guidebook for parents to use for activities that are detailed in the paper. The guidebook includes instructions for activities, along with the academic lesson that correlates with the activity. Included is a list of activities that can correlate with academics. The list includes baking with math, planting with science, and language arts with play dough. The activities not only detail how children are using their senses but what academics they will learn along the way.

I attempt to answer questions such as: how do children benefit from hands-on learning; what can parents do to promote hands-on learning; how does hands-on learning create a confident child; how can this benefit children throughout their lives; and what does this do for parent-child relationships?

I use different areas of learning to correlate with multi-sensory projects. I have created the projects from my own personal ideas. I use projects that I have done in the past, with the young children at the Montessori school I work in. I use research and personal findings from courses taken at Dominican University of California to create academic lessons to be taught in each multi-sensory project.

The Humanities major is a mixture of different disciplines that prepares a student to be well-rounded in many subjects. The Humanities focuses on language, arts, critical thinking, philosophy, religion, and many other topics. The project that I am doing fits within the realm of Humanities, for one, because it has to do with humans and how we respond to types of learning, and also, it teaches children academics from all different disciplines, like the Humanities major does. The project itself will allow children to think critically about what it is they are creating and how it is being created. It also allows for children to learn how to be creative with their own hands. I think that this project fits quite well within the Humanities because it is about being creative and learning.

I have found my expert theory through child education books and research. I look at different disciplines, such as Montessori and Waldorf. I also use personal experience of working in a Montessori preschool for six-plus years. I detail how children respond to creating and working with their senses. These are tools that can guide them towards career goals or hobbies

that they can continue to grow with. The confidence that is cultivated in children through these activities is never-ending and is beneficial throughout their lives.

### **Section 1: Technology, The Good & The Bad.**

Technology is not all evil. It can be beneficial in many ways. In this day and age, there are so many educational applications for children to play with. It is not that we should completely eliminate technology from children's lives, but parents should ensure that they are still getting non-virtual experiences. In an article from *Dimensions of Early Childhood*, the authors state the importance of allowing children to experience both types of learning:

The greatest challenge for adults is that many kids are opting to play with technological devices rather than engaging in traditional forms of play.

Research on the subject of technology, however, is quite mixed, showing both negative and positive results. (Slutsky et al.)

The type of technology that children benefit from are education games or programs. School-aged children can also benefit from academic applications or programs that help them practice and learn new concepts in math, science, or language arts. The reality of the situation is that in some cases, children are spending too much invaluable time in front of a screen. The following are recommendations from The American Academy of Pediatrics: "For children ages 2 to 5 years, limit screen use to 1 hour per day of high-quality programs. Parents should co-view media with children to help them understand what they are seeing and apply it to the world around them."

Here are some statistics on screen time obtained from PBS.org from a report done by Common-Sense Media Report: "Children ages 2 to 4 spend 2 hours and 40 minutes, and kids ages 5 to 8 spend nearly 3 hours (2:58) with screen media daily" (Rasmussen). This is where

concern comes in. Children are spending double the recommendation. The American Academy of Pediatrics states, “Problems begin when media use displaces physical activity, hands-on exploration and face-to-face social interaction in the real world, which is critical to learning.” The recommended time versus that average time spent in front of a screen does not match up, and this is why there is a need to engage children in multi-sensory learning. The statistics stated above prove that children are spending less time doing physical and hands-on activity. The more the screen-time number increases, the less time spent learning in the real world. It is because of this that I am promoting multi-sensory learning. Multi-sensory learning is a great way to engage with one’s child, while doing interactive, educational, and fun activities.

## **Section 2: Why multi-sensory learning is important**

Multi-sensory learning is an important way to teach children, especially in today’s technologically driven world. As pointed out in the previous section, children are doubling their screen-time and spending less time engaged in hands-on activities. Multi-sensory learning is the ability to manipulate or use a material to create something while using one’s senses to make connection to achieve the task at hand. It is important for children to work in this way because they are able to connect academics with real life things, while experiencing it all through their senses. According to a study on Scholastics.com,

As students put projects together, create crafts, or use familiar materials in new ways, they're constructing meaning. “Kids learn through all their senses,” says Ben Mardell, PhD, a researcher with Project Zero at Harvard University, “and they like to touch and manipulate things.” But more than simply moving materials around, hands-on activities activate kids' brains. (Cleaver)

The process of being able to create while learning allows children to use more than one area of their brains. Children are also activating more than one of their senses at a time. This allows for all children to learn, because they are using multiple senses, as opposed to just listening or seeing. Hands-on learning is also fun and exciting for children. They want to be able to contribute and try activities.

### **Section 3: How is this proven?**

Multi-sensory learning is not a new concept. In fact, it has been around for years. The shift in society and learning styles has affected how students are learning in the classroom and even at home. Today's society's technology, although beneficial, is hindering children's motivation to create with their hands. I have seen first-hand that children gravitate towards tablets as opposed to playing and building with actual materials. Many of the students in my preschool classroom have tablets at home. According to an article by Katrina Schwartz, an education writer for KQED,

Scholarly study goes back a long time in history, but in terms of human evolution, many of the academic skills now required for successful functioning in the world are fairly new to the human brain. As neuroscientists investigate how humans learn, they often find that newer skills and aptitudes are mapped onto areas of the brain that also control basic body functions. Increasingly, this work is helping to illuminate neurological connections between the human body, its environment and the process of learning.

The study finds that learning while the body is functioning can help make positive connections in the brain. It creates an environment for learning. The study reminds me of Maria Montessori. She



was an educational philosopher who believed in a multi-sensory style of learning. Maria Montessori was a big advocate for hands-on learning:

Montessori is a method of education that is based on self-directed activity, hands-on learning and collaborative play. In Montessori classrooms children make creative choices in their learning, while the classroom and the teacher offer age-appropriate activities to guide the process. Children work in groups and individually to discover and explore knowledge of the world and to develop their maximum potential. (Montessori)

My experience working in a Montessori classroom has proven to me that this method works. I see the children learning and connecting concepts through hands-on activities every day. We often use real-life activities to connect academic concepts, such as math and science. “In fact, a University of Chicago study found notable differences in brain function between those who physically experienced math and science concepts and those who did not. When thinking about concepts during a test, hands-on students had a higher rate of activity in the sensory and motor-related parts of their brain, leading to better memory” (“Hands-on Learning and Memory”). We cook in our classroom and work math into the lesson. The children are beginning to learn the basics about different types of measurement and basic concepts about chemistry. They see the mixing of ingredients to create something else. The children may not understand what these concepts are, but when they are introduced to them later in life, they will be able to make connections. They will already have a platform to build on. The children are being introduced to the concepts and connecting the concepts with their senses. “Cooking inspires children’s curiosity, thinking, and problem solving, offering new opportunities to make predictions and observations. Additionally, cooking offers authentic opportunities for students to

understand and apply their knowledge of measuring, one-to-one correspondence, numbers, and counting. As they follow a recipe, children organize ingredients, follow a sequence, and carry out multiple directions“ (“Cooking to Promote Development”). Cooking also provides opportunity for children to develop fine motor skills; cutting, kneading, rolling, and mixing with hands are all examples of how children get to use their hands to build their fine motor skills.

The school also has a garden where the children are taught about science. In these lessons, children are using their hands and mind to learn: “There is evidence that our ability to use our hands affects the structure and functioning of the brain” (Schwartz). Working in the garden introduces students to concepts in science: “Key science concepts that can be explored in the garden include organisms, cycles, basic requirements for life, plant anatomy, adaptations, food webs, decomposition, interdependence, ecological principles, pollination, and diversity of life” (Collective School Garden Network). Of course, at a preschool age, the students are being introduced to these concept without really knowing it. The experience of being in the garden, digging, planting, watering, and watching a plant grow and then die is beneficial for the children. It is beneficial because through their senses, they are getting involved and creating a memory that will serve them in connecting science concepts later in their academic careers.

Multi-sensory learning is a benefit for all ages, according to a study on older students: “Brain scans showed that students who took a hands-on approach to learning had activation in sensory and motor-related parts of the brain when they later thought about concepts such as angular momentum and torque. Activation of these brain areas was associated with better quiz performance by college physics students who participated in the research” (Ingmire). Studies are proving that this type of learning should follow students throughout their lives.

The next academic concept that children can acquire through their multi-sensory learning is language arts. Montessori has some great activities for learning language arts through tactile activities, such as sandpaper letters and movable alphabets. There are other ways that basic language arts can be taught. Multi-sensory is a great way to teach for all learners: “Multisensory techniques are frequently used for children with learning differences. Studies from the National Institute of Child Health and Human Development (United States of America) have shown that for children with difficulties in learning to read, a multisensory teaching method is the most effective teaching method” (AV).

Children at a young age love to use their hands, and incorporating learning with play type materials is a great way to teach at home. Children may not realize that they are learning. Introducing topics like the alphabet to them through shaping letters with play dough will set the foundation in their sensorial memory.

**Section 4: Guide Book contents for parents (Note: This section & activities 1, 2, and 3 are intended to accompany the guidebook)**

Parents can help facilitate hands-on learning at home. Giving one’s children the opportunity to create with their hands will open other senses, along with their minds. Parents can set up simple activities with their children to help them learn at home; this is also a great way to spend quality time with one’s child. In this section, one will find activities accompanied by academic concepts one’s child can learn. Parents should not expect their children to grasp these concepts the first time. The activities are all about introducing their children to concepts and making connections through their senses, so that the next time they are introduced to these concepts, they already have a platform in their memory.

**Activity 1: Baking: Math & Science**

Baking is an easy and fun activity for both child and parent. A simple from-scratch pizza dough recipe is easy and a great way to teach mathematical concepts. As you are measuring out the ingredients in your recipe, explain to the children the different types of measurement: for example, cups, tablespoons, and teaspoons. Let children do the measuring themselves, so they can see what each measurement looks like. Ask them questions as you go along, such as, “What measurement is bigger?” Let them mix the ingredients in the bowl. Explain how when the dry ingredients (flour, yeast, salt, sugar) are mixed with wet ingredients (water and oil), they make a dough. Allow the children to feel the dough and roll it out themselves. They will see that the dough is pliable and how, with their own hands, they are creating a pizza crust. Put toppings on the pizza and bake. When the pizza is done, use this time to introduce children to basic mathematical concepts. Explain how there is one whole pizza. Cut the pizza in half, and ask the children, “What happens when we cut it down the middle? How many pieces do we have?” Continue doing this. You have just introduced your children to concepts of fractions. Also, you can count the pieces as you eat them to learn subtraction.

**Activity 2: Gardening: Science**

Gardening is a great activity to get outside and allow your children to be in nature. Gardens are a great place for learning. Gardening is an ongoing process. Let your children choose what they want to plant (flowers, vegetables, or fruit). It is best to start with seeds. Of course, it will take time for the seeds to sprout and create buds. The beginning lesson in this activity will be having the children dig a hole in the garden, plant the seeds in a row, and water

the seeds. Show the children pictures of what the life cycle of a plant will look like. This will help them connect the picture with the activity. Explain that watering the plant is feeding the plant, along with sunshine. Introduce them to the word photosynthesis. Photosynthesis is the process of the plant using water, sunshine, and carbon dioxide to make food to grow. Introducing children to the concept will build their vocabulary. It will also provide the basis in their memory for the next time they are introduced to this concept.

Throughout the lifespan of your garden, continue to teach and talk about the different stages the seed is in. Once the seed has sprouted, explain that the seed has grown roots, a stem, and a bud. The roots are like our feet; they help the plant stand strong. The stem is like our stomach and throat: it takes in water and brings it to the plant to feed it. The stem also helps the plant grow like how our bodies grow. The leaves on the plant help catch sunlight and give the plant energy. The children have now been introduced to concepts that they will encounter later in school. The activity has given them the foundation for future learning. It has also given them a sense of accomplishment, by caring for and watching their garden grow.

### **Activity 3:** Language arts & play dough

Play dough has great benefits for sensory motor skills and fine motor skills. Fine motor skills are developed by using fingers and hands to mold and sculpt shapes. Learning how to spell and form letters through tactile activities is a great way to learn. You can promote learning by using play dough to shape letters. Depending on your children's age, you can even use the letters you shape to promote spelling by creating words. You can buy store-bought play dough, or to add another step to this activity, you and your children can make play dough at home. For younger learners, you can draw the letter shapes on a paper or print them out so that

your children can “trace” the letter with the play dough. For older learners, you do not need the mat. If the children are ages 2-3, you can start by shaping the play dough into letters of the alphabet. Practice saying the sounds and the letter names as you are making the shapes. Practice shaping uppercase and lowercase letters. Have your children come up with words that start with the letter you are shaping. For ages 3-5, practice shaping the play dough into letters and practice spelling sight words or the children’s names. Depending on the children’s abilities, make the activity more challenging or less. This activity is something your child can grow with and continue to use for practicing language arts. This activity is great because children feel like they are playing without even realizing they are learning. It is also a great way to engage with your children.

### **Section 5: Conclusion**

Multi-sensory learning is a style of learning that is easy to access, because it is done with our own bodies. It does not take a tablet or much else to be able to learn in this style. Children are proven to learn in a positive way when they are able to make connections in learning through their body, as stated by Katrina Schwartz, Maria Montessori, and studies by The University of Chicago. In my personal experience, I too see this method being a beneficial learning style for children. It helps build a foundation for learning, creates an exciting environment, and allows children to learn through more than one way.

Studies have shown that children are spending more than the recommended time using technologies like tablets. The extra time spent using these technologies could be time parents or guardians can spend bonding, creating, and learning with the children. The guidebook which accompanies this essay will allow engaging multi-sensory opportunities for children and

parents/guardians. It does this by providing activities that allow children to explore and create with many senses. It also allows for confidence-building. The process of baking, gardening, and creating allows children to see a start to finish in these activities. The cycle of the activities builds confidence because children see what their minds and hands can create. As a future educator, it is my goal to keep multi-sensory learning alive.

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